

AGENDA - REVISED
CITY COUNCIL OF THE CITY OF MORENO VALLEY MORENO VALLEY COMMUNITY SERVICES DISTRICT CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF MORENO VALLEY MORENO VALLEY HOUSING AUTHORITY MORENO VALLEY PUBLIC FINANCING AUTHORITY BOARD OF LIBRARY TRUSTEES

December 19, 2023

## REGULAR MEETING - 6:00 PM

City Council Study Sessions
Second Tuesday of each month - 6:00 p.m.
City Council Meetings
Special Presentations - 5:30 P.M.
First \& Third Tuesday of each month - 6:00 p.m.
City Council Closed Sessions
Will be scheduled as needed at 4:30 p.m.
City Hall Council Chamber - 14177 Frederick Street
Upon request, this agenda will be made available in appropriate alternative formats to persons with disabilities, in compliance with the Americans with Disabilities Act of 1990. Any person with a disability who requires a modification or accommodation in order to participate in a meeting should direct such request to the ADA Coordinator, at 951.413 .3350 at least 72 hours before the meeting. The 72-hour notification will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

Ulises Cabrera, Mayor

# AGENDA <br> CITY COUNCIL OF THE CITY OF MORENO VALLEY December 19, 2023 

CALL TO ORDER - 5:30 PM
SPECIAL PRESENTATIONS

1. RECOGNIZING ANTHONY SILVAS, MLB TWINS PLAYER
2. RECOGNIZING LAUNDRY TO LANDSCAPING BUSINESS

AGENDA
JOINT MEETING OF THE
CITY COUNCIL OF THE CITY OF MORENO VALLEY MORENO VALLEY COMMUNITY SERVICES DISTRICT CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF MORENO VALLEY MORENO VALLEY HOUSING AUTHORITY MORENO VALLEY PUBLIC FINANCING AUTHORITY AND THE BOARD OF LIBRARY TRUSTEES
*THE CITY COUNCIL RECEIVES A SEPARATE STIPEND FOR CSD MEETINGS*

## REGULAR MEETING - 6:00 PM

DECEMBER 19, 2023

## CALL TO ORDER

Joint Meeting of the City Council, Community Services District, City as Successor Agency for the Community Redevelopment Agency, Housing Authority and the Board of Library Trustees - actions taken at the Joint Meeting are those of the Agency indicated on each Agenda item.

## PLEDGE OF ALLEGIANCE

## INVOCATION - PASTOR ARTURO MACIAS FROM GENERATIONS CHURCH

## ROLL CALL

## INTRODUCTIONS

## PUBLIC COMMENTS ON ANY SUBJECT NOT ON THE AGENDA UNDER THE JURISDICTION OF THE CITY COUNCIL

## PUBLIC COMMENTS ON ANY SUBJECT ON THE AGENDA UNDER THE JURISDICTION OF THE CITY COUNCIL

## JOINT CONSENT CALENDARS (SECTIONS A-E)

All items listed under the Consent Calendars, Sections A, B, C, D, and E are considered to be routine and non-controversial, and may be enacted by one motion unless a member of the City Council, Community Services District, City as Successor Agency for the Community Redevelopment Agency, Housing Authority or the Board of Library Trustees requests that an item be removed for separate action. The motion to adopt the Consent Calendars is deemed to be a separate motion by each Agency and shall be so recorded by the City Clerk. Items withdrawn for report or discussion will be heard after public hearing items.

## A. CONSENT CALENDAR-CITY COUNCIL

A.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
A.2. MINUTES - CITY COUNCIL - CLOSED SESSION - DEC 5, 2023 5:00 PM.

## Recommendation:

1. Approve As Submitted.
A.3. MINUTES - CITY COUNCIL - REGULAR MEETING - DEC 5, 2023 6:00 PM.

## Recommendation:

1. Approve As Submitted.
A.4. COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2023/2024 FROM JULY 1, 2023 THROUGH OCTOBER 31, 2023. (Report of: City Clerk)

## Recommendation:

1. Receive and file the Fiscal Year 2023/2024 Council Discretionary Expenditure Report for July 1, 2023 through October 31, 2023.
A.5. COUNCIL TRAINING \& TRAVEL EXPENDITURE REPORTS FOR FISCAL YEAR 2023-2024 (Report of: City Clerk)

## Recommendation:

1. Receive and file the Training \& Travel Authorization Forms for the month of November 2023.
A.6. LIST OF PERSONNEL CHANGES (Report of: City Manager)

## Recommendation:

1. Ratify the list of personnel changes as described.
A.7. SECOND READING AND ADOPTION OF ORDINANCE NO. 1005 (Report of: Community Development)

## Recommendation: That the City Council:

1. Conduct the second reading by title only and adopt Ordinance No. 1005.
A.8. RECEIVE THE ANNUAL AB1600 COMPLIANCE REPORT FOR FISCAL YEAR 2022-23 (Report of: Financial \& Management Services)

## Recommendations:

1. Receive and file the Annual AB 1600 Compliance Report for FY 202223 in compliance with California Government Code sections 66006 and 66001 .
2. Approve the finding that staff has demonstrated a continuing need to hold unexpended Development Impact Fees.
A.9. AUTHORIZATION TO AWARD AN AGREEMENT FOR PROFESSIONAL CONSULTANT SERVICES TO MICHAEL BAKER INTERNATIONAL FOR THE ENGINEERING DESIGN AND ENVIRONMENTAL SERVICES FOR THE PUMP TRACK AND SITE IMPROVEMENTS, PROJECT NO. 807 00583015 (Report of: Parks \& Community Services)

## Recommendations:

1. Award a Professional Consultant Services Agreement to Michael Baker International, to provide Engineering Design and Environmental Services for the Pump Track and Site Improvements (Project No. 807 0058-3015); and
2. Authorize the Executive Director to execute the Professional Consultant Services Agreement with Michael Baker International, in the amount of \$405,780.00; and
3. Authorize the Executive Director to execute any subsequent Amendments to the Agreement with Michael Baker International within Council approved annual budgeted amounts, including the authority to authorize the associated purchase orders in accordance with the terms of the Agreement, subject to the approval of the City Attorney.

## A.10. APPROVAL TO USE ASSET FORFEITURE FUNDS TO PURCHASE LAW ENFORCEMENT EQUIPMENT (Report of: Police Department)

## Recommendations:

1. Authorize the Police Department to purchase law enforcement equipment at a cost of $\$ 30,417.83$; and
2. Authorize a budget adjustment as set forth in the Fiscal Impact Section of this report.
A.11. APPROVE ADDITIONAL FUNDING FOR ENERGY ASSISTANCE AND ENERGY EFFICIENCY PROGRAMS, AND APPROVE INCENTIVES FOR ELECTRIC VEHICLES (Report of: Public Works)

## Recommendation:

1. Approve an additional budget allocation of $\$ 300,000$ for Utility Assistance Programs;
2. Approve an additional budget allocation of $\$ 350,000$ to expand the Energy Audit and Direct Installation program;
3. Approve an additional budget allocation of $\$ 115,000$ to expand the Transportation Electrification program;
4. Approve Resolution 2023-XX. A Resolution of the City Council of the City of Moreno Valley, California, to confirm the Electric Rules for Moreno Valley Utility to be effective March 2024.
A.12. ACCEPTANCE OF CYCLE 6 ACTIVE TRANSPORTATION PROGRAM (ATP) GRANT FUNDS FOR ADA CURB RAMP REMEDIATION PROJECT (Report of: Public Works)

## Recommendations:

1. Accept and approve the Program Supplement Agreements between California Department of Transportation (Caltrans) and the City of Moreno Valley (City) for the ADA Curb Ramps Remediation Project in the amount of $\$ 1,523,000$ (Fund 2301); and
2. Authorize the Public Works Director/City Engineer to execute the Program Supplement Agreements and any subsequent amendments, subject to the approval of the City Attorney; and
3. Authorize a budget adjustment as set forth in the Fiscal Impact section of this report.
A.13. APPROVAL OF POWER PURCHASE AGREEMENT FOR RENEWABLE RESOURCES FROM GOLDEN FIELDS SOLAR IV, LLC (Report of: Public Works)

## Recommendation:

1. Approve the Power Purchase Agreement for Renewable Resources between City of Moreno Valley (as Buyer) and Golden Fields Solar IV, LLC (as Seller)
2. Authorize the City Manager to execute the Power Purchase Agreement and to approve and execute any subsequent amendments
subject to the approval of the City Attorney and within the previously Council approved budget.

## B. CONSENT CALENDAR-COMMUNITY SERVICES DISTRICT

B.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
B.2. MINUTES - CITY COUNCIL - CLOSED SESSION - DECEMBER 5, 2023 5:00 PM.

## Recommendation:

1. Approve as submitted.
B.3. MINUTES - CITY COUNCIL - REGULAR MEETING - DECEMBER 5, 2023 6:00 PM.

Recommendation:

1. Approve as submitted.
C. CONSENT CALENDAR - HOUSING AUTHORITY
C.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
C.2. MINUTES - CITY COUNCIL - CLOSED SESSION - DECEMBER 5, 2023 5:00 PM.

## Recommendation:

1. Approve as submitted.
C.3. MINUTES - CITY COUNCIL - REGULAR MEETING - DECEMBER 5, 2023 6:00 PM.

## Recommendation:

1. Approve as submitted.
D. CONSENT CALENDAR - BOARD OF LIBRARY TRUSTEES
D.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
D.2. MINUTES - CITY COUNCIL - CLOSED SESSION - DECEMBER 5, 2023 5:00 PM.

## Recommendation:

1. Approve as submitted.
D.3. MINUTES - CITY COUNCIL - REGULAR MEETING - DECEMBER 5, 2023 6:00 PM.

## Recommendation:

1. Approve as submitted.

## E. CONSENT CALENDAR - PUBLIC FINANCING AUTHORITY

E.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
E.2. MINUTES - CITY COUNCIL - CLOSED SESSION - DECEMBER 5, 2023 5:00 PM.

## Recommendation:

1. Approve as submitted.
E.3. MINUTES - CITY COUNCIL - REGULAR MEETING - DECEMBER 5, 2023 6:00 PM.

Recommendation:

1. Approve as submitted.

## F. PUBLIC HEARINGS

Questions or comments from the public on a Public Hearing matter are limited to five minutes per individual and must pertain to the subject under consideration.

Those wishing to speak should complete and submit a GOLDENROD speaker slip to the Sergeant-at-Arms.
F.1. GATEWAY HEIGHTS 108 UNIT CONDOMINIUM PROJECT (continued from December 5, 2023) (Report of: Community Development)

## Recommendations: That the City Council:

1. ADOPT Resolution 2023-XX:
2. CERTIFYING the Initial Study/Mitigated Negative Declaration prepared for the Proposed Project consisting of General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Tentative Tract Map 38459 (PEN22-0127) and Conditional Use Permit (PEN21-0066); and
3. ADOPTING the Mitigation Monitoring and Reporting Program prepared for the Mitigated Negative Declaration; and
4. ADOPT Resolution 2023-XX:
5. APPROVING General Plan Amendment (PEN20-0095), Tentative Tract Map 38459 (PEN22-0127) and Conditional Use Permit (PEN21-0066); and
6. INTRODUCE Ordinance No. [next in order]:
7. Approving a Change of Zone (PEN2O-0096) and corresponding amendment to the City's Zoning Atlas.
F.2. BEYOND FOOD MART (Report of: Community Development)

Recommendations: That the City Council:

1. ADOPT Resolution 2023-XX:
2. CERTIFYING the Initial Study/Mitigated Negative Declaration prepared for the Proposed Project consisting of Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176); and
3. ADOPTING the Mitigation Monitoring and Reporting Program prepared for the Mitigated Negative Declaration; and
4. ADOPT Resolution 2023-XX:
5. APPROVING Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176);

## G. ITEMS REMOVED FROM CONSENT CALENDARS FOR DISCUSSION OR SEPARATE ACTION

## H. GENERAL BUSINESS

H.1. CITY COUNCIL REORGANIZATION - SELECTION OF MAYOR PRO TEM (continued from December 5, 2023) (Report of: City Clerk)

## Recommendation:

1. Conduct the reorganization of the City Council by selecting one Council Member to serve a one-year term as Mayor Pro Tem.
H.2. PROVIDE DIRECTION REGARDING THE COUNCIL MOTION TO CANCEL THE JANUARY 02, 2024 REGULAR MEETING (Report of: City Manager)

## Recommendations:

1. Direct City Clerk to cancel the January 2, 2024 Regular Meeting; or
2. Provide alternate direction to the City Clerk.
H.3. RECEIVE, FILE AND ADOPT PARKS, COMMUNITY SERVICES \& TRAILS MASTER PLAN 2023 (Report of: Parks \& Community Services)

Recommendations: That the City Council and CSD:

1. Staff recommends that the City Council receive, file and approve the Parks, Community Services, and Trails Master Plan 2023.

## I. REPORTS

I.1. CITY COUNCIL REPORTS
(Informational Oral Presentation - not for Council action)
March Joint Powers Commission (JPC)
Riverside County Habitat Conservation Agency (RCHCA)
Riverside County Transportation Commission (RCTC)
Riverside Transit Agency (RTA)
Western Riverside Council of Governments (WRCOG)
Western Riverside County Regional Conservation Authority (RCA)
School District/City Joint Task Force

## I.2. EMPLOYEE ASSOCIATION REPORTS

## I.3. CITY MANAGER'S REPORT

CLOSING COMMENTS AND/OR REPORTS OF THE CITY COUNCIL, COMMUNITY SERVICES DISTRICT, CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY, HOUSING AUTHORITY, PUBLIC FINANCING AUTHORITY, AND THE BOARD OF LIBRARY TRUSTEES.

## ADJOURNMENT

## PUBLIC INSPECTION

The contents of the agenda packet are available for public inspection on the City's website at www.moval.org and in the City Clerk's office at 14177 Frederick Street during normal business hours.

Any written information related to an open session agenda item that is known by the City to have been distributed to all or a majority of the City Council less than 72 hours prior to this meeting will be made available for public inspection on the City's website at www.moval.org and in the City Clerk's office at 14177 Frederick Street during normal business hours.

## CERTIFICATION

I, Jane Halstead, City Clerk of the City of Moreno Valley, California, certify that 72 hours prior to this Regular Meeting, the City Council Agenda was posted on the City's website at: www.moval.org and in the following three public places pursuant to City of Moreno Valley Resolution No. 2007-40:

City Hall, City of Moreno Valley
14177 Frederick Street
Moreno Valley Library
25480 Alessandro Boulevard
Moreno Valley Senior/Community Center
25075 Fir Avenue

Jane Halstead, CMC
City Clerk
Date Posted: December 14, 2023

# MINUTES <br> CITY COUNCIL OF THE CITY OF MORENO VALLEY MORENO VALLEY COMMUNITY SERVICES DISTRICT CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF MORENO VALLEY <br> MORENO VALLEY PUBLIC FINANCING AUTHORITY MORENO VALLEY HOUSING AUTHORITY 

## CLOSED SESSION - 5:00 PM

December 5, 2023

## CALL TO ORDER

The Closed Session of the City Council of the City of Moreno Valley, Moreno Valley Community Services District, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley, Housing Authority, and the Moreno Valley Public Financing Authority was called to order at 5:00 p.m. by Mayor Cabrera in the Council Chamber located at 14177 Frederick Street, Moreno Valley, California.

Mayor Cabrera announced that the City Council receives a separate stipend for CSD meetings.

## ROLL CALL

| Council: | Ulises Cabrera <br> David Marquez | Mayor <br> Council Member |
| :---: | :--- | :--- |
|  | Elena Baca-Santa Cruz | Council Member |
| Absent: | Ed Delgado | Mayor Pro Tem |
|  | Cheylynda Barnard | Council Member |

Motion to excuse the absences of Mayor Pro Tem Delgado for health reasons and Council Member Barnard due to a pre-scheduled work-related appointment.

Motion moved by Mayor Cabrera and seconded by Council Member Marquez to excuse the absences of Mayor Pro Tem Delgado and Council Member Barnard.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marguez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

RESULT: APPROVED [UNANIMOUS]
MOVER: Ulises Cabrera, Mayor
SECONDER: David Marquez, Council Member
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard

## PUBLIC COMMENTS ON MATTERS ON THE AGENDA ONLY

Mayor Cabrera opened the public comments portion of the meeting for items listed on the agenda only. There being no members of the public to come forward to speak, he closed the public comments.

## CLOSED SESSION

City Attorney Steven Quintanilla announced that the City Council would recess to Closed Session to discuss the items as listed on the agenda and that there might be a post Closed Session announcement.

## A CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION

Pursuant to Government Code Section 54956.9(d)(1)
Case name: City of Moreno Valley v. Box Springs Mutual Water Company, et al Case Number: CVR12304062

Mayor Cabrera recessed the City Council to the City Manager's Training Room, second floor, City Hall, for their Closed Session at 5:02 p.m.

Mayor Cabrera reconvened the City Council in the Council Chamber from their Closed Session at 5:30 p.m.

## REPORT OF ACTION FROM CLOSED SESSION, IF ANY, BY CITY ATTORNEY

City Attorney Steven Quintanilla reported that in regard to the Box Springs Mutual Water Company case, the City Council voted in Closed Session 2-1 to reject the Box Springs Mutual Water Company's settlement proposal, with Mayor Cabrera and Council Member Marquez voting affirmatively to reject, and Council Member Baca-Santa Cruz voting no.

## ADJOURNMENT

There being no further business to come before the City Council, Mayor Cabrera adjourned the meeting at 5:32 p.m.

Submitted by:

Jane Halstead, CMC<br>City Clerk<br>Secretary, Moreno Valley Community Services District<br>Secretary, City as Successor Agency for the Community<br>Redevelopment Agency of the City of Moreno Valley<br>Secretary, Moreno Valley Housing Authority<br>Secretary, Board of Library Trustees<br>Secretary, Public Financing Authority

Approved by:

Ulises Cabrera
Mayor
City of Moreno Valley
President, Moreno Valley Community Services District
Chairperson, City as Successor Agency for the Community
Redevelopment Agency of the City of Moreno Valley
Chairperson, Moreno Valley Housing Authority
Chairperson, Board of Library Trustees
Chairperson, Public Financing Authority

## MINUTES

CITY COUNCIL REGULAR MEETING OF THE CITY OF MORENO VALLEY December 5, 2023

## CALL TO ORDER - 5:30 PM

SPECIAL PRESENTATIONS

1. RECOGNIZING SOUTHWEST CARPENTERS UNION FOR CONSTRUCTING LITTLE FREE LIBRARIES - PROCLAMATION
2. RECOGNIZING CLASSIFIED EMPLOYEE \& DEPUTY OF THE 3RD QUARTER

# MINUTES <br> JOINT MEETING OF THE <br> CITY COUNCIL OF THE CITY OF MORENO VALLEY MORENO VALLEY COMMUNITY SERVICES DISTRICT CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF MORENO VALLEY <br> MORENO VALLEY HOUSING AUTHORITY MORENO VALLEY PUBLIC FINANCING AUTHORITY BOARD OF LIBRARY TRUSTEES AND MORENO VALLEY COMMUNITY FOUNDATION 

## REGULAR MEETING - 6:00 PM

December 5, 2023

## CALL TO ORDER

The Joint Meeting of the City Council, Community Services District, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley, Moreno Valley Housing Authority, Moreno Valley Public Financing Authority and the Board of Library Trustees was called to order at 6:03 p.m. by Mayor Cabrera in the Council Chamber located at 14177 Frederick Street.

Mayor Cabrera announced that the City Council receives a separate stipend for CSD meetings.

## PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Mayor Cabrera.

## INVOCATION - DR. DALE LACQUEMENT FROM FAITH SOUTHERN BAPTIST CHURCH

The invocation was given by Dale Lacquement from Southern Baptist Church.

ROLL CALL

| Council: | Ulises Cabrera | Mayor |
| :--- | :--- | :--- |
|  | Elena Baca-Santa Cruz | Council Member |
| Absent: | David Marquez | Council Member |
|  | Ed Delgado | Mayor Pro Tem |
|  | Cheylynda Barnard | Council Member |

Motion to excuse the absences of Mayor Pro Tem Delgado for health reasons and Council Member Barnard due to a pre-scheduled work-related appointment.

Motion moved by Mayor Cabrera and seconded by Council Member Marquez to excuse the absences of Mayor Pro Tem Delgado and Council Member Barnard.

Motion passed by a vote of 2-1, with Council Member Marquez, and Mayor Cabrera voting yes, Council Member Baca-Santa Cruz voting not, with Mayor Pro Tem Delgado and Council Member Barnard absent.

RESULT: APPROVED [2 TO 1]
MOVER: David Marquez, Council Member
SECONDER: Ulises Cabrera, Mayor
AYES: Ulises Cabrera, David Marquez
NAYS: Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard
Motion to move item F-1, the Gateway Public Hearing Item to just before the Consent Calendar.

City Attorney Steven Quintanilla provided guidance per the Government Code and City policy regarding voting requirements on certain items, due to there only being three members of the City Council present.

Motion made by Mayor Cabrera and seconded by Council Member Marquez to move item F-1, the Gateway Public Hearing Item to just before the Consent Calendar.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

## RESULT: APPROVED [UNANIMOUS]

MOVER: Ulises Cabrera, Mayor
SECONDER: David Marquez, Council Member
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard

## INTRODUCTIONS

| Staff: | Jane Halstead | Manager of the Office of the Mayor and City |
| :--- | :--- | :--- |
|  | Patty Rodriguez | Council/City Clerk |
|  | Senior Deputy City Clerk |  |
| Steven Quintanilla | City Attorney |  |
|  | Mike Lee | City Manager |

Brian Mohan
Michael Lloyd
Sean Kelleher
Launa Jimenez
Melissa Walker
Jeremy Bubnick
Robert Cardenas
Timothy Brause Jesse Park

Assistant City Manager, City Treasurer
Assistant City Manager
Community Development Director
Chief Financial Officer
Public Works Director/City Engineer
Parks and Community Services Director
Human Resources Director
Lieutenant, Police
Fire Chief

## PUBLIC COMMENTS ON ANY SUBJECT NOT ON THE AGENDA UNDER THE JURISDICTION OF THE CITY COUNCIL

Seth Cox

1. Gratitude.

Fred Banuelos

1. Public Safety.

Daryl Terrell

1. MVC Partnership Proposal.

Bob Palomarez

1. Press Enterprise.

Chris Baca

1. Community Involvement, Towing.

Roy Bleckert

1. Public Safety.

Genevieve A.

1. Public Art.

Pete Bleckert

1. Elected Officials.

GATEWAY HEIGHTS 108 UNIT CONDOMINIUM PROJECT (Report of: Community Development)

## Recommendations: That the City Council:

1. ADOPT Resolution 2023-XX:
2. CERTIFYING the Initial Study/Mitigated Negative Declaration prepared for the Proposed Project consisting of General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Tentative Tract Map 38459 (PEN22-0127) and Conditional Use Permit (PEN21-0066); and
3. ADOPTING the Mitigation Monitoring and Reporting Program prepared for the Mitigated Negative Declaration; and
4. ADOPT Resolution 2023-XX:
5. APPROVING General Plan Amendment (PEN20-0095), Tentative Tract Map 38459 (PEN22-0127) and Conditional Use Permit (PEN21-0066); and
6. INTRODUCE Ordinance No. [next in order]:
7. Approving a Change of Zone (PEN20-0096) and corresponding amendment to the City's Zoning Atlas.
RESULT: CONTINUED [UNANIMOUS] Next: 12/19/2023 6:00 PM
MOVER: Ulises Cabrera, Mayor
SECONDER: Elena Baca-Santa Cruz, Council Member
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard
PUBLIC COMMENTS ON ANY SUBJECT ON THE AGENDA UNDER THE JURISDICTION OF THE CITY COUNCIL

JOINT CONSENT CALENDARS (SECTIONS A-E)
Motion made by Council Member Marquez and seconded by Council Member Baca-Santa Cruz to approve the consent calendar.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

RESULT: APPROVED [UNANIMOUS]<br>MOVER: David Marquez, Council Member<br>SECONDER: Elena Baca-Santa Cruz, Council Member<br>AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz<br>ABSENT: Ed Delgado, Cheylynda Barnard

## A. CONSENT CALENDAR-CITY COUNCIL

A.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
A.2. City Council - Closed Session - Nov 21, 2023 5:00 PM
A.3. City Council - Regular Meeting - Nov 21, 2023 6:00 PM
A.4. PAYMENT REGISTER - OCTOBER 2023 (Report of: Financial \& Management Services)

## Recommendation:

1. Receive and file the Payment Register.
A.5. RESOLUTION OF THE CITY OF MORENO VALLEY SERVING AS THE SUCCESSOR AGENCY TO THE COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF MORENO VALLEY APPROVING THE RECOGNIZED OBLIGATION PAYMENT SCHEDULE AND ADMINISTRATIVE BUDGET FOR THE PERIOD OF JULY 1, 2024 THROUGH JUNE 30, 2025 (ROPS 24-25) (RESO. NO. SA 2023-06) (Report of: Financial \& Management Services)

## Recommendations: That the City Council as Successor Agency:

1. Adopt Resolution No. SA 2023-06. A Resolution of the City Council of the City of Moreno Valley, California, serving as Successor Agency to the Community Redevelopment Agency of the City of Moreno Valley Approving the Recognized Obligation Payment Schedule and Administrative Budget for the Period of July 1, 2024 through June 30, 2025 (ROPS 24-25) and Authorizing the City Manager acting for the Successor Agency or his/her Designee to Make Modifications Thereto; and
2. Authorize the City Manager acting for the Successor Agency or his Designee to make modifications to the Schedule; and
3. Authorize the transmittal of the ROPS $24-25$, for the period of July 1 ,

2024 through June 30, 2025 ("Exhibit A"), including Administrative Budget ("Exhibit B") for the said period, to the Countywide Oversight Board for County of Riverside for review and approval.
A.6. SECOND READING AND ADOPTION OF ORDINANCE NO. 1004, AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, LEVYING A SPECIAL TAX IN CONNECTION WITH COMMUNITY FACILITIES DISTRICT NO. 2023-01 (PUBLIC SAFETY SERVICES) AND TAKING CERTAIN RELATED ACTIONS (Report of: Financial \& Management Services)

## Recommendation:

1. Conduct the second reading by title only and adopt Ordinance No. 1004.
A.7. ADOPT A RESOLUTION TO APPROVE A JOINT COMMUNITY FACILITIES AGREEMENT BY AND AMONG PASSCO PACIFICA LLC, MORENO VALLEY UNIFIED SCHOOL DISTRICT, AND THE CITY OF MORENO VALLEY RELATING TO MORENO VALLEY UNIFIED SCHOOL DISTRICT COMMUNITY FACILITIES DISTRICT NO. 2023-4 (RESO. NO. 2023-85) (Report of: Financial \& Management Services)

## Recommendation:

1. Adopt Resolution No. 2023-85, a Resolution Approving the Joint Community Facilities Agreement between Passco Pacifica, LLC, Moreno Valley Unified School District, and City of Moreno Valley, in substantially the form attached hereto with modifications subject to City Attorney approval and authorize the City Manager to execute the Agreement and related documents.
A.8. ADOPT A RESOLUTION TO APPROVE A JOINT COMMUNITY FACILITIES AGREEMENT BY AND AMONG D.R. HORTON LOS ANGELES HOLDING COMPANY, INC., MORENO VALLEY UNIFIED SCHOOL DISTRICT, AND THE CITY OF MORENO VALLEY RELATING TO MORENO VALLEY UNIFIED SCHOOL DISTRICT COMMUNITY FACILITIES DISTRICT NO. 2023-3 (RESO. NO. 2023-86) (Report of: Financial \& Management Services)

## Recommendation:

1. Adopt Resolution No. 2023-86, a Resolution Approving the Joint Community Facilities Agreement between D.R. Horton Los Angeles Holding Company, Inc., Moreno Valley Unified School District, and City of Moreno Valley, in substantially the form attached hereto with modifications subject to City Attorney approval, and authorize the City Manager to execute the Agreement and related documents.

## B. CONSENT CALENDAR-COMMUNITY SERVICES DISTRICT

B.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
B.2. MINUTES - CITY COUNCIL - CLOSED SESSION - NOVEMBER 21, 2023 5:00 PM.

Recommendation:
1: Approve as submitted.
B.3. MINUTES - CITY COUNCIL - REGULAR MEETING - NOVEMBER 21, 2023 6:00 PM.

Recommendation:
1: Approve as submitted.
B.4. PURSUANT TO LANDOWNER PETITIONS, ANNEX CERTAIN PARCELS INTO COMMUNITY FACILITIES DISTRICT NO. 2021-01 (PARKS MAINTENANCE) - AMENDMENT NOS. 126, 129 and 131 (RESO. NOS. CSD 2023-96, CSD 2023-97, and CSD 2023-98) (Report of: Financial \& Management Services)

## Recommendation:

1. Adopt Resolution No. CSD 2023-96, a Resolution of the Board for the Moreno Valley Community Services District of the City of Moreno Valley, California, ordering the annexation of territory to City of Moreno Valley Community Facilities District No. 2021-01 (Parks Maintenance) and approving the amended map for said District (Amendment No. 126) (Ruben V. Marquez, located at 14191 Travers Dr.).
2. Adopt Resolution No. CSD 2023-97, a Resolution of the Board for the Moreno Valley Community Services District of the City of Moreno Valley, California, ordering the annexation of territory to City of Moreno Valley Community Facilities District No. 2021-01 (Parks Maintenance) and approving the amended map for said District (Amendment No. 129) (Leticia Llamas, Sergio Llamas and Martin Castro Cazarez, located at 14755 Silvertree Rd.).
3. Adopt Resolution No. CSD 2023-98, a Resolution of the Board for the Moreno Valley Community Services District of the City of Moreno

Valley, California, ordering the annexation of territory to City of Moreno Valley Community Facilities District No. 2021-01 (Parks Maintenance) and approving the amended map for said District (Amendment No. 131) (24291 Bairndale Drive Land Trust and Brock Christopher Bagley, located at 24291 and 24295 Bairndale Dr.).

## C. CONSENT CALENDAR - HOUSING AUTHORITY

C.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
C.2. MINUTES - CITY COUNCIL - CLOSED SESSION - NOVEMBER 21, 2023 5:00 PM .

Recommendation:
1: Approve as submitted.
C.3. MINUTES - CITY COUNCIL - REGULAR MEETING - NOVEMBER 21, 2023 6:00 PM.

Recommendation:
1: Approve as submitted.
D. CONSENT CALENDAR - BOARD OF LIBRARY TRUSTEES
D.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
D.2. MINUTES - CITY COUNCIL - CLOSED SESSION - NOVEMBER 21, 2023 5:00 PM.

Recommendation:
1: Approve as submitted.
D.3. MINUTES - CITY COUNCIL - REGULAR MEETING - NOVEMBER 21, 2023 6:00 PM.

## Recommendation:

1: Approve as submitted.

## E. CONSENT CALENDAR - PUBLIC FINANCING AUTHORITY

E.1. ORDINANCES - READING BY TITLE ONLY - THE MOTION TO ADOPT AN ORDINANCE LISTED ON THE CONSENT CALENDAR INCLUDES WAIVER OF FULL READING OF THE ORDINANCE.

Recommendation: Waive reading of all Ordinances.
E.2. MINUTES - CITY COUNCIL - CLOSED SESSION -NOVEMBER 21, 2023 5:00 PM.

Recommendation:
1: Approve as submitted.
E.3. MINUTES - CITY COUNCIL - REGULAR MEETING - NOVEMBER 21, 2023 6:00 PM.

Recommendation:
1: Approve as submitted.

## F. PUBLIC HEARINGS

F.1. Item was moved to before the Consent Calendar.
F.2. REQUEST FOR TEMPORARY CLOSURE OF GRANDE VISTA DRIVE (Report of: Public Works)

## Recommendation:

1. Conduct a public hearing to adopt Resolution No. 2023-87 approving the temporary closure of Grande Vista Drive south of Bonita Heights

Public Works Director Melissa Walker provided the staff report.
With the conclusion of the staff report, Mayor Cabrera opened the floor for Council questions of staff.

Council Member Marquez asked questions of staff.
Public Works Director Melissa Walker responded to Council Member Marquez's inquiry.

With the conclusion of Council questions of staff, Mayor Cabrera called for public comment to be heard.

With no public comments, Mayor Cabrera called for Council deliberation.

After Council deliberation, Mayor Cabrera entertained a motion.
Motion made by Council Member Marquez and seconded by Council Member Baca-Santa Cruz to approve the temporary closure of Grande Vista Drive.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

## RESULT: APPROVED [UNANIMOUS]

MOVER: David Marquez, Council Member
SECONDER: Elena Baca-Santa Cruz, Council Member
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard
F.3. MUNICIPAL CODE AMENDMENT AMENDING CHAPTER 9.02 (PERMITS AND APPROVALS), CHAPTER 9.03 (RESIDENTIAL DISTRICTS), CHAPTER 9.05 (INDUSTRIAL DISTRICTS), CHAPTER 9.14 (LAND DIVISIONS), AND CHAPTER 9.16 (DESIGN GUIDELINES) OF TITLE 9 (PLANNING AND ZONING) (Report of: Community Development)

## Recommendation: That the City Council:

1. CONDUCT the First Reading of Ordinance No. 1005 and Introduce the Ordinance amending Sections 9.02.020, 9.03.040, 9.03.055, 9.03.070, 9.03.080, 9.05.040, 9.14.100, and 9.09.170 of Title 9 of the Moreno Valley Municipal Code to provide updates consistent with new State Law and Housing and Community Development (HCD) requirements, streamline Code requirements to provide flexibility and clarity regarding existing requirements, and provide for other minor clarifications and clean-up items.

Community Development Director Sean Kelleher provided the staff report.

With the conclusion of the staff report, Mayor Cabrera called for Council questions of staff.

With no Council questions of staff, Mayor Cabrera called for public comment to be heard.

With no public comment, Mayor Cabrera opened the floor for Council deliberation.

With no Council deliberation, Mayor Cabrera entertained a motion.

## Motion made by Council Member Baca-Santa Cruz and seconded by Council Member Marquez to approve the 2023 Winter Omnibus.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

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RESULT: APPROVED [UNANIMOUS]
MOVER: Elena Baca-Santa Cruz, Council Member
SECONDER: David Marquez, Council Member
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard
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F.4. PUBLIC HEARING FOR THE ANNUAL ACTION PLAN FOR PROGRAM YEAR 2024-2025 AND TO ADOPT 2024-2025 OBJECTIVES AND POLICIES (Report of: City Manager)

## lecommendations: That the City Council:

1. Conduct a Public Hearing to allow for the public to comment on the needs of low- and moderate-income residents in Moreno Valley.
2. Approve the proposed CDBG, HOME, and ESG Grant Objectives and Policies for the 2024-2025 Program Year.

Assistant City Manager Brian Mohan provided the staff report.
With the conclusion of the staff report, Mayor Cabrera opened the floor for Council questions of staff.

With no Council questions of staff, Mayor Cabrera called for public comments to be heard.

Chris Baca

1. Legal concerns.

Public comments were heard.
With the conclusion of public comments, Mayor Cabrera opened the floor for Council deliberation.

With no Council deliberation, Mayor Cabrera entertained a motion.

Motion made by Council Member Baca-Santa Cruz and seconded by Mayor Cabrera to approve the Annual Action Plan for program year 2024-2025 and to adopt 2024-2025 objectives and policies.

Motion passed by a vote of 3-0, with Council Member BacaSanta Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

RESULT: APPROVED [UNANIMOUS]
MOVER: Elena Baca-Santa Cruz, Council Member
SECONDER: Ulises Cabrera, Mayor
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard

## G. ITEMS REMOVED FROM CONSENT CALENDARS FOR DISCUSSION OR SEPARATE ACTION

## H. GENERAL BUSINESS

H.1. CITY COUNCIL REORGANIZATION - SELECTION OF MAYOR PRO TEM (continued from December 5, 2023) (Report of: City Clerk)

Recommendation:

1. Conduct the reorganization of the City Council by selecting one Council Member to serve a one-year term as Mayor Pro Tem.

Mayor Cabrera made a motion to continue this item to the December 19th, 2023.

Motion made by Mayor Cabrera and seconded by Council Member Marquez to continue the selection of Mayor Pro Tem to the December 19, 2023 City Council Meeting.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

RESULT: CONTINUED [UNANIMOUS]
Next: 12/19/2023 6:00 PM
MOVER: Ulises Cabrera, Mayor
SECONDER: David Marquez, Council Member
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard
H.2. REVIEW AND CONSIDER APPROVAL OF PUBLIC ART REQUEST FOR FUNDING APPLICATION -ANTONIO MARTINEZ MAIN LIBRARY MURAL (Report of: Parks \& Community Services)

## Recommendations: That the City Council:

1. Receive and file the artist presentation; and
2. Review and consider approval of Public Art Request for Funding Application from Antonio Martinez for the creation and installation of a 260 square foot mural at the Main Library; and
3. Authorize Executive Director and or its designee to enter into an agreement for services with the approved applicant and submit a budget adjustment request to utilize funding from DIF Public Art Fund 2916.

Parks and Community Services Director Jeremy Bubnick provided the staff report.

With the conclusion of the staff report, Mr. Antonio Martinez provided a presentation.

With the conclusion of the presentation, Mayor Cabrera called for Council questions of the applicant.

Mr. Antonio Martinez responded to all of Council's inquiries.
With the conclusion of Council questions of the applicant, Mayor Cabrera called for public comments to be heard.

Pete Bleckert

1. Critical comments.

Roy Bleckert

1. Concerns.

Alejandro Barwinski

1. Supporting artists.

Public comments were heard.
With the conclusion of public comments, Mayor Cabrera called for Council deliberation.

Assistant City Manager Brian Mohan provided comments to Council.
With the conclusion of Council deliberation, Mayor Cabrera entertained a motion.

Motion made by Council Member Marquez and seconded by Mayor Cabrera to approve the Public Art Request for Funding Application from Antonio Martinez.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.
RESULT: APPROVED [UNANIMOUS]
MOVER: David Marquez, Council Member
SECONDER: Ulises Cabrera, Mayor
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard

## H.3. REVIEW AND CONSIDER APPROVAL OF PUBLIC ART REQUEST FOR FUNDING APPLICATION -ALEXANDRA GARCIA GATEWAY PARK RESTROOM MURAL (Report of: Parks \& Community Services)

## Recommendations: That the City Council:

1. Receive and file artist presentation; and
2. Review and consider approval of Public Art Request for Funding Application from Alexandra Garcia for the creation and installation of a 732 square foot mural at the Gateway Park Restroom; and
3. Authorize Executive Director and or its designee to enter into an agreement for services with the approved applicant and submit a budget adjustment request to utilize funding from DIF Public Art Fund 2916.

Parks and Community Services Director Jeremy Bubnick provided clarification on items brought up during public comment.

Parks and Community Services Director Jeremy Bubnick provided the staff report.

With the conclusion of the staff report, Ms. Alexandra Garcia provided a presentation.

With the conclusion of the presentation, Mayor Cabrera called for Council questions of the applicant.

Assistant City Manager Brian Mohan and Public Works Director Jeremy Bubnick provided clarification to the City Council.

Ms. Alexandra Garcia responded to all of Council's inquiries.
With the conclusion of Council questions of the applicant, Mayor Cabrera called for public comments to be heard.

Pete Bleckert

1. Critical comments.

Bob Palomarez

1. Community involvement.

Genevieve Aleman

1. Supporting artist.

Roy Bleckert

1. Concerns.

Public comments were heard.
With the conclusion of public comments, Mayor Cabrera called for Council deliberation.

After Council deliberation, Mayor Cabrera entertained a motion.
Motion made by Council Member Baca-Santa Cruz and seconded by Council Member Marquez to approve the Public Art Request for Funding Application from Alexandra Garcia.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

| RESULT: | APPROVED [UNANIMOUS] |
| :--- | :--- |
| MOVER: | Elena Baca-Santa Cruz, Council Member |
| SECONDER: | David Marquez, Council Member |
| AYES: | Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz |
| ABSENT: | Ed Delgado, Cheylynda Barnard |

H.4. REVIEW AND CONSIDER APPROVAL OF PUBLIC ART REQUEST FOR FUNDING APPLICATION -PATRICK BARWINSKI CRC MURAL (Report of: Parks \& Community Services)

## Recommendations: That the City Council:

1. Receive and file the artist presentation; and
2. Review and consider approval of Public Art Request for Funding Application from Patrick Barwinski for the creation and installation of a 2,835 square foot mural at the Moreno Valley Conference \& Recreation Center (CRC); and
3. Authorize Executive Director and or its designee to enter into an agreement for services with the approved applicant and submit a budget adjustment request to utilize funding from DIF Public Art Fund 2916.

Parks and Community Services Director Jeremy Bubnick provided the staff report.

With the conclusion of the staff report, Mr. Patrick Barwinski provided a presentation.

With the conclusion of the presentation, Mayor Cabrera called for Council questions of the applicant.

With no Council questions of the applicant, Mayor Cabrera called for public comments to be heard.

Pete Bleckert

1. Concerns.

Roy Bleckert

1. Critical comments.

Genevieve Aleman

1. Arts Commission

Public comments were heard.
With the conclusion of public comments, Mayor Cabrera called for Council deliberation.

After Council deliberation, Mayor Cabrera entertained a motion

## Motion made by Council Member Baca-Santa Cruz and seconded by Council Member Marquez to approve the Public Art Request for Funding Application from Patrick Barwinski.

Motion passed by a vote of 3-0, with Council Member BacaSanta Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.
RESULT: APPROVED [UNANIMOUS]
MOVER: Elena Baca-Santa Cruz, Council Member
SECONDER: David Marquez, Council Member
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard
H.5. REVIEW AND CONSIDER APPROVAL OF PUBLIC ART REQUEST FOR FUNDING APPLICATION -SHAYNE MITCHELL WESTBLUFF PARK RESTROOM MURAL (Report of: Parks \& Community Services)

Recommendations: That the City Council:

1. Receive and file the artist presentation; and
2. Review and consider approval of Public Art Request for Funding Application from Shayne Mitchell for the creation and installation of a 560 square foot mural at the Westbluff Park Restroom; and
3. Authorize Executive Director and or its designee to enter into an agreement for services with the approved applicant and submit a budget adjustment request to utilize funding from DIF Public Art Fund 2916.

Parks and Community Services Director Jeremy Bubnick provided the staff report.

With the conclusion of the staff report, Mr. Shayne Mitchell provided a presentation.

With the conclusion of the presentation, Mayor Cabrera called for Council questions of the applicant.

With no Council questions of the applicant, Mayor Cabrera called for public comments to be heard.

Pete Bleckert

1. Critical comments.

Roy Bleckert

1. Concerns.

Public comments were heard.
With the conclusion of public comments, Mayor Cabrera called for Council deliberation.

After Council deliberation, Mayor Cabrera entertained a motion.
Motion made by Council Member Baca-Santa Cruz and seconded by Council Member Marquez to approve the Public Art Request for Funding Application from Shayne Mitchell.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.
RESULT: APPROVED [UNANIMOUS]
MOVER: Elena Baca-Santa Cruz, Council Member
SECONDER: David Marquez, Council Member
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard
H.6. REVIEW AND CONSIDER APPROVAL OF PUBLIC ART REQUEST FOR FUNDING APPLICATION -MARYAM CROGMAN FOR UTILITY BOX WRAPS AT FOUR INTERSECTIONS (Report of: Parks \& Community Services)

Recommendations: That the City Council:

1. Receive and file the artist presentation; and
2. Review and consider approval of Public Art Request for Funding Application from Maryam Crogman for the installation of utility box wraps at four intersection utility boxes at Eucalyptus \& Heacock; Perris \& Cottonwood; Alessandro Plaza \& Alessandro; Perris \& Alessandro; and
3. Authorize Executive Director and or its designee to enter into an agreement for services with the approved applicant and submit a budget adjustment request to utilize funding from DIF Public Art Fund 2916.

Mayor Cabrera called for a five-minute break at 8:14pm.
The City Council reconvened at $8: 20 \mathrm{pm}$.
Parks and Community Services Director Jeremy Bubnick provided the staff report.

With the conclusion of the staff report, Ms. Maryam Crogman the provided a presentation.

With the conclusion of the presentation, Mayor Cabrera called for Council questions of the applicant.

With no Council questions of the applicant, Mayor Cabrera called for public comments to be heard.

Pete Bleckert

1. Critical comments.

Roy Bleckert

1. Concerns.

Public comments were heard.
With the conclusion of public comments, Mayor Cabrera called for Council deliberation.

After Council deliberation, Mayor Cabrera entertained a motion.
Motion made by Council Member Marquez and seconded by Mayor Cabrera to approve the Public Art Request for Funding Application from Maryam Crogman.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.

RESULT: APPROVED [UNANIMOUS]
MOVER: David Marquez, Council Member
SECONDER: Ulises Cabrera, Mayor
AYES: Ulises Cabrera, David Marquez, Elena Baca-Santa Cruz
ABSENT: Ed Delgado, Cheylynda Barnard

## I.REPORTS

## I.1.CITY COUNCIL REPORTS

(Informational Oral Presentation - not for Council action)

## March Joint Powers Commission (JPC)

None.

## Riverside County Habitat Conservation Agency (RCHCA)

None.

## Riverside County Transportation Commission (RCTC)

Mayor Cabrera reported the following:

The Committee heard a presentation regarding Senate Bill 125 Formula-Based Funding for the Transit and Intercity Rail Capital Program and Zero Emission Transit Capital Program. The committee recommended the Commission approve the funding recommendations.

The Committee also recommended the Commission adopt the Commission's 2024 State and Federal Legislative Platform.

## Riverside Transit Agency (RTA)

None.

## Western Riverside Council of Governments (WRCOG)

Council Member Baca-Santa Cruz reported the following:

Items covered at the WRCOG Executive Committee meeting on December 4, 2023, included an update on the EPA's Climate Pollution Reduction Grants (CPRG) Funding Opportunity. The U.S. Environmental Protection Agency (EPA) has allocated funding to 117 entities nationally to prepare preliminary studies that will be used to identify GHG emissions reduction strategies.
San Bernardino COG is leading the preparation of the initial planning study for the Riverside / San Bernardino Area with assistance from SCAG, AQMD, WRCOG and other stakeholders. Unfortunately, this grant cannot be pursued by individual municipalities.

## Western Riverside County Regional Conservation Authority (RCA)

Council Member Marquez reported the following:
Items covered at the RCA Board of Directors meeting on December 4, 2023, included a status report on acquisitions made by RCA. For the 2023 calendar year, 33 parcels were acquired, adding approximately 1,038 acres to the reserve.

## School District/City Joint Task Force

None.

## I.2.EMPLOYEE ASSOCIATION REPORTS

## I.3.CITY MANAGER'S REPORT

1. Affordable housing projects.
2. March Field Park indoor soccer field dedication, December 18th.
3. New Economic Development Director, Cruz Esparza.
4. City's 39th birthday.

CLOSING COMMENTS AND/OR REPORTS OF THE CITY COUNCIL, COMMUNITY SERVICES DISTRICT, CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY, HOUSING AUTHORITY, PUBLIC FINANCING AUTHORITY, AND THE BOARD OF LIBRARY TRUSTEES.

Council Member Baca-Santa Cruz

1. Snow Day.
2. District 1 Library Commissioner.
3. Little Libraries Special Presentation.
4. Recounted protest at Vista Heights Middle School.

Council Member Marquez

1. Snow Day and Tree Lighting Ceremony.
2. Mailbox theft issues.
3. Art murals.
4. RTA ribbon cutting.
5. Fire and Police services.
*Council Member Baca-Santa Cruz left the meeting at $8: 54$ pm.
Mayor Cabrera
6. Council issues.
7. Happy Thanksgiving.
8. Student of the Month event.
9. Telephone Town Hall
10. Snow Day and Tree Lighting Ceremony.
11. Spark of Love Toy Drive.

Mayor Cabrera directed the City Manager and City Clerk to add an item agenda to potentially cancel the January 2, 2024 City Council meeting.

## ADJOURNMENT

There being no further business to come before the City Council, Mayor Cabrera adjourned the meeting at 8:59PM.

The contents of the agenda packet are available for public inspection on the City's website at www.moval.org and in the City Clerk's office at 14177 Frederick Street during normal business hours.

Any written information related to an open session agenda item that is known by the City to have been distributed to all or a majority of the City Council less than 72 hours prior to this meeting will be made available for public inspection on the City's website at www.moval.org and in the City Clerk's office at 14177 Frederick Street during normal business hours.

Submitted by:

Jane Halstead, CMC
City Clerk
Secretary, Moreno Valley Community Services District
Secretary, City as Successor Agency for the Community
Redevelopment Agency of the City of Moreno Valley
Secretary, Moreno Valley Housing Authority
Secretary, Board of Library Trustees
Secretary, Public Financing Authority
Approved by:

Ulises Cabrera<br>Mayor<br>City of Moreno Valley<br>President, Moreno Valley Community Services District<br>Chairperson, City as Successor Agency for the Community<br>Redevelopment Agency of the City of Moreno Valley<br>Chairperson, Moreno Valley Housing Authority<br>Chairperson, Board of Library Trustees<br>Chairperson, Public Financing Authority

|  | Report to City Council |
| :---: | :---: |
| TO: | Mayor and City Council |
| FROM: | Jane Halstead, CMC, City Clerk |
| AGENDA DATE: | December 19, 2023 |
| TITLE: | COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2023/2024 FROM JULY 1, 2023 THROUGH OCTOBER 31, 2023. |

## RECOMMENDED ACTION

## Recommendation:

1. Receive and file the Fiscal Year 2023/2024 Council Discretionary Expenditure Report for July 1, 2023 through October 31, 2023.

## SUMMARY

This staff report is prepared at the request of the City Council to provide transparency with respect to the expenditure of City funds from City Council Discretionary Expenditure Accounts. These reports are for each Council Member's year to date expenditures for Fiscal Year 2023/2024, for July 1, 2023 through October 31, 2023. Each Council District receives an annual budget allocation of $\$ 3,000$ and the Mayor receives an annual budget allocation of $\$ 6,000$.

With the adoption of the current fiscal year budget and pursuant to Resolution No. 202324, unused monies from Fiscal Year 2022/2023 will be carried over to the current Fiscal Year as approved by the City Manager.

The expenditure reports are included routinely in the City Council agenda as an additional means of distributing reports on activities to the Council and public. The reports are to be posted to the City's website following Council approval. The monthly reports provide unaudited information and are reconciled to the City's general ledger. Following the end of the Fiscal Year, the financial information shall be reviewed as part of the City's independent financial audit.

## NOTIFICATION

Posting of the agenda as required by the Brown Act.

## PREPARATION OF STAFF REPORT

Prepared By:
Jasmin Rivera
Executive Assistant to the Mayor and Council Office

Department Head Approval:
Jasmin Rivera
Jane Halstead
City Clerk

## CITY COUNCIL GOALS

None

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. FY 23-24 Expenditure Report Sheet

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved |  | $12 / 11 / 23$ 11:54 AM |
| :--- | :--- | :--- | :--- |
|  | $\checkmark$ Approved |  |  |
| City Attorney Approval |  |  |  |
| City Manager Approval | $\checkmark$ Approved | $12 / 11 / 23$ 12:15 PM |  |

MAYOR ULISES CABRERA
Fiscal Year 2023/2024 Council Discretionary Expenditures
Accounts: 1010-10-01-10015-620130 Mayor Discretionary 1010-10-01-10015-620131 Mayor Discretionary - Carryover

July 1, 2023 - October 31, 2023

| Date | Amount $\quad$ Description |  |
| :---: | :---: | :---: | :---: |
| $7 / 25 / 2023$ | $\$$ | 1,000.00 Kids Youth Mentorship Services Inc. Back-to-School Backpack Giveaway Event |
| $7 / 31 / 2023$ | $\$$ | 102.59 Senior Center Community Engagement Consumables |
| $7 / 31 / 2023$ | $\$$ | 75.00 We Walk by Faith Not by Sight Event |
| 8/25/2023 | $\$$ | 300.00 StreetBeat Ave. Records and Moreno Valley Mall Christmas Toy Drive |
| $9 / 08 / 2023$ | $\$$ | 300.00 Diamond Girls Softball Association |
| $9 / 30 / 2023$ | $\$$ | 50.00 CIELO Inland Empire Community Foundation Celebration Brunch |
| $10 / 10 / 2023$ | $\$$ | 300.00 Move \& Groove For Health Event - Venue Sponsorship |
| $10 / 31 / 2023$ | $\$$ | 250.00 Kama Burton / Loving Me 1st 8th Annual Girls Conference Sponsorship |
| $10 / 31 / 2023$ | $\$$ | 229.95 Inland Empire Labor Council COPE Gala |

$\$ \quad 2,607.54$ TOTAL Council Discretionary Expenditures for FY 23/24
$\$ \quad 6,000.00$ FY 23/24 Adopted Budget Amount
$\$ \quad 6,000.00$ FY 23/24 Amended Budget Amount
\$ 3,392.46 FY 23/24 Budget Amount Remaining

Source: Unaudited financial data from the City's accounting records.
Updated as of: 12/7/2023

Fiscal Year 2023/2024 Council Discretionary Expenditures
Accounts: 1010-10-01-10012-620112 District 2 Discretionary
1010-10-01-10012-620117 District 2 Discretionary - Carryover
July 1, 2023 - October 31, 2023

Date Amount Description
No expenditures to report for July 2023
No expenditures to report for August 2023
No expenditures to report for September 2023
10/10/2023 \$ 300.00 Move \& Groove For Health Event - Venue Sponsorship
10/20/2023 \$ 121.00 Trailseekers of Moreno Valley Equestrian Center Event - Venue Sponsorship
\$ 421.00 TOTAL Council Discretionary Expenditures for FY 23/24
$\$ \quad 3,000.00$ FY 23/24 Adopted Budget Amount
$\$ 3,000.00$ FY 23/24 Amended Budget Amount
$\$ \quad 2,579.00$ FY 23/24 Budget Amount Remaining

Source: Unaudited financial data from the City's accounting records.
Updated as of: 12/7/2023

COUNCIL DISTRICT 1 ELENA BACA-SANTA CRUZ
Fiscal Year 2023/2024 Council Discretionary Expenditures
Accounts: 1010-10-01-10011-620111 District 1 Discretionary
1010-10-01-10011-620116 District 1 Discretionary - Carryover
July 1, 2023 - October 31, 2023

| Date | Amount | Description |
| :--- | :--- | :--- |
|  | No expenditures to report for July 2023 |  |

8/04/2023 \$ 250.00 Diamond Girls Softball Association Team Contribution: Queen Kobras
8/15/2023 \$ 300.00 Diamond Girls Softball Association Team Contribution: Cyclones
9/30/2023 \$ 75.00 We Walk by Faith Not by Sight Event
9/30/2023 \$ 187.25 District 1 Towngate Community Meeting - Venue Rental
No expenditures to report for October 2023

Source: Unaudited financial data from the City's accounting records. Updated as of: 12/7/2023

COUNCIL DISTRICT 3 DAVID MARQUEZ
Fiscal Year 2023/2024 Council Discretionary Expenditures
Accounts: 1010-10-01-10013-620113 District 3 Discretionary
1010-10-01-10013-620118 District 3 Discretionary - Carryover
July 1, 2023 - October 31, 2023
Date Amount Description
No expenditures to report for July 2023
8/04/2023 \$ 500.00 Diamond Girls Softball Association Team Contribution: Ice Queens
No expenditures to report for September 2023
No expenditures to report for October 2023
$\$ \quad 500.00$ TOTAL Council Discretionary Expenditures for FY 23/24
$\$ \quad 3,000.00$ FY 23/24 Adopted Budget Amount
$\$ \quad 3,000.00$ FY 23/24 Amended Budget Amount
$\$ \quad 2,500.00$ FY $23 / 24$ Budget Amount Remaining

Source: Unaudited financial data from the City's accounting records.
Updated as of: 12/7/2023


COUNCIL DISTRICT 4 CHEYLYNDA BARNARD
Fiscal Year 2023/2024 Council Discretionary Expenditures
Accounts: 1010-10-01-10014-620114 District 4 Discretionary
1010-10-01-10014-620119 District 4 Discretionary - Carryover
July 1, 2023 - October 31, 2023

| Date | Amount | Description |
| :--- | :--- | ---: | :--- |
| $7 / 31 / 2023$ | $\$$ | 100.00 Rancho Verde High School Cheer |
| $7 / 31 / 2023$ | $\$$ | 134.86 District 4 Community Engagement Consumables |
| $8 / 15 / 2023$ | $\$$ | 200.00 Diamond Girls Softball Association Team Contribution: Ice Queens |
| $8 / 15 / 2023$ | $\$$ | 13.27 District 4 Community Engagement Refreshments |
| $8 / 17 / 2023$ | $\$$ | 23.70 District 4 Community Engagement Consumables |
| $8 / 18 / 2023$ | $\$$ | 200.00 Diamond Girls Softball Association Team Contribution: Cyclones |
|  |  |  |
|  | No expenditures to report for September 2023 |  |
| No expenditures to report for October 2023 |  |  |

Source: Unaudited financial data from the City's accounting records.
Updated as of: 12/7/2023

Report to City Council
TO: Mayor and City Council
FROM: Jane Halstead, CMC, City Clerk
AGENDA DATE:
December 19, 2023
TITLE:
COUNCIL TRAINING \& TRAVEL EXPENDITURE REPORTS FOR FISCAL YEAR 2023-2024

## RECOMMENDED ACTION

## Recommendation:

1. Receive and file the Training \& Travel Authorization Forms for the month of November 2023.

## SUMMARY

This staff report is prepared at the request of the City Council to provide transparency with respect to the expenditure of City funds used for City Council Training and Travel. Each Council District receives an annual budget allocation of $\$ 4,000$ and the Mayor receives an annual budget allocation of $\$ 12,000$.

On September 5, 2023, the City Council approved the revision of policy \#3.06; to incorporate additional transparency requirements for the reporting of the travel and training forms.

The training and travel forms provide unaudited information and are reconciled to the City's general ledger. Following the end of the Fiscal Year, the financial information shall be reviewed as part of the City's independent financial audit.

No City Council training or travel expenditure activity to report for October 2023.
No City Council training or travel expenditure activity to report for November 2023.

## FISCAL IMPACT

No Fiscal Impact as all funds are budgeted within the Fiscal Year 2023/2024 annual
budget.

## PREPARATION OF STAFF REPORT

## Prepared By:

Name Jasmin Rivera
Title Executive Assistant to the Mayor and Council Office
Concurred By:
Name
Title

## CITY COUNCIL GOALS

None

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

None

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved |  | $12 / 11 / 23$ 12:05 PM |
| :--- | :--- | :--- | :--- |
|  | Approved |  |  |
| City Attorney Approval | $12 / 11 / 2312: 14$ PM |  |  |



## Report to City Council

TO: Mayor and City Council
FROM: Brian Mohan, Assistant City Manager
AGENDA DATE: December 19, 2023
TITLE: LIST OF PERSONNEL CHANGES

## RECOMMENDED ACTION

## Recommendation:

1. Ratify the list of personnel changes as described.

## DISCUSSION

The attached list of personnel changes scheduled since the last City Council meeting is presented for City Council ratification.

Staffing of City positions ensures assignment of highly qualified and trained personnel to achieve Momentum MoVal priorities, objectives, and initiatives.

## FISCAL IMPACT

All position changes are consistent with appropriations previously approved by the City Council.

## PREPARATION OF STAFF REPORT

## CITY COUNCIL GOALS

None

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. Personnel Changes for Staff Report_12.19.23

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved | 12/10/23 6:02 PM |
| :---: | :---: | :---: |
| City Attorney Approval | $\checkmark$ Approved |  |
| City Manager Approval | $\checkmark$ Approved | 12/11/23 11:18 AM |

# City of Moreno Valley <br> Personnel Changes- 11/1/23-11/30/23 <br> December 19, 2023 

## New Hires

Rosalea Layman, Senior Grants Analyst, Grants Administration, City Manager

Rebekah Key, Senior Grants Accountant, Grants Administration, City Manager

Andrew Palacios, Assistant Engineer, Capital Projects, Public Works

## Promotions

Kamran Aladross
From: Sr. Engineer, P.E., Electric Utility, Public Works
To: Electric Utility Assistant Manager, Electric Utility, Public Works

Arlene Celis
From: Community Services Coordinator, Parks and Community Services
To: Management Assistant, Parks and Community Services

Julie Descoteaux
From: Sr. Planner, Planning, Community Development Services
To: Principal Planner, Planning, Community Development Services

## Transfers

NONE

## Separations

NONE

| Report to City Council |  |
| :--- | :--- |
| TO: | Sayor and City Council <br> Sean P. Kelleher, Community Development Director |
| December 19, 2023 |  |
| TITLE: | SECOND READING AND ADOPTION OF ORDINANCE <br> NO. 1005 |

## RECOMMENDED ACTION

## Recommendation: That the City Council:

Conduct the second reading by title only and adopt Ordinance No. 1005.

## SUMMARY

This report recommends the adoption of Ordinance No. 1005, introduced at the City Council meeting of December 5, 2023, approving amendments to Title 9 (Planning and Zoning).

## DISCUSSION

This item is the second reading of the Ordinance amending various sections of Municipal Code Title 9 (Planning and Zoning) of the Moreno Valley Municipal Code that address the following matters:

1. Updates to comply with State requirements related to housing, as well as assisting the City in complying with its housing element.
2. Other minor clarifications and clean-up items.

## ALTERNATIVES

A. Conduct the second reading by title only and adopt Ordinance No.1005. Staff recommends this alternative.
B. Provide revisions to the draft Ordinances and have staff return with the revised drafts for another adoption process.

## FISCAL IMPACT

There are no fiscal impacts anticipated from the approval and adoption of this Ordinance. However, it is anticipated that the proposed modifications will streamline business and development regulations, which would be expected to have a positive impact on business and development and, thus, a positive fiscal impact to the City.

## NOTIFICATION

The agenda was posted in accordance with the Brown Act.

## PREPARATION OF STAFF REPORT

Department Head Approval:
Sean Kelleher
Community Development Director

## CITY COUNCIL GOALS

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

Positive Environment. Create a positive environment for the development of Moreno Valley's future.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" $\square$ on the left hand side of this document for the necessary attachment.

1. Ordinance No. 1005

## APPROVALS

| $\checkmark$ Approved |
| ---: |
| $\checkmark \checkmark$ Approved |

City Manager Approval $\quad \checkmark$ Approved 12/11/23 11:18 AM

Page 3
Packet Pg. 53

## ORDINANCE NO. 1005

## AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, AMENDING VARIOUS SECTIONS WITHIN TITLE 9 (PLANNING AND ZONING), INCLUDING CHAPTER 9.02 (PERMITS AND APPROVALS), CHAPTER 9.03 (RESIDENTIAL DISTRICTS), CHAPTER 9.05 (INDUSTRIAL DISTRICTS), CHAPTER 9.14 (LAND DIVISIONS), AND CHAPTER 9.16 (DESIGN GUIDELINES) OF THE MORENO VALLEY MUNICIPAL CODE

WHEREAS, the City of Moreno Valley ("City") is a general law city and a municipal corporation of the State of California; and

WHEREAS, pursuant to the authority granted the City by Article XI, Section 7 of the California Constitution, the City has the police power to adopt regulations designed to promote the public convenience or the general prosperity, as well as regulations designed to promote the public health, morals and/or safety; and

WHEREAS, Section 9.02.050 (Amendments to zoning districts or other provisions of Title 9) of Chapter 9.02 (Permits and Approvals) of Title 9 (Planning and Zoning) of the Municipal Code provides that either the staff or the Planning Commission may initiate amendments to the provisions of Title 9; and

WHEREAS, staff has recommended to the Planning Commission that it recommend that the City Council adopt several amendments to Title 9, which include revising certain provisions of Chapter 9.02 (Permits and Approvals), Chapter 9.03 (Residential Districts), Chapter 9.05 (Industrial Districts), Chapter 9.14 (Land Divisions) and Chapter 9.16 (Design Guidelines) (collectively referred to herein as "PEN23-0125"); and

WHEREAS, PEN23-0125 will clarify various development standards to provide some flexibility regarding existing requirements, make it less costly for the public with respect to processing certain entitlements and streamline certain entitlement procedures for efficiency purposes, all of which will promote economic development within the City; and

WHEREAS, staff has determined that PEN23-0125 is consistent with the MOVAL 2040 General Plan and its goals, objectives, policies, and programs, and with any applicable specific plan; and

WHEREAS, staff has further determined that PEN23-0125 will not adversely affect the public health, safety or general welfare; and

WHEREAS, staff has also determined that PEN23-0125 is consistent with the purposes and intent of Title 9; and

WHEREAS, staff has determined that PEN23-0125 amendments are exempt from the California Environmental Quality Act in accordance with Section 15061(b)(3) of the

CEQA Guidelines in that the amendments involve general policy and procedure making, and it can be seen with certainty that there is no possibility that the amendments will have a significant effect on the environment.

## NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY DOES ORDAIN AS FOLLOWS:

## Section 1. RECITALS

That the above recitals are true and correct and are incorporated herein as though set forth at length herein.

## Section 2. AUTHORITY

That this Ordinance is adopted pursuant to the authority granted by Article XI , Section 7 of the Constitution of the State of California and California Government Code Section 37100, and it is not intended to be duplicative of state law, or be preempted by state legislation.

## Section 3. AMENDMENT TO SECTION 9.02.020 (PERMITTED USES)

Section 9.02.020 (Permitted Uses) of Chapter 9.02 (Permits and Approvals) of Title 9 (Planning and Zoning) is hereby amended as set forth in Exhibit A.

Section 4. AMENDMENT TO SECTION 9.03.040 (RESIDENTIAL SITE DEVELOPMENT STANDARDS)

Section 9.03.040 (Residential Site Development Standards) of Chapter 9.03 (Residential Districts) of Title 9 (Planning and Zoning) is hereby amended as set forth in Exhibit B.

Section 5. AMENDMENT TO SECTION 9.03.055 (DENSITY BONUS PROGRAM FOR GREEN BUILDING AND ENERGY EFFICIENCY)

Section 9.03.055 (Density Bonus Program for Green Building and Energy Efficiency) of Chapter 9.03 (Residential Districts) of Title 9 (Planning and Zoning) is hereby amended as set forth in Exhibit C.

Section 6. ADDING SECTION 9.03.070 (STREAMLINED MINISTERIAL APPROVAL PROCESS (SENATE BILL 35)) TO CHAPTER 9.03 (RESIDENTIAL DISTRICTS)

Section 9.03.070 (Streamlined Ministerial Approval Process (Senate Bill 35)) of Chapter 9.03 (Residential Districts) of Title 9 (Planning and Zoning) is hereby added to Chapter 9.03 (Residential Districts) as set forth in Exhibit D.

## Section 7. ADDING SECTION 9.03.070 (9.03.080 STREAMLINED MINISTERIAL APPROVAL PROCESS (SENATE BILLS 330 AND 8) TO CHAPTER 9.03 (RESIDENTIAL DISTRICTS)

Section 9.03 .080 (Streamlined Ministerial Approval Process (Senate Bills 330 and 8)) of Chapter 9.03 (Residential Districts) of Title 9 (Planning and Zoning) is hereby added to Chapter 9.03 (Residential Districts) as set forth in Exhibit E.

Section 8. AMENDMENT TO SECTION 9.05 .040 (INDUSTRIAL SITE DEVELOPMENT STANDARDS)

Section 9.05.040 (Industrial Site Development Standards) of Chapter 9.05 (Industrial Districts) of Title 9 (Planning and Zoning) is hereby amended as set forth in Exhibit F.

## Section 9. AMENDMENT TO SECTION 9.14.100 (LAND DIVISION DEDICATIONS, IMPROVEMENTS, FEES AND RESERVATIONS)

Section 9.14.100 (Land Division Dedications, Improvements, Fees and Reservations) of Chapter 9.14 (Land Divisions) of Title 9 (Planning and Zoning) is hereby amended as set forth in Exhibit G.

## Section 10. AMENDMENT TO SECTION 9.16.170 (APPLICATIONS FOR HILLSIDE DEVELOPMENT PERMIT)

Section 9.16.170 (Applications for Hillside Development Permit) of Chapter 9.16 (Design Guidelines) of Title 9 (Planning and Zoning) is hereby amended as set forth in Exhibit H.

## Section 11. CEQA COMPLIANCE

That PEN23-0125 Amendments are exempt from the California Environmental Quality Act in accordance with Section 15061(b)(3) of the CEQA Guidelines in that the amendments involve general policy and procedure making, and it can be seen with certainty that there is no possibility that the amendments will have a significant effect on the environment.

## Section 12. FINDINGS

The ordinance is consistent with the City's 2040 General Plan.

## Section 13. SEVERABILITY

That the City Council declares that, should any provision, section, paragraph, sentence or word of this Ordinance be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this ordinance as hereby adopted shall remain in full force and effect.

## Section 14. REPEAL OF CONFLICTING PROVISIONS

That all the provisions of the Municipal Code as heretofore adopted by the City of Moreno Valley that are in conflict with the provisions of this Ordinance are hereby repealed.

## Section 15. EFFECTIVE DATE

That this Ordinance shall take effect thirty (30) days after its second reading.

## Section 16. CERTIFICATION

That the City Clerk shall certify to the passage and adoption of this Ordinance, enter the same in the book for original ordinances of the City, and make a minute of passage and adoption thereof in the records of the proceedings of the City Council, in the minutes of the meeting at which this Ordinance is passed and adopted.
[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

INTRODUCED at a regular meeting of the City Council on December 5, 2023, and PASSED, APPROVED, and ADOPTED by the City Council on December 19,2023 , by the following vote:

Ulises Cabrera, Mayor
City of Moreno Valley
ATTEST:

Jane Halstead, City Clerk

APPROVED AS TO FORM:

Steven B. Quintanilla, Interim City Attorney

## ORDINANCE JURAT

```
STATE OF CALIFORNIA )
COUNTY OF RIVERSIDE )
ss. CITY OF MORENO VALLEY
)
```

I, $\qquad$ , City Clerk of the City of Moreno Valley, California, do hereby certify that Ordinance No. 2023-1005 was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the 19th day of December, 2023, by the following vote:

AYES:
NOES:
ABSENT:
ABSTAIN:
(Council Members, Mayor Pro Tem and

## CITY CLERK

(SEAL)

X - $\quad$ Indicates stated use is permitted subject to district requirements.
C - Indicates stated use is allowed with a conditional use permit.

-     - Indicates a use is permitted unless the use is located three hundred (300) feet or less from a residential zone or use, in which case the use is allowed with a conditional use permit. However, the expansion of an existing general manufacturing use is allowed without a conditional use permit regardless of its distance from residential zones or residential uses
A - Indicates a use is permitted with an adult business use permit, providing the requirements of Section 9.09.030 of this title are met.
S - Indicates a use is permitted, providing the requirements of 9.09 .280 (Smoke Shops) of this title are met. A conditional use permit is required if dictated by the distance criteria. M - $\quad$ Indicates a use is allowed with a conditional use permit, providing the requirements of 9.09.290 (Commercial Cannabis Activities) of this title are met

|  | Residential Zones |  |  |  |  |  |  |  |  |  |  |  | Mixed Use Overlay |  |  | Commercial \& Office Zones |  |  |  |  |  | Industrial Zones |  |  |  | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 呈 | $\stackrel{\underset{\sim}{\sim}}{\underline{\sim}}$ | $\bar{\square}$ | $\underset{\underset{Z}{\underset{Z}{2}}}{ }$ | 区 | $\stackrel{\otimes}{\square}$ | $\stackrel{10}{\square}$ | $\xrightarrow{\circ}$ | $\frac{\circ}{\bar{x}}$ | $\frac{10}{\Sigma}$ | $\begin{aligned} & \text { O} \\ & \underset{\sim}{n} \end{aligned}$ | $\begin{aligned} & \text { প̀ } \\ & \underset{\sim}{2} \\ & \hline \end{aligned}$ |  | $\begin{aligned} & \underset{\sim}{i} \\ & 0 \\ & \vdots \\ & \sum \\ & \sum \end{aligned}$ |  | Z | U | $3$ | $0$ | $\bigcirc$ | Q |  | Ј | $\stackrel{n}{\infty}$ | $\stackrel{\times}{\text { ¢ }}$ |  |
| Adult Businesses |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | A |  | A | A |  | A | A | A | A |  |
| Agricultural Uses-Crops Only ${ }^{18}$ | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Agricultural (involving structures) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Aircraft Landing Facilities (including helipads and facilities for quadcopters) ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  | C | C | C | C | C | C | C |  |
| Ambulance Service |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  | $\checkmark$ | X | X | X | X |  |
| Amusement Parks, Fairgrounds ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  | X |  |  |  |  |
| Animal Raising (see Section 9.09.090 of this title) ${ }^{18}$ | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Appliance and Electronic Repair Shops |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  |  |  |  | X | X |  | X |  |
| Arcades, Video Machines |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ | X | $\checkmark$ |  |  |  |  |  |  |  |  |
| Athletic Clubs, Gymnasiums and Spas ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  | X |  |  | X | X | X | X |  |
| Auction Houses ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  | X |  |
| Auditoriums ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ | $\checkmark$ | $\checkmark$ |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |
| Auto Electronic Accessories and Installation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  | X | X |  | X |  |
| Automobile Fleet Storage |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |
| Automobile, Motorcycle, Truck, Golf Cart, Recreational Vehicle and Boat Sales and Incidental Minor Repairs and Accessory Installations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  | X | X |  |  |  |
| Auto Service Stations <br> Accessory uses include convenience store and car wash Minor repairs to include auto/boat/motorcycle/RV (excludes major repair, paint, body work) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ | $\checkmark$ | $\bullet$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |
| Automotive, Boat, Motorcycle and RV Repair-Minor (includes brake, muffler and tire installation and repair) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ | X |  |  |  |  | X | X |  | X |  |
| Automotive Paint and Body Repair-Major Engine Overhaul |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  | X |  |  |  |  |
| Auto Rentals |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  | X | X | X |  |
| Auto Supply Stores |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  |  |  |  | X | X |  | X |  |
| Bakery Shops |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  | X |  |
| Bakery-Commercial ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Banks-Financial Institutions ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X |  |  |  | X | X |  |
| Barber and Beauty Colleges ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  | X | X |  |  |  | X | X |  |
| Bars (Drinking Establishments) ${ }^{\mathbf{1 8}}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Bars |  |  |  |  |  |  |  |  |  |  |  |  | C | C | C | C | C | C |  |  |  |  |  |  |  |  |
| Bars, with Limited Live Entertainment |  |  |  |  |  |  |  |  |  |  |  |  | C | C | C | C | C | C |  |  |  |  |  |  |  |  |

X - $\quad$ Indicates stated use is permitted subject to district requirements.
C - Indicates stated use is allowed with a conditional use permit.

-     - Indicates a use is permitted unless the use is located three hundred (300) feet or less from a residential zone or use, in which case the use is allowed with a conditional use permit. However, the expansion of an existing general manufacturing use is allowed without a conditional use permit regardless of its distance from residential zones or residential uses.
A - Indicates a use is permitted with an adult business use permit, providing the requirements of Section 9.09 .030 of this title are met.
S - Indicates a use is permitted, providing the requirements of 9.09 .280 (Smoke Shops) of this title are met. A conditional use permit is required if dictated by the distance criteria. M - $\quad$ Indicates a use is allowed with a conditional use permit, providing the requirements of 9.09.290 (Commercial Cannabis Activities) of this title are met

|  | Residential Zones |  |  |  |  |  |  |  |  |  |  |  | Mixed Use Overlay |  |  | Commercial \& Office Zones |  |  |  |  |  |  | Industrial Zones |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\underset{\sim}{\underline{\sim}}$ | $\stackrel{\underset{\sim}{\sim}}{\underline{\sim}}$ | $\bar{\square}$ | $\underset{\sim}{\mathbb{Z}}$ | ® | ¢ | $\stackrel{1}{\square}$ | O ¢ ¢ | $\frac{\circ}{\bar{x}}$ | $\frac{1}{\square}$ | $\begin{aligned} & \stackrel{\circ}{N} \\ & \underset{y}{n} \end{aligned}$ | $\begin{aligned} & \text { O} \\ & \underset{\sim}{1} \\ & \hline \end{aligned}$ | $\begin{aligned} & \underset{\sim}{\dot{\sigma}} \\ & \underset{\Sigma}{Z} \\ & \underset{\Sigma}{ } \end{aligned}$ |  | $\cdots$ | U | U | $3$ | $0$ | $\bigcirc$ |  | $\square$ |  | 三 | $\frac{\square}{\infty}$ | $\stackrel{\times}{\infty}$ | 0 |
| Boat Sales New and Used Including Repairs and Accessory Installation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  |  | X |  |  |  |  |
| Boarding and Rooming Houses ${ }^{18}$ |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Bowling Alley |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | X | X |  |  |  |  |  |  |  |  |  |  |
| Building Material Sales ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  |  |  |  |  |  |  |
| With outdoor storage ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  |  | X | X |  |  |  |
| Building Material Storage Yards ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Bus, Rail and Taxi Stations ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  | $\checkmark$ |  |  |  |  |  |  |  |  |  |  |
| Business Equipment Sales (includes repairs) |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  |  | X |  |
| Business Schools ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X |  |  |  | X | X | X |  |
| Business Supply Stores |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  | X |  |  |  | X | X |  | X |  |
| Cabinet Shop |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X |  |
| Caretakers Residence ${ }^{1}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ | $\checkmark$ | C | $\checkmark$ | $\checkmark$ |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |
| Car Wash |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  | X |  |  |  |  |
| Accessory to auto related use |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ | $\checkmark$ |  |  |  |  |  | X |  |  |  |  |
| Catering Service |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  | X | X |  |
| Cemetery (Human or Pet) With or Without Accessory Mortuary and Cremation Services (Minimum 10-acre site required) | C | C | C | C | C | C | C | C | C | C | C | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Churches ${ }^{2,18}$ | C | C | C | C | C | C | C | C | C | C | C | C | $\checkmark$ | $\checkmark$ | $\bullet$ | $\checkmark$ | $\checkmark$ | C | $\checkmark$ | $\checkmark$ |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |
| Clubs ${ }^{18}$ |  |  |  |  |  |  |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\bullet$ | $\bullet$ | $\checkmark$ | $\checkmark$ | $\bullet$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\bullet$ |  | $\checkmark$ |  |  |  |  | C |
| Commercial Cannabis Activities ${ }^{17,18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cultivation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M |  |
| Dispensary |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M |  |  |  |  |  |  |  |  | M |  |
| Manufacturing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M |  |
| Testing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M | M |  |
| Microbusiness |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M |  |  |  |  |  |  |  |  | M |  |
| Distribution Center |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M | M |  |  |  |  |  |  | M | M | M |  |
| Commercial Radio or Television Stations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| With on-site antenna |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  |  | - | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |
| Without on-site antenna |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  | X | X | X | X |  |
| Communications Facilities (See Section 9.09.040 of this title) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Computer Sales and Repairs |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  | X |  |  |  | X | X | X | X |  |
| Contractors Storage Yard |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |

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|  | Residential Zones |  |  |  |  |  |  |  |  |  |  |  | Mixed Use Overlay |  |  | Commercial \& Office Zones |  |  |  |  |  | Industrial Zones |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\frac{\underline{\sim}}{\underline{I}}$ | $\frac{\underset{\sim}{\underline{\sim}}}{}$ | $\bar{\square}$ | $\underset{\underset{Z}{\mathbb{Z}}}{2}$ | $\underset{\sim}{\text { N }}$ | $\stackrel{\sim}{\Perp}$ | $\stackrel{1}{\square}$ | $\begin{aligned} & \circ \\ & \stackrel{\rightharpoonup}{\infty} \\ & \hline \end{aligned}$ | $\frac{\circ}{\bar{X}}$ | $\frac{10}{\underline{x}}$ | $\begin{aligned} & \text { O} \\ & \underset{\sim}{4} \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { প} \\ & \underset{\sim}{n} \\ & \hline \end{aligned}$ |  | I $\vdots$ 0 0 2 $\Sigma$ |  | $0$ | U | $\bigcirc$ | $0$ | $\bigcirc$ | Q |  | 三 | $\frac{\square}{\infty}$ | ¢ | 0 |
| Convalescent Homes/Assisted Living ${ }^{18}$ |  |  |  |  |  |  | C | C | C | C | C | C | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |  |  |  |  |
| Convenience Stores |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| With drive-through |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |  |  |  |  |  |  |
| Without drive-through |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  |  |  |  |  |  |  |  |  |
| With alcohol sales |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |  |  |  |  |  |  |  |  |  |
| Convention Hall, Trade Show, Exhibit Building with Incidental Food Services ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  | $\checkmark$ |  | $\bullet$ |  | $\checkmark$ |  |  | $\checkmark$ | $\checkmark$ |  |
| Copy Shops |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X |  | X | X | X | X |  |
| Country Club ${ }^{18}$ | C | C | C | C | C | C | C | C | C | C | C | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dancing, Art, Music and Similar Schools ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X |  |  | X | X | X |  |
| Day Care Centers ${ }^{\mathbf{1 8 , 1 9}}$ | X | X | X | X | X | X | X | X | X | X | X | X | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\bullet$ | $\checkmark$ | $\bullet$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | C |
| Delicatessens ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  | X | X | X |  |
| Diaper Supply Service |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Laundry with fleet storage ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Disposal company |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Drapery Shops |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |
| Dressmaking Shops |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |
| Driving School ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | $X$ |  | X | X |  |  | X | X | X |  |
| Drug Stores |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |
| Dry Cleaning or Laundry ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| a. Dry Cleaning |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  | X |  |
| b. Laundromat |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  |  |  |
| c. Laundry Commercial |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |
| Emergency Shelters ${ }^{14}$ |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  | C |  | C | C | X | C |  |  | C |  |
| Employee Housing ${ }^{18}$ |  |  |  |  |  |  |  |  | X | X | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Equestrian Centers, Riding Academies, Commercial Stables (including incidental sales of feed and tack) ${ }^{18}$ | C | C | C | C |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  |  |  |  |  | C |
| Exterminators |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  |  |  |  | X | X | X | X |  |
| Feed and Grain Stores |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  |  |  |  |  |  |  |  |
| Fire and Police Stations | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Floor Covering Stores (may include incidental repairs with installation service) |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  |  |  |  | X |  |  |  |  |
| Fraternity/Sorority ${ }^{18}$ |  |  |  |  |  |  |  | C | C | C | C | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Frozen Food Locker |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |

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|  | Residential Zones |  |  |  |  |  |  |  |  |  |  |  |  | Mixed Use Overlay |  |  | Commercial \& Office Zones |  |  |  |  |  | Industrial Zones |  |  |  | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 또̇ | $\xrightarrow{\text { ¢ }}$ | $\overline{\underline{q}}$ |  | ¹ | $\underset{\sim}{\sim}$ | ${ }^{2}$ | R | $\stackrel{\circ}{\infty}$ | $\frac{o}{\underline{q}}$ | $\frac{\llcorner }{\underline{I}}$ | $\begin{aligned} & \text { N} \\ & \text { y } \end{aligned}$ | $\begin{aligned} & \text { OM} \\ & \end{aligned}$ | $\begin{aligned} & \underset{\sim}{\underset{\sigma}{2}} \\ & \underset{\Sigma}{z} \\ & \underset{\Sigma}{2} \end{aligned}$ |  | $\begin{aligned} & \bar{i} \\ & \stackrel{y}{\infty} \\ & \bar{\infty} \\ & \bar{\Sigma} \end{aligned}$ | U | 0 | $\bigcirc$ | $0$ | 0 | 0 |  | コ | $\stackrel{0}{0}$ | $\stackrel{\times}{\times}$ |  |
| Medical Clinics/Medical Care ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Inpatient care |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  | X | X |  | X | X | X | X |  |
| Urgent care |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  | X | X |  |  |  |  |  |  |
| Medical device services and sales (retail), including, but not limited to, fittings for and sale of prosthetic and orthotic devices |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  | X |  |  |  |  |  |  |  |
| Medical equipment supply, including retail sales for in-home medical care, such as wheelchairs, walkers, and respiratory equipment |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  | X |  |  |  |  |  |  |  |
| Mobile Home Parks ${ }^{18}$ | C | C | C | C | C | C |  | C | C | C | C | C | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mobile Home Sales or Rentals (outdoor display) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  |  |  |  |  |  |  |  |  |
| Mortuaries |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| With cremation services |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |
| No cremation services |  |  | C | C | C | C |  | C | C | C | C | C | C |  |  | $\checkmark$ | - | - |  |  |  |  |  | X | X |  |  |
| Museums ${ }^{18}$ | X | X | X | X | X | X |  | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Newspaper and Printing Shops |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  |  |  |  | X | X | X | X |  |
| Nightclubs ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C | C |  | C |  |  |  |  |  |  |  |  |  |
| Nursery, (Plant), Wholesale and Distribution | X | X | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  | X |
| Offices (administrative and professional) ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X |  |  | X | X | X |  |
| Open Air Theaters ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  |  |  |  |  | C |  |  |  |  | C |
| Orphanages ${ }^{18}$ | C | C | C | C | C | C |  | C | C | C | C | C | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Painting Contractor |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |
| Parcel Delivery Terminals ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X |  |
| Parking Lot |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C | C | X | X | C |  |  |  |  | X |  |  |
| Parks and Recreation Facilities (public) ${ }^{18}$ | X | X | X | X | X | X |  | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Personal Services (e.g., nail salons, spa facilities ${ }^{15}$, barber and beauty shops, and tattoo parlors) ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  | X |  |
| Pharmacy ${ }^{4}$ |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  | X |  |
| Photo Studios |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  | X |  |
| Plumbing Shops |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  | X |  |
| Plumbing Supply Stores for Contractors |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  |
| Pool Hall ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  | - |  | - | $\checkmark$ |  |  |  |  |  |  |  |  |  |
| Postal Services |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  | X | X | X |  |
| Pottery Sales with Outdoor Sales |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  | X |  |  | X |  |

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|  | Residential Zones |  |  |  |  |  |  |  |  |  |  |  |  | Mixed Use Overlay |  |  | Commercial \＆Office Zones |  |  |  |  |  | Industrial Zones |  |  |  | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\stackrel{\text { ㅈ̇̇ }}{ }$ | $\xrightarrow{\text { r }}$ | $\bar{\square}$ | $\underset{\text { 区 }}{\text { 区 }}$ | ฐ | $\xrightarrow{\text { m }}$ |  | ค | $\begin{aligned} & \stackrel{0}{\infty} \\ & \end{aligned}$ | $\frac{0}{\underline{q}}$ | $\frac{\stackrel{\omega}{\underline{q}}}{}$ | $\begin{aligned} & \text { 을 } \\ & \underset{\sim}{n} \end{aligned}$ | O-( |  |  | $\begin{aligned} & \bar{j} \\ & \stackrel{y}{\infty} \\ & \stackrel{\infty}{\infty} \\ & \underset{\Sigma}{\Sigma} \end{aligned}$ | $0$ | $0$ | $0$ | $0$ | 0 | $\square$ |  | こ | $\stackrel{0}{0}$ | $\underset{\substack{\times \\ \hline}}{ }$ |  |
| Public Administration，Buildings and Civic Centers ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X | X | X | X | X | X |  |
| Public Utility Stations，Yards，Wells and Similar Facilities， Excluding Offices ${ }^{18}$ | C | C | C | C | C | C |  | C | C | C | C | C | C | － | － | $\checkmark$ | $\checkmark$ | $\checkmark$ | － | － | $\bullet$ | － | X | X | $\checkmark$ | － | C |
| Racetracks ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  |  |  | C |  |  |  |  |  |
| Record Store |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |
| Recording Studio |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X |  | X | X | X | X |  |
| Recreational Facilities（Private）such as Tennis Club，Polo Club，with Limited Associated Incidental Uses ${ }^{18}$ | C | C | C | C | C | C |  | C | C | C | C | C | C | － | － | $\checkmark$ | － | － | － |  |  |  |  |  |  |  |  |
| Recycling，Large Collection Facility ${ }^{5}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  | X | X |  |  |  |
| Recycling，Small Collection Facility |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |
| Recycling Processing Centers |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X |  |
| Refreshment Stands |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X | X | X | X | X | X |  |
| Rental Service |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Within an enclosed structure（furniture，office，party supplies） |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  | X | X | X | X |  |
| With outdoor storage and display（vehicles，equipment，etc．） |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | － | $\checkmark$ |  |  |  |  | X | X |  |  |  |
| Research and Development ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  |  |  | X | X |  | X | X | X | X |  |
| Residential ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Single－Family | X | X | X | X | X | X |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Multiple－Family |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  |  |  |  |  |  |  |
| Affordable Housing in Commercial Zones ${ }^{20}$ |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | X |  |  |  |  |  |  |
| Manufactured home park（see mobile home parks） |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Residential Care Facility |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| for six（6）or less persons ${ }^{18}$ | X | X | X | X | X | X |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| for seven or more persons ${ }^{18}$ | C | C | C | C | C | C |  | C | C | C | C | C | C | C | C | X |  |  |  |  |  |  |  |  |  |  |  |
| Restaurants（Eating and Drinking Establishments）${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Without entertainment |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  | X |  |
| With Limited Live entertainment |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  |  |  |
| With alcoholic beverage sales |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  | X |  |
| With outdoor seating ${ }^{13}$ |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  | X |  |
| Restaurants（fast－food）${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| With drive－through |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | － | $\stackrel{\rightharpoonup}{*}$ |  |  |  |  |  |  |  | $\stackrel{\rightharpoonup}{*}$ |  |
| Without drive－through |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  |  |  |  |  |  |  | X |  |
| Retails Sales |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |
| Support Retail Sales |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  |  |  | X |  |  |  |  |  | X |  |

X - $\quad$ Indicates stated use is permitted subject to district requirements.
C - Indicates stated use is allowed with a conditional use permit.

-     - Indicates a use is permitted unless the use is located three hundred (300) feet or less from a residential zone or use, in which case the use is allowed with a conditional use permit. However, the expansion of an existing general manufacturing use is allowed without a conditional use permit regardless of its distance from residential zones or residential uses
A - Indicates a use is permitted with an adult business use permit, providing the requirements of Section 9.09 .030 of this title are met.
S - Indicates a use is permitted, providing the requirements of 9.09 .280 (Smoke Shops) of this title are met. A conditional use permit is required if dictated by the distance criteria M - Indicates a use is allowed with a conditional use permit, providing the requirements of 9.09 .2

|  | Residential Zones |  |  |  |  |  |  |  |  |  |  |  |  |  | Mixed Use Overlay |  |  | Commercial \& Office Zones |  |  |  |  |  | $\begin{aligned} & \text { Industrial } \\ & \text { Zones } \end{aligned}$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 年 | $\stackrel{\text { r }}{\text { r }}$ | $\bar{q}$ | ¢ |  | T | $\underset{\sim}{\sim}$ | $\stackrel{1}{\sim}$ | $\begin{aligned} & \circ \\ & \vdots \\ & \end{aligned}$ | 움 |  | $\stackrel{\Omega}{\underline{r}}$ | $\begin{aligned} & \stackrel{\text { v}}{\underline{x}} \end{aligned}$ |  | $\begin{aligned} & \underset{\sim}{\underset{\sigma}{0}} \\ & \dot{\Phi} \\ & \underset{\Sigma}{\Sigma} \end{aligned}$ |  |  | U | U | $\bigcirc$ | O | 0 | Q |  | こ | $\stackrel{0}{0}$ | $\stackrel{\times}{0}$ | 0 |
| Sandwich Shops ${ }^{6}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X | $\mathrm{X}^{6}$ |  |  |  |  |  |  |
| Schools, Private | C | C | C | C |  | C | C | C | C | C |  | C | C | C | - | $\stackrel{\rightharpoonup}{*}$ | $\stackrel{\rightharpoonup}{*}$ | - | $\checkmark$ |  | $\checkmark$ | $\stackrel{\rightharpoonup}{*}$ |  |  |  | $\checkmark$ | $\checkmark$ |  |
| Senior Housing | X | X | X | X |  | X | X | X | X | X |  | X | X | X | X | X | X |  |  |  | X | X |  |  |  |  |  |  |
| Shoe Shine Stands |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  | X | X |  |  |  | X | X |  |
| Shoe Repair Shop |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |
| Sign Shop |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  | X | X | X | X |  |
| Single room occupancy (SRO) facility ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  | C | C | C | C |  | X |  |  |  |  |  |  |  |  |  |
| Skating Rinks ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  | X |  |  |  |  |  |  |  |  |  |
| Smoke Shops ${ }^{16}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | S | S | S | S |  |  |  |  |  |  |  |
| Stationery Stores |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  | X | X |  |
| Statue Shop -Outdoor display |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  | X | X |  |  |  |
| Storage Lots and Mini-Warehouses |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Indoor |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  |  |  |  | X |  |  |  |  |
| Outdoor |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  |  |  |  | X |  |  |  |  |
| Supportive and Transitional Housing | X | X | X | X |  | X | X | X | X | X |  | X | X | X | X | X | X |  |  |  | X | X |  |  |  |  |  |  |
| Swim Schools/Center with Incidental Commercial Uses ${ }^{18}$ | C | C | C | C |  | C | C | C | C | C |  | C | C | C |  |  |  |  | X |  |  |  |  |  |  |  |  |  |
| Taxidermist |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  | X | X |  |  |  |
| Theaters (excludes open air) ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X |  |  |  |  |  |  |  |  |
| Tire Recapping |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Trade and Vocational Schools ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  | X |  | X | X |  |  | X | X | X |  |
| Transfer, Moving and Storage Facilities |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |
| Truck Charging Facilities |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  |  |  |  | X | X |  |  |  |
| Truck Wash |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |
| Upholstery Shops |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  | X | X |  | X |  |
| Vehicle Storage Yards |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Indoor |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  | X | X |  |  |  |
| Outdoor |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | C |  |  |  |  | X | X |  |  |  |
| Vending Machine Service and Repair |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X |  |
| Veterinarian (including animal hospital) ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| All activities within an enclosed structure |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X |  |  |  |  |  |  | X | X |  |
| With outdoor activities |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  |  |  | $\checkmark$ | $\checkmark$ |  |
| Weight Reduction Center |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X | X | X | X |  |  |  |  |  |  |  |
| Wholesale, Storage, and Distribution ${ }^{18}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| All activities indoors (50,000 square feet or less) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X | X |  |

X - $\quad$ Indicates stated use is permitted subject to district requirements.
C - Indicates stated use is allowed with a conditional use permit.

-     - Indicates a use is permitted unless the use is located three hundred (300) feet or less from a residential zone or use, in which case the use is allowed with a conditional use permit. However, the expansion of an existing general manufacturing use is allowed without a conditional use permit regardless of its distance from residential zones or residential uses.
A - Indicates a use is permitted with an adult business use permit, providing the requirements of Section 9.09.030 of this title are met.
S - Indicates a use is permitted, providing the requirements of 9.09 .280 (Smoke Shops) of this title are met. A conditional use permit is required if dictated by the distance criteria M - $\quad$ Indicates a use is allowed with a conditional use permit, providing the requirements of 9.09.290 (Commercial Cannabis Activities) of this title are met.

|  | Residential Zones |  |  |  |  |  |  |  |  |  |  |  | Mixed Use Overlay |  |  | Commercial \& Office Zones |  |  |  |  |  | Industrial Zones |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 뫂 | $\frac{\underset{\sim}{\underline{\sim}}}{}$ | $\overline{\underline{\Sigma}}$ | $\underset{\underset{\sim}{\underset{1}{2}}}{ }$ | $\underset{\sim}{\text { N }}$ | ®ٌ | $\stackrel{10}{\sim}$ | $\circ$ © ロ | $\frac{\circ}{\bar{X}}$ | $\frac{\omega}{\underline{q}}$ | $\begin{aligned} & \text { O} \\ & \text { N} \end{aligned}$ | $\begin{aligned} & \text { oి } \\ & \underset{\sim}{2} \\ & \hline \end{aligned}$ | $\begin{aligned} & \underset{\underset{j}{2}}{2} \\ & \underset{\Sigma}{2} \end{aligned}$ | $\begin{aligned} & \underset{\sim}{\mathrm{O}} \\ & \mathrm{O} \\ & \underset{\Sigma}{2} \end{aligned}$ |  | $0$ | U | $3$ | $0$ | $\bigcirc$ | 0 |  | 三 | $\frac{\square}{0}$ | $\stackrel{\text { ¢ }}{\substack{\text { ¢ }}}$ | 0 |
| All activities indoors (more than 50,000 square feet) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |
| All activities outdoors |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |
| Retail sale of goods warehoused on-site ${ }^{7}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X | X |  |  |
| Wrecking Yard |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\checkmark$ |  |  |  |  |

(1) Do not consider residential use per distance requirement.
(2) The administrative plot plan process may be used to establish these uses in an existing building within any commercial or industrial zone, even if the project is located adjacent to residential uses or zones.
(3) Retail is limited to fifteen (15) percent of gross floor area (see Section 9.05.040 of this title).
(4) Permitted in the OC and VOR districts only as a support medical office facility.
(5) Large collection facilities may be established within an existing building through the "tenant improvement" process if such building or tenant space occupied by the use is not located adjacent to a residential use or zone.
(6) Sandwich shops shall not have cooking hoods, nor shall they exceed five percent of the gross floor area of the complex where they are located.
(7) Retail is limited to fifteen (15) percent of gross floor area (see Section 9.05 .040 of this title).
(8) In the MUI district, mixed use (commercial uses on first floor with office uses or residential uses on upper floors) are (a) required to on lots at street intersections and within 300 feet in any direction from a street intersection, as measured from the corner formed by the lot's property lines, and (b) are allowed, but not required on the other lots.
(9) In the MUC and MUN districts, mixed use (commercial uses on first floor with office uses or residential uses on upper floors) are (a) required to on lots at street intersections and within 150 feet in any direction from a street intersection, as measured from the corner formed by the lot's property lines, and (b) are allowed, but not required on the other lots.
(10) See Section 9.07.40 (Medical Use Overlay District)
(11) See Section 9.09.260 (Mixed Use Development)
(12) See Section 9.09.250 (Live-Work Development)
(13) See Section 9.09.270 (Outdoor Dining)
(14) Use is also permitted in the Moreno Valley Industrial Area Plan (SP 208)
(15) For Spa Facilities refer to Title 11, Chapter 11.96 of the Municipal Code.
(16) See Section 9.09.280.C (Smoke Shops) for distance requirements that require a Conditional Use Permit.
(17) See Section 9.09.290 (Commercial Cannabis Activities) for all Commercial Cannabis Activities regulations.
(18) See Section 9.07.060 Airport Land Use Compatibility Plan for Airport Land Use Compatibility Plan (ALUCP) requirements for actions proposed on property located within an Airport Compatibility Zone. When located within an Airport Land Use Compatibility Zone, greater land use, restrictions for airport compatibility may apply per the applicable ALUCP.
(19) For Day Care uses in the Moreno Valley Industrial Area Plan (SP 208), See Section 9.07.060 Airport Land Use Compatibility Plan for Airport Land Use Compatibility Plan (ALUCP) requirements for actions proposed on property located within an Airport Compatibility Zone. When located within an Airport Land Use Compatibility Zone, greater land use, restrictions for airport compatibility may apply per the applicable ALUCP.
(20) See Section 9.04.050 (Affordable Housing in Commercial Zones)
(21) See Section 9.09.320. 9.09.320 Low barrier navigation centers.

| Zoning District Key |  |  | MU |
| :--- | :--- | :--- | :--- |
| HR | Hillside Residential District | Mixed Use Overlay District |  |
| RR | Rural Residential District | MUN | Mixed-Use Neighborhood Overlay District |
| R1 | Residential 1 District (40,000 square feet minimum lot size) | MUC | Mixed-Use Community Overlay District |
| RA2 | Residential Agriculture 2 (20,000 square feet minimum lot size) | NC | Mixed-Use Institutional Anchor Overlay District |
| R2 | Residential 2 District (20,000 square feet minimum lot size) | CC | Community Commercial District |
| R3 | Residential 3 District (10,000 square feet minimum lot size) | VC | Village Commercial District |
| R5 | Residential 5 District (7,200 square feet minimum lot size) | O | Office District |
| RS10 | Residential Single-Family 10 District (4,500 square feet minimum lot size) | OC | Office Commercial District |
| R10 | Residential 10 District (Up to 10 Dwelling Units per net acre) | P | Public District |
| R15 | Residential 15 District (Up to 15 Dwelling Units per net acre) | I | Industrial District |
| R20 | Residential 20 District (Up to 20 Dwelling Units per net acre) | LI | Light Industrial |
| R30 | Residential 30 District (Up to 30 Dwelling Units per net acre) | BP | Business Park District |
|  |  | BPX | Business Park-Mixed Use District |
|  |  | OS | Open Space District |
|  |  |  |  |

## Exhibit B

### 9.03.040 Residential site development standards.

The following standards shall apply to land and permitted or conditionally permitted buildings and structures located within the herein described residential districts. The standards stated herein are not intended to prevent more restrictive private site development standards contained in the covenants, conditions and restrictions or other private consensual restrictions imposed on any property or dwelling unit. However, in no case shall private deed or other property restrictions be applied or recognized so as to permit a lesser standard than the minimum standards established in this title or to otherwise revise the standards established by this title.
A. Rural Residential Requirements.

1. Slope-Density-Natural Area Relationship. The maximum density (du/ac) and the minimum percent of a site to remain in a natural state shall be determined by a slope analysis applied to the Slope-Density-Natural Area Table, as defined below.
a. Slope-Density-Natural Area Table 9.03.040-4.

| Slope Class | Allowable Density (DU/Acre) | Amount of Open Space Required |
| :--- | :--- | :--- |
| Greater than $25 \%$ | $0.05(1 \mathrm{du} / 20 \mathrm{ac})$ | $60 \%$ |
| $15.1 \%$ to $25 \%$ | $0.10(1 \mathrm{du} / 10 \mathrm{ac})$ | $50 \%$ |
| $10 \%$ to $15 \%$ | $0.20(1 \mathrm{du} / 5 \mathrm{ac})$ | $35 \%$ |
| Less than $10 \%$ | $0.40(1 \mathrm{du} / 2.5 \mathrm{ac})$ | $\mathrm{n} / \mathrm{a}$ |

b. Slope analysis calculations and mapping shall be provided by the applicant as described under subsection C of this section. The slope analysis shall be certified by a qualified civil engineer or licensed surveyor.
c. The total number of dwelling units permitted within a project area shall be the sum of the allowable dwelling units within each slope class. For example, if ten (10) acres of the project falls within the ten (10) to fifteen (15) percent slope class and five acres falls within the fifteen and one-tenth (15.1) percent to twenty-five (25) percent slope class, then the total permitted yield shall be two dwelling units (10 ac $\times 0.10$ du/ac plus 5 ac $\times 0.20 \mathrm{du} / \mathrm{ac}$ ).
2. Minimum Lot Size. Minimum lot size shall be one dwelling unit per two and one-half acres within a slope category of ten (10) percent or less unless determined to be reduced by an approved slope analysis. Based on the outcome of a slope analysis, minimum lot size within the rural residential district may be reduced to twenty thousand $(20,000)$ square feet, or the minimum lot size of the adjacent zone, whichever is greater, if clustered on slopes of less than ten (10) percent and the lots are part of a project that preserves the steeper slope classes as natural open space by dedication to an appropriate governmental entity, open space easement, transfer of development rights or other means approved by the city. The ongoing maintenance of such open space areas shall be ensured through a mechanism approved by the city.
3. Subdivision Design and Future Land Divisions.
a. Subdivisions shall be compatible with the surrounding development pattern. A subdivision shall be considered compatible if the lots created along the outside boundary of the project are no smaller than the average lot size within three hundred (300) feet of the project boundary. Parcels greater than five acres in area shall be excluded from the calculations when determining the average lot size within three hundred (300) feet of the project boundary.
b. Subdivisions shall be designed in such a way as to transfer development density to the lower slope classes and preserve the steeper slopes for very low density and/or open space. Subdivisions created in this way are prohibited from further division so as not to circumvent the density transfer and the purpose of the district. This restriction shall be binding on the subdivider and subsequent land owners. Therefore, this restriction shall be secured by development agreement or other type of recorded deed restriction approved by the city.
4. Building Height. Dwellings and other accessory structures shall not exceed thirty (30) feet in overall height, provided that on slopes of less than ten (10) percent, the overall height shall not exceed thirty-five (35) feet.
5. Setbacks and Other Site Development Criteria. Front, side and rear setbacks and other site development standards not specifically referenced in this section shall be subject to the following standards:

| Lot Size | Standards |
| :--- | :--- |
| Under 40,000 s.f. | R2 district standards |
| 40,000 s.f. or greater | R1 district standards |

6. Grading within the rural residential district shall be performed as described under the hillside residential requirements, subsection (B)(6) of this section.
B. Hillside Residential Requirements.
7. Slope-Density-Natural Area Relationship. The maximum density (du/ac) and the percent of a site to remain in a natural state shall be determined by a slope analysis applied to the Slope-Density-Natural Area Table, as defined below.
a. Slope-Density-Natural Area Table 9.03.040-5.

| Slope Class | Allowable Density (DU/Acre) | Minimum Amount of Open <br> Space Required |
| :--- | :--- | :--- |
| Greater than 25\% | $0.10(1 \mathrm{du} / 10 \mathrm{ac})$ | $60 \%$ |
| $15.1 \%$ to $25 \%$ | $0.25(1 \mathrm{du} / 4 \mathrm{ac})$ | $50 \%$ |
| $10 \%$ to $15 \%$ | $0.50(1 \mathrm{du} / 2 \mathrm{ac})$ | $35 \%$ |
| Less than $10 \%$ | $1.00(1 \mathrm{du} / \mathrm{ac})$ | $\mathrm{n} / \mathrm{a}$ |

b. Slope analysis calculations and mapping shall be provided by the applicant as described under subsection C of this section. The community development director may require the slope analysis to be certified by a qualified civil engineer or licensed surveyor.
c. The total number of dwelling units permitted within a project area shall be the sum of the allowable dwelling units within each slope class. For example, if ten (10) acres of the project falls within the fifteen and one-tenth (15.1) percent to twenty-five (25) percent slope class and five acres falls within the greater than twenty-five (25) percent slope class, then the total permitted yield shall be three dwelling units ( 10 ac $\times 0.25$ du/ac plus 5 ac $\times 0.10$ du/ac).
2. Minimum Lot Size. Minimum lot size shall be one acre within a slope category of ten (10) percent or less unless determined to be reduced by an approved slope analysis. Based on the outcome of a slope analysis, the lot size within the hillside residential district may be reduced to ten thousand $(10,000)$ square feet or the minimum lot size of the adjacent zone, whichever is greater, if clustered on slopes of less than ten (10) percent and the lots are part of a project that preserves the steeper slope classes as natural open space by dedication to an appropriate governmental entity, open space easement, transfer of development rights or other means approved by the city. The ongoing maintenance of such open space areas shall be ensured through a mechanism approved by the city.
3. Subdivision Design and Future Land Divisions.
a. Subdivisions shall be compatible with the surrounding development pattern. A subdivision shall be considered compatible if the lots created along the outside boundary of the project are no smaller than the average lot size within three hundred (300) feet of the project boundary. Parcels greater than five acres in area shall be excluded from the calculations when determining the average lot size within three hundred (300) feet of the project boundary.
b. Subdivisions shall be designed in such a way as to transfer development density to the lower slope classes and preserve the steeper slopes for very low density and/or open space. Subdivisions created in this way are prohibited from further division so as not to circumvent the density transfer and the purpose of the district. This restriction shall be binding on the subdivider and subsequent land owners. Therefore, this restriction shall be secured by development agreement or other type of recorded deed restriction approved by the city.
4. Building Height. Dwellings and other accessory structures shall not exceed thirty (30) feet in overall height, provided that on slopes of less than ten (10) percent, the overall height shall not exceed thirty-five (35) feet.
5. Setbacks and Other Site Development Criteria. Front, side and rear setbacks and other site development standards not specifically referenced in this section shall be subject to the following standards:

| Lot Size | Standards |
| :--- | :--- |
| Less than 20,000 s.f. | R-3 district standards |
| 20,000 s.f. to 40,000 s.f. | R-2 district standards |
| 40,000 s.f. or greater | R-1 district standards |

6. Grading of any site shall be minimized and shall conform to the provisions contained in the city of Moreno Valley design guidelines, Ch. 9.16, under applications for hillside development, Article IV, Sections 9.16.170 through 9.16.235 of this title, and the following standards:

| Slope Class | Standards |
| :--- | :--- |
| $15.1-25 \%$ | Padded building sites may be allowed, but maximum use of custom foundations and split <br> level designs shall be employed to reduce the need for large, padded building areas. |
| Above 25\% | Mass grading is not permitted. Special hillside architectural and design techniques are <br> expected in order to conform to the natural landform. Homes constructed on lots within this <br> terrain shall use custom, multiple-level foundations. |
| For all areas | All graded areas shall be protected from wind and water erosion through acceptable slope <br> stabilization methods such as planting, walls or jute netting. |

C. Slope Calculations. For the purposes of this section, the following method will be used to determine slope.

1. "Slope" is defined as the relationship between the change in elevation (rise) of the land and the horizontal distance (run) over which that change in elevation occurs. The percent of any given slope is determined by dividing the rise by the run on the natural slope of land, multiplied by one hundred (100).
2. a. For the purpose of determining the amount and location of land falling into each slope category, the applicant shall submit to the community development department, at the time of application, a base topographic map of the subject site prepared and signed by a registered civil engineer or licensed land surveyor. Such a map shall have a scale of not less than one inch to two hundred (200) feet and a contour interval of not more than ten (10) feet.
b. This base topographic map shall include all adjoining properties within three hundred (300) feet of the site boundaries. Slope bands in the range of less than ten (10) percent, ten (10) to fifteen (15) percent, fifteen (15) to twenty-five (25) percent, and greater than twenty-five (25) percent shall be delineated on the topographic map. The map shall be accompanied by a tabulation of the land area in each slope category specified in acres. The exact method for computing the percent slope and area by percent slope category is to be sufficiently described and presented so that a review can readily be made.
3. Slope Mapping Method.
a. The percent slope of any particular piece of land shall be plotted on the map as described in this subsection.
b. In preparing a slope map, those portions of ravines, ridges and terraces of less area generally sloping at twenty-five (25) percent slope or greater, shall be regarded as part of the bordering twentyfive (25) percent slope or greater band.
D. General Residential Requirements. The following tables sets forth minimum site development standards for residential development projects in the specified
residential districts. In addition, projects must comply with the special development standards enumerated in this section, the performance standards included in Chapter 9.10 and any other applicable city ordinances, policies and standards.


Table 9.03.040-6
Residential Site Development Standards Single-Family Standards

| Requirement | R1 | R2 | RA2 | R3 | R5 | RS10 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 1. Maximum density (DUs* per net acre) | 1 | 2 | 2 | 3 | 5 | 10 |
| 2. Minimum lot size (sq. ft. net area) | $40 \mathrm{~K}^{* *}$ | 20 K | 20 K | 10 K | 7,200 | 4,500 |
| 3. Minimum lot width, in feet | 150 | 100 | 100 | 90 | 70 | 45 |
| Cul-de-sac/knuckle lot frontage | 50 | 50 | 50 | 50 | 50 | 45 |
| 4. Minimum lot depth, in feet | 170 | 120 | 120 | 100 | 100 | 85 |
| 5. Minimum front yard setback | 25 | 25 | 25 | 25 | 20 | 20 |
| Front-facing garages |  |  |  |  |  | 10 |

$\left.\begin{array}{|l|l|l|l|l|l|l|}\hline \text { Buildings other than front-facing garages } & & & & & & 10 \\ \hline \text { 6. Minimum side yard setback, in feet*** } & & & & & & \\ \hline \text { a. Interior side yard } & \begin{array}{l}\text { See Note } \\ 1\end{array} & \begin{array}{l}\text { See Note } \\ \text { See Note }\end{array} & \begin{array}{l}\text { See Note } \\ \text { See Note } \\ 1\end{array} & \text { See Note 3 } \\ 2\end{array}\right]$

* The term "DUs" means dwelling units.
** The term "K" means thousands.
*** See Section 9.08.030 regarding accessory structures and room additions.

Notes to Residential Site Development Standards Table 9.03.040-6.

1. Combined interior side yard setbacks of twenty (20) feet shall be provided with a minimum of five feet on one side.
2. Combined interior side yard setbacks of fifteen (15) feet shall be provided with a minimum of five feet on one side.
3. In the RS10 district the minimum street side setback shall be ten (10) feet. The interior side setback shall be five feet, except in the case of zero lot line developments with houses placed on an interior side lot line. When a house is placed on an interior side lot line, the other minimum side yard setback shall be ten (10) feet. Where applicable, an easement at least five feet in width shall be provided along the common lot line. The easement shall guarantee the right to use and occupy the easement for a roof overhang(s), stormwater drainage and for building maintenance and repair.
4. The minimum front yard setback from private streets within the R1, R2 and R3 districts shall be fiftyfive (55) feet measured from the center line of the street. The minimum front yard setback from private streets within the R5 district shall be fifty (50) feet measured from the center line of said street.

Table 9.03.040-7
Residential Site Development Standards Multifamily Standards

| Requirement | R10 | R15 | R20 | R30 |
| :--- | :--- | :--- | :--- | :--- |
| 1. Maximum density (DUs*/net acre) | 10 | 15 | 20 | 30 |
| 2. Minimum lot size (net area in sq. ft .)** | 1 acre | 1 acre | 1 acre | 1 acre |
| 3. Minimum lot width in ft. | 200 | 200 | 200 | 200 |
| 4. Minimum lot depth in ft. | 175 | 175 | 175 | 175 |
| 5. Minimum front yard setback, in ft. | 20 | 25 | 30 | 30 |
| 6. Minimum side yard setback, in ft. |  |  |  |  |
| Interior side yard | 10 | 10 | 10 | 10 ft. plus 2 ft. for every 5 <br> ft. in height over 30 ft. |
| Street side yard | 20 | 20 | 20 | 20 |
| 7. Minimum rear yard setback, in ft. | 15 | 20 | 25 | 10 ft. plus 2 ft. for every 5 <br> ft. in height over 30 ft. |
| 8. Maximum lot coverage | $40 \%$ | $45 \%$ | $50 \%$ | $50 \%$ |
| 9. Maximum building and structure height, <br> in ft. | 50 feet |  |  |  |
| 10. Minimum dwelling size (sq. ft.) | See Note 1 |  |  |  |


| 11. Minimum distance between buildings, <br> in ft. (including main DUs and accessory <br> structures) | 20 | 20 | 20 | 20 |
| :--- | :--- | :--- | :--- | :--- |
| 12. Floor area ratio | 0.75 | 0.75 | 0.75 | 1.0 |
| * The term "DUs" means dwelling units. <br> ** Minimum lot size only applies to newly subdivided multifamily lots; existing lots can be developed under <br> the multifamily development standards. |  |  |  |  |

E. Special Single-Family Residential Development Standards.

1. In any residential district, front yard setbacks in subdivision developments may be reduced by twenty (20) percent provided the mean of all such setbacks in the development is not less than the minimum required for the district.
2. In the R2, RA2, R3 and R5 districts, developments of five or more dwelling units shall include front and street side yard landscaping and shall consist predominantly of plant materials, except for necessary walks, drives and fences.
3. In the RS10 district, driveways and fire hydrants shall be designed and located to maximize on-street parking opportunities in front of each residence.
4. Within the RS10 district, small lot single-family subdivisions on less than fifteen (15) gross acres shall provide landscaping and decorative walls along the street side of corner lots and at least two of the following amenities throughout the project:
a. Front porches;
b. Automatic garage door openers;
c. Electronic security systems.
5. Within the RS10 district, small lot single-family subdivisions on fifteen (15) gross acres or more shall include usable common open space encompassing a minimum of ten (10) percent of each development. Usable common open space does not include individually owned lots, parking areas, nor vehicular rights-of-way. Usable common open space is open space and/or recreational amenities under joint (common) ownership, including, but not necessarily limited to, landscaped areas, trails, playgrounds, tennis courts, swimming pools and recreational buildings. A homeowners' association shall be established to provide continual maintenance of the commonly owned facilities.
6. For all developments within the R5 land use district, a buffer of lots held to the development standards of the R3 land use district shall be included for all portions of a subdivision located adjacent to lower density single-family residential land use districts, including the R1, R2, RA-2, and RR zones.
7. For all single-family residential developments in the R10, R15, R20, and R30 districts a planned unit development application shall be submitted to establish the applicable development standards.
8. In all residential districts, air conditioners, heating, cooling and ventilating equipment and all other mechanical, lighting or electrical devices shall be operated so that noise levels do not exceed sixty (60) dBA (Ldn) at the
property line. Additionally, such equipment, including roof-mounted installation, shall be screened from surrounding properties and streets and shall not be located in the required front yard or street side yard. All equipment shall be installed and operated in accordance with other applicable city ordinances.
F. Special Multiple-Family Residential Development Standards.
9. In the R10, R15, R20 and R30 districts, buildings exceeding one story in height shall maintain a minimum building setback of fifty (50) feet from any single-family district. Any single-story building within the R10, R15, R20 or R30 district shall maintain a minimum setback of twenty (20) feet from any single-family district.
10. In any residential district, front yard setbacks in subdivision developments may be reduced by twenty (20) percent provided the mean of all such setbacks in the development is not less than the minimum required for the district.
11. In all residential districts, air conditioners, heating, cooling and ventilating equipment and all other mechanical, lighting or electrical devices shall be operated so that noise levels do not exceed sixty (60) dBA (Ldn) at the property line. Additionally, such equipment, including roof-mounted installation, shall be screened from surrounding properties and streets and shall not be located in the required front yard or street side yard. All equipment shall be installed and operated in accordance with other applicable city ordinances.
12. In the RS10, R10, R15, R20 and R30 districts, developments of five or more dwelling units shall include front and street side yard landscaping and shall consist predominantly of plant materials, except for necessary walks, drives and fences.
13. In the RS10, R10, R15, R20 and R30 districts, a minimum of thirty-five (35) percent of the net site area, exclusive of private patio and yard areas, shall be landscaped. Turf shall not exceed fifty (50) percent of this area. Required setback areas and outdoor recreation areas may be counted toward this minimum. Landscaping shall consist predominately of plant materials to include water efficient native plants, except for necessary walks and fences. Landscape areas shall be designed to promote water retention and allow runoff from impervious surfaces. Hardscape areas are recommended to be constructed with pervious surfaces where feasible to reduce run off.
14. Where a multiple-family project abuts property in a single-family district, a decorative masonry wall at least six feet in height and screening landscaping within a planter of at least five-foot interior width shall be erected and maintained between such uses and the single-family district. Decorative walls composed of block, brick, stone, stucco-treated masonry or concrete panels are acceptable. The community development director may approve alternative materials, provided that the materials are decorative and comparable to masonry walls or concrete panels in durability and ability to attenuate light and sound.
15. Parking for each use shall comply with the requirements of Chapter 9.11 of this title.
16. In the R30 District, Landscape Trees. One tree per twenty (20) linear feet of building dimension for the portions of building visible from parking lot or ROW and one tree per twenty (20) linear feet of perimeter planter areas.
17. In the R30 district, for a development of three acres or greater, up to sixty (60) percent of the units may be in buildings with three or four stories, fifty (50) feet maximum height subject to planning commission approval.

Table 9.03.040-8

| Designation | Minimum Density* | Maximum Density |
| :--- | :--- | :--- |
| R10 | 8 units/acre | 10 units/acre |
| R15 | 12 units/acre | 15 units/acre |
| R20 | 16 units/acre | 20 units/acre |
| R30 | 24 units/acre | 30 units/acre |
| * Eighty (80) percent of allowable density must be achieved by all multiple-family residential <br> developments. |  |  |

G. General Multiple-Family Guidelines.

1. Opposing garages or carports should be turned to avoid the monotony of alley-like parking corridors.
2. Parking areas should be staggered and landscaped to add visual interest, and opportunities for accent treatments.
3. Parking spaces within multifamily areas shall be located within two hundred fifty (250) feet of the dwellings they serve.
4. Multifamily parking lots shall be limited to two double aisles of cars to help reduce expanses of paving. Parking lots shall provide openings in curbs to convey surface drainage into landscape areas for water quality, retention and absorption.
5. Open parking areas should be clustered and treated as landscaped plazas and courts.
6. Landscaping shall be used around the perimeter of the lot, as well as within the lot, reducing paved area and providing for a more pedestrian oriented site.
7. No more than four units for a two-story structure should be served by one entry.
8. Each multiple-family unit shall have at least one hundred fifty (150) square feet of private open space per downstairs unit and a minimum of one hundred (100) square feet of private open space per upstairs unit. Private open space may consist of a fenced yard area, patio or balcony. Fenced yards and patios shall have a minimum dimension of at least eight feet. Balconies shall be at least five feet deep.
9. Common open space at a minimum of three hundred (300) square feet per each residential dwelling in the project is required.
10. Individual units should have a porch or porch-like space at the front door.
11. Trash enclosures shall be located to provide a maximum walking distance of two hundred fifty (250) feet from the units they serve.
12. Trash enclosures shall include solid roofs and be designed to be compatible with the project's architecture.
13. Trash enclosures shall not be located on dead end drive aisles, unless adequate turnaround is provided for collection vehicles.
14. There shall be at least one double-bin trash enclosure for every forty-eight (48) residential units.
15. Mail boxes should be located at various places on the site and treated to match the building's architecture, avoiding the institutional and monumental "gang box" appearance, while conforming to post office guidelines.
16. Drive aisles should be curved and should incorporate landscaping and paving treatments to reduce vehicle speed. Landscaping treatments may include pinched planters and a mix of canopy and vertical trees. Paving treatments may include interlocking paver bands or etchings across drives. Speed bumps or Botts' dots are not an acceptable alternative.
17. Freestanding structures, like gazebos or pergolas, should be located to define activity areas at pathway intersections or in secluded landscape areas.
18. Drive aisles shall be at least twenty-four (24) feet wide for two-way traffic and shall be at least twenty (20) feet wide for one-way traffic.
19. Buffer setbacks and landscaping shall be provided along all property lines. Buffers may also be appropriate within the complex, separating recreational areas from units and limiting lines of sight between balconies and into parking areas.
20. Multiple-family projects warrant special design considerations, including:
a. Intimate, shaded outdoor seating areas;
b. A network of pathways, providing interesting walking experiences;
c. Gentle slopes for outdoor pathways and ramps to entry doors and between floors;
d. Convenient and attractive access to transit, including porte cocheres, information kiosks, seating areas and water elements;
e. Security;
f. Direct ambulance access (senior housing projects);
g. Parking close to units;
h. Elevators (senior housing projects).
21. Multifamily units shall be clustered to minimize grading and to help maintain the natural landscape.
22. Multifamily projects shall be designed for the needs of the intended residents. For example, children's needs would require open space, tot lots, handrails, and enclosed yards on ground floor units. Disabled or elderly needs would require ramps, parking close to units, minimum and gradual elevation changes and elevators.
23. Architectural features should be used to increase privacy from nearby units and common or public spaces.
24. Roof forms should be mixed and combined to vary the perception of building height, to differentiate units and to add interest to building mass. The long, straight roofline of a single gable is not permitted.

## Exhibit B

25. A diagram of the complex showing the location of the viewer and the building designations shall be positioned at each visitor entrance of a multiple-family development.
26. Buildings shall provide for a variety of colors and architectural features to break up the massing of buildings and provide visual interest.

### 9.03.055 Density bonus program for green building and energy efficiency.

A. Purpose and Intent. The purpose of this section is to provide an incentive for residential housing units that are constructed to green building standards that exceed the requirements of the city's building code, which is a greenhouse gas reduction measure included in the city's Energy Efficiency and Climate Action Strategy.
B. Applicability. Developers of multifamily residential housing dwelling units in the R10, R15, R20, R30, MUN, MUC, MUI, H-OC, COMU, DC, and SP204-Village Residential zone on sites of at least one acre minimum.
C. Incentive. Developers may request a density bonus of five percent above the calculated number of units for qualified projects.
D. Energy Efficiency Requirements. A project must meet the applicability requirement in subsection B. For projects that meet the applicability requirement, the developer may request the incentive in subsection C if the project complies with the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) certification criteria for LEED "Certified" level or higher, or an equivalent green building rating system as approved by the community development director. LEED Certified level represents the minimum level of certification under the USGBC Leadership Energy and Environmental Design rating system, and shall be consistent with the USGBC published criteria on the date the project application to the city is deemed complete.
E. Implementation.

1. The total number of dwelling units allowed under a density bonus shall be calculated by multiplying the maximum density allowed under the applicable zoning designation (i.e., the maximum density listed in Table 9.03.040-6 of this title or the applicable specific plan designation), and multiplying the result by 1.05 , for a five percent density bonus. If the result, including the density bonus, contains a fraction of a unit, the number of allowable units shall be determined by rounding down to the nearest whole number if the fraction is below one-half. Calculations containing fractions of one-half or above shall be rounded up.
2. This density bonus shall not be cumulative with any other density bonus program included in this section.
3. The development standards for density bonus projects shall be those of the applicable zoning classification.

### 9.03.070 Streamlined Ministerial Approval Process (Senate Bill 35)

A. Purpose and Intent. This section is adopted pursuant to the provisions of Senate Bill 35 (SB 35), to the extent permissible by law, to establish a streamlined ministerial review and public oversight process for the final review and approval of SB 35 applications pursuant to the requirements in California Government Code Section 65913.4. SB 35 has been designed to help address the state's continuing housing crisis.
B. Applicability. This section establishes clear eligibility criteria to establish a streamlined ministerial review and public oversight process for the Planning Commission's final review and approval of SB 35 applications pursuant to the requirements in California Government Code Section 65913.4.
C. Qualifying Requirements.

1. A developer may submit an application for a development that is subject to the streamlined, ministerial approval process provided by SB 35 and not subject to a conditional use permit or any other discretionary local government review or approval.
2. The project must be a multifamily housing development project, as defined in California Government Code Section 65589.5 that contains at least two residential units and complies with the minimum and maximum residential density range permitted for the site per the Land Use and Community Character Element of the MoVal 2040General Plan, plus any applicable density bonus.
3. Affordability Requirement. If more than 10 residential units are proposed, at least 10 percent of the project's total units must be dedicated as affordable to households making below 80 percent of the County of Riverside median income. If the project will contain subsidized units, the applicant has recorded, or is required by law to record, a land use restriction for the following minimum durations, as applicable:
a. $\quad 55$ years for rental units.
b. 45 years for homeownership units

The development proponent shall commit to record a covenant or restriction dedicating the required minimum percentage of units to below-market housing before issuing the first building permit.
4. The project must be located on a legal parcel or parcels within the incorporated City limits. At least 75 percent of the site's perimeter must adjoin parcels developed with urban uses.
5. The project must be located on a site that is either zoned or has a General Plan designation for residential or residential mixed-use development, including sites where residential uses are permitted as conditional use. If the multiple-family housing development is mixed-use, at least two-thirds of the project's square footage must be designated for residential use.
6. The project must meet all objective zoning and design review standards in effect at the time the application is submitted.
If the project is consistent with the minimum and maximum density range allowed within the General Plan land use designation, it is deemed consistent with housing density standards.

Any density bonus, concessions, incentives, or waivers of development standards or reduction of parking standards requested under Chapter 9.03.050 (Density bonus program for affordable housing) are deemed consistent with objective standards.
7. Prevailing Wages: If the development is not in its entirety a public work, as defined in Government Code Section 65913.4 (a)(8)(A), all construction workers employed in the execution of the development must be paid at least the general prevailing rate of per diem wages for the type of work and geographic area.
8. Skilled and Trained Workforce provisions: A skilled and trained workforce, as defined in Government Code Section 65913.4 (a)(8)(B)iii, must complete the development if the project consists of 50 or more units.
9. The development did not or does not involve a subdivision of a parcel that is subject to the California Subdivision Map Act unless the development either (i) receives a low-income housing tax credit and is subject to the requirement that prevailing wages be paid, or (ii) is subject to the requirements to pay prevailing wages and to use a skilled and trained workforce.
10. The development must be located on a property that is not within a coastal zone, prime farmland, wetlands, a high fire hazard severity zone, hazardous waste site, a delineated earthquake fault zone, a flood plain, a floodway, a community conservation plan area, a habitat for protected species, or under a conservation easement.
11. The project does not demolish any housing units that tenants have occupied in the last 10 years; are subject to any form of rent or price control, or are subject to a recorded covenant, ordinance, or law that restricts rents to levels affordable to persons and families of moderate, low, or very low incomes.
12. The project does not demolish a historic structure that has been placed on a national, state, or local historic register.
D. Application and Processing.

Development projects submitted pursuant to California Government Code Section 65913.4 shall be reviewed in accordance with the procedures set forth in Subsection (b) of Section 65913.4, as such procedures may be amended from time to time and as further outlined in this Chapter.

1. The development proponent shall submit to the local government a notice of its intent to submit an application. The notice of intent (NOI) shall be in the form of an SB 35 Preliminary Application that includes all of the information described in Section 65941.1.
2. Upon receipt of a NOI, the Community Development Director shall engage in a scoping consultation regarding the proposed development with any California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed development as required by Section 65913.4(b), as may be amended from time to time.
3. After completing the NOI to submit an application for streamlined ministerial approval process (also referred to as SB 35 processing) and Tribal

Consultation process pursuant to Government Code Section 65913.4, Subsection (b), an applicant may submit an application for streamlined ministerial approval processing to the City. The applicant must submit a building permit application and an SB 35 streamlined ministerial approval process application demonstrating the proposed project's eligibility under California Government Code Section 65913.4. Once an application is submitted, the process set forth in Subsections E-H, below, shall be followed.
E. Community Development Director Determinations.

1. The Community Development Director shall review the application submitted hereunder and determine if the project is consistent with or conflicts with any of the objective zoning standards, objective subdivision standards, and objective design review standards applicable to the project. The Community Development Director's review of the project shall be completed within 60 days of application submittal for projects of 150 or fewer units and 90 days for projects consisting of more than 150 units.
2. If the City provides written comments as to any conflicts in the objective standards, or requests additional information to make such a determination, then the 60- or 90 -day timeline will restart upon submittal of a revised development application in response to such written notice. The City's written comments shall specify the standard or standards with which the development conflicts and shall provide an explanation for the reason or reasons the development conflicts with that standard or standards within the timeframe specified.
3. If the application can be brought into compliance with minor changes to the proposal, the City, in lieu of making detailed findings, will allow the applicant to correct any deficiencies within the timeframes noted in Subsection E. 2 above.
4. If the City fails to provide the required documentation determining consistency within these timeframes, the development shall be deemed to satisfy the City's objective planning standards and shall be deemed consistent.
5. The Community Development Director's determination shall be forwarded to the City's Planning Commission consideration as part of the ministerial design review/public oversight process as provided for in Subsection F below, under California Government Code Section 65913.4(d).
F. Planning Commission Ministerial Design Review/Public Oversight

The Planning Commission, at a noticed public meeting, shall undertake ministerial design review and public oversight as provided for in California Government Code Section 65913.4(d). Planning Commission review shall include a review of the Community Development Director's determination as outlined in Subsection E above. Furthermore, the Planning Commission's review under this process shall be objective and strictly focused on the project's compliance with the criteria required for a streamlined project pursuant to the California Government Code Section 65913.4 and consistency with City reasonable objective zoning standards, objective subdivision standards, and objective design review standards applicable
to the project, which have been adopted prior to the submittal of the application to the City and apply to other developments within the City.
The Planning Commission's review and a final determination on whether an application complies with the criteria under California Government Code Section 65913.4 and the reasonable objective zoning standards, objective subdivision standards, and objective design review standards applicable to the project must be completed in 90 days for projects with 150 or fewer units and 180 days for projects with more than 150 units, measured from the date of the application submittal.
The Planning Commission's ministerial review and public oversight process shall not in any way inhibit, chill, or preclude the ministerial approval of the project if it is in compliance with criteria specified in Government Code Section 65913.4 and consistent with the objective zoning standards, objective subdivision standards, and objective design review standards applicable to the project.
G. Submission of Application and Payment of Fees.

Development projects submitted pursuant to California Government Code Section 65913.4 must include a copy of the City's City SB 35 Checklist Application as well as required documents for a Plot Plan application. Payment of application fees are due at time of submittal.
H. Public Hearing.

The public hearing on an application hereunder shall be scheduled within the time frames provided for in Subsection F above.
I. Modification.

An applicant can request modification of approval after ministerial review and approval but prior to issuance of a final building permit pursuant to California Government Code Section 65914.3, Subsection (g). If the modification request falls within the parameters in Section 65913.4, Subsection (g), (3) (A) or (B) 1, then such modification shall be subject to review pursuant to Subsections E-H above. Otherwise, the modification shall be reviewed by the Community Development Director to confirm compliance with California Government Code Section 65913.4.
J. Parking. A qualifying SB 35 project is required to provide one parking space per residential unit. Furthermore, the City shall not impose any parking requirements for qualifying projects if any of the following instances are present:
a. The development is located within one-half mile of the Transit.
b. The development is located within an architecturally and historically significant historic district.
c. When on-street parking permits are required but not offered to the development's occupants.
d. When there is a car share vehicle located within one block of the development. A block can be up to 1,000 linear feet of pedestrian travel along a public street from the development.
Mixed-use projects must provide parking for the commercial component of the development as required by Chapter 9.11 .040 (Off-street parking requirements).
K. The expiration dates for projects approved under SB 35 are as follows [Govt Code §65913.4(f)(2)]:

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1. No expiration: Projects where $50 \%$ of the units are affordable to households making below $80 \%$ of the area median income (below moderate-income levels) and the project includes public investment in housing affordability beyond tax credits.
2. After three years: Projects not including affordable housing are noted in the bullet above. Projects shall remain valid for three years and stay in effect as long as construction has begun and not ceased for more than 180 days. A one-year extension to the original three-year period may be granted if progress is made toward construction.
L. Definitions. For the purpose of this section, the following definitions shall apply unless the context clearly indicates or requires a different meaning.
"Application" means a submission requesting Streamlined Ministerial Approval pursuant to Government Code section 65913.4 and the Guidelines, which contain information pursuant to Section 300(b) describing the development's compliance with the criteria outlined in Article IV of the Guidelines.
"Guidelines" shall mean the Updated Streamlined Ministerial Approval Process issued by the California Department of Housing and Community Development, as updated March 30, 2021, and as may be updated in the future.
"Ministerial processing" means a process for development approval involving little or no personal judgment by the public official as to the wisdom or manner of carrying out the project. The public official merely ensures that the proposed development meets all the "objective zoning standards," "objective subdivision standards," and "objective design review standards" in effect at the time that the application is submitted to the local government but uses no special discretion or judgment in reaching a decision.
"Ministerial approval" means approval of a project that complies with requirements and guidelines as set forth in Government Code Section 65913.4 that is nondiscretionary and cannot require a conditional use permit or other discretionary local government review or approval.
"Objective zoning standard", "objective subdivision standard", and "objective design review standard" means standards that involve no personal or subjective judgment by a public official and are uniformly verifiable by reference to an external and uniform benchmark or criterion available and knowable by both the applicant or development proponent and the public official prior to submittal, and includes only such standards as are published and adopted by ordinance or resolution by a local jurisdiction before submission of a development application.
"Urban uses" means any current or former residential, commercial, public institutional, transit or transportation passenger facility, or retail use, or any combination of those uses. Parcels that are only separated by a street or highway shall be considered adjoined.

### 9.03.080 Streamlined Ministerial Approval Process (Senate Bills 330 and 8)

A. Purpose and Intent. This section is adopted pursuant to the provisions of Senate Bill 330 (SB 330), Housing Crisis Act of 2019 (HCA), and Senate Bill (SB 8), which is an extension of the HCA. The HCA aims to increase residential unit development, protect existing housing inventory, and expedite permit processing.
B. Applicability. This section establishes clear eligibility criteria to establish a streamlined review and approval of SB 330 applications pursuant to the requirements in California Government Code Sections 65589.5, 65905.5, 65913.10, 65940, 65941.1, 65943, 65950, 66300 , and 66301.
C. Qualifying Requirements.

1. The project must be a housing development project, as defined in California Government Code Section 65589.5(h)(2)(B). Specifically, pursuant to Government Code Section 65589.5(h)(2)(B) a project is a housing development project if:
a. Residential projects, excluding hotels, assisted living or other commercial dwelling units. Single-family, ADUs and/or JADUs are excluded from dwelling unit count;
b. Mixed-use development consisting of residential and nonresidential uses with at least two-thirds of the square footage of the project designated for residential use (not including hotels, assisted living or other commercial dwelling units); or
c. The project is a transitional or supportive housing development project.
2. The HCA does not apply to housing development projects located within a very high fire hazard severity zone.
3. The project must meet all objective zoning and design review standards in effect at the time the application is submitted.
If the project is consistent with the minimum and maximum density range allowed within the General Plan land use designation, it is deemed consistent with housing density standards.
Any density bonus, concessions, incentives, or waivers of development standards or reduction of parking standards requested under Chapter 9.03.050 (Density bonus program for affordable housing) are deemed consistent with objective standards.
4. The City may not approve a housing development project that requires the demolition or removal of a protected unit before January 1, 2030, unless the project will replace any existing, demolished or removed protected units. "Protected Units" are defined as:
a. Affordable units deed-restricted to households earning below 80 percent of area median income (AMI).
b. Occupied by low-income households earning below 80 percent of AMI.
c. Units vacated under the Ellis Act within 10 years prior to development application.
D. Application and Processing.
5. Project applicants choosing to seek vesting rights through a SB 330 Preliminary Application are encouraged to schedule a preliminary project discussion with Planning Division staff to assess eligibility before submitting a Preliminary Application for the SB 330 review process.
6. The SB 330 Preliminary Application must be filed with the Planning Division prior to filing a project application requesting approval of any discretionary action.
7. In order for a housing development project to receive initial vesting rights, a preliminary application must include all of the information required on the SB 330 Preliminary Application consistent with subdivision (a) of California Government Code Section 65941.1 and upon verification that the preliminary application processing fee is paid.
8. The SB 330 Preliminary Application shall be accompanied by any maps and supporting documents, including a site plan, floor plans, elevations, exterior material details and colors, and any other drawings that are required by this application.
9. A subsequent project application filed with the Planning Division requesting approval of a discretionary action (not including ministerial administrative reviews) must be filed within 180 days of the date that the SB 330 Preliminary Application is deemed complete.
10. If the project application is deemed incomplete or inconsistent after filing, the City shall provide the applicant in writing with a detailed explanation of the reason within 30 days (if 150 units or fewer) or 60 days (if 151 units or more). The applicant must submit all missing or incomplete items to Planning Division within 90 days of being notified in writing by Planning Division staff. If the project is again determined to be incomplete, the project applicant may appeal. The City has 60 days to respond to appeal.
11. Construction of the project must commence within two and one-half years following the date that the project receives final approval, including all necessary approvals to be eligible to apply for, and obtain a building permit or permits and all appeal periods or statutes of limitations have been exhausted or resolved in favor of the housing development project.
12. Any change in the residential unit count is limited to less than 20 percent exclusive of any increase resulting from the receipt of a density bonus, concession, waiver, or similar provision-indicated on the submitted and deemed complete SB 330 Preliminary Application, otherwise the project must be resubmitted.
13. Any change in the Building Area is limited to less than 20 percent exclusive of any increase resulting from receiving a density bonus, concession, waiver, or similar provision indicated on the submitted and deemedcomplete SB 330 Preliminary Application, otherwise the project must be resubmitted.
14. If the project submitted for a building permit differs substantially from the original submission (more than 20 percent in unit count or square footage), the Planning Division will re-certify the project for eligibility and re-review
the project's design, restarting the timeline and requiring resubmittal of the SB 330 Preliminary Application.

## E. Public Hearings

SB 330 prevents jurisdictions from conducting more than five public hearings in connection with the approval of a housing development project that meets objective zoning standards. The definition of "hearing" found in California Government Code section 65905.5 includes required Planning Commission, City Council, or other board, committee, or commission hearing or public workshop as well as any appeal hearing.
Meetings held solely pursuant to CEQA law, including CEQA appeals, are not counted toward the number of hearings.

### 9.05.040 Industrial site development standards.

A. General Requirements.

1. The following table sets forth minimum property development standards for all land, buildings and structures constructed within the specified industrial districts. All sites shall conform to the dimensions set forth in this section. A development or center may, however, be a combination of many parcels totaling at least the required site size, but its design must be integrated and unified.
2. In addition, projects must comply with the special requirements enumerated in subsection B, the performance standards included in Chapter 9.10 and any other applicable city ordinances, policies and programs.

## Table 9.05.040-8 Industrial Site Development Minimum Standards

| Requirement | BP/LI ${ }^{\mathbf{1}}$ | BPX | I |
| :--- | :--- | :--- | :--- |
| Minimum site area (in acres) | 1 | 1 | 5 |
| Minimum site width (in feet) | 200 | 200 | 300 |
| Minimum site depth (in feet) | 200 | 200 | 300 |
| Minimum front building setback area (in feet) | 20 | 20 | 20 |
| Minimum interior side building setback area (in feet) | $*$ <br> (see note <br> below) | *(see note <br> below) | - |
| Minimum street side building setback area (in feet) | 20 | 20 | 20 |
| Minimum rear building setback area (in feet) | *(see note <br> below) | *(see note <br> below) | - |

1. See Special Site Development Standards Section 9.05.040(B)(9) for unique separation requirements for structures greater than 50,000 square feet in building area.
*Structures shall be constructed on the property line or a minimum of three feet from the property line.
B. Special Site Development Standards.
2. When any industrial district abuts a property in any residential district, a minimum building setback equal to the building height, but not less than twenty (20) feet shall be required from such residential district. Further, the ten (10) feet of such setback nearest the district boundary line shall be landscaped.
3. Where off-street parking areas in industrial districts are visible from any street, screening in the form of a landscaped earthen berm, shrubs, or decorative wall three feet in height shall be erected between the required landscape area and the parking area.
4. In all industrial districts, required front building setback areas shall be landscaped. The landscaping shall consist predominantly of plant materials except for necessary walks and drives.
5. Except as otherwise permitted, a street side building setback area in any industrial district shall be used only for landscaping, pedestrian walkways, driveways or off-street parking. Where off-street parking in any industrial district is located within building setback areas, a minimum landscaped area ten (10) feet in depth shall be provided between the property line and
parking area, with an additional minimum landscaped area ten (10) feet in depth required between the parking area and the building.
6. Except as otherwise permitted, required rear and interior side building setback areas in any industrial district shall be used only for landscaping, pedestrian walkways, driveways, off-street parking or loading, recreational activities or facilities, and similar accessory activities.
7. Parking for each use shall comply with the requirements of Chapter 9.11 and this title.
8. The land uses planned for each development shall be specified on the approved site plans. No use shall be established unless the development where it is located has adequate parking facilities to accommodate such use and any planned uses that share parking facilities with such use.
9. In the BP, LI and I districts, the retail sales of goods produced or warehoused in connection with a manufacturing, assembly or warehouse use may be conducted, provided that no more than fifteen (15) percent of the gross floor area of the space occupied by such use is devoted to retail sales. Any merchandise storage or display areas to which the public has access shall be considered as committed to the percentage of building area used for retail purposes.
10. In the LI district, industrial and warehouse structures greater than fifty thousand $(50,000)$ square feet in building area shall be separated from any residential district as determined by an air quality and noise impact analysis. The minimum separation distance for such uses shall be two hundred fifty (250) feet between the residential district and the truck court or loading area.
11. The parcelization of a business complex for marketing, financing or other purpose shall not establish separate privileges with respect to the maximum percentage of floor area specified in this section with respect to the BPX district.
12. Industrial buildings larger than 50,000 square feet shall be designed and constructed to meet the equivalent level of $L E E D$ Silver.
13. Industrial buildings with more than 30 required Truck Parking stalls shall provide a minimum of $10 \%$ of all required truck parking stalls with appropriately sized conduit(s) for future truck charging facilities.
14. Industrial Building Signage
a. All signage required under this Section must be posted in English and Spanish and must be permanent, durable, weather-proof, and legible.
b. Signs and drive aisle pavement markings shall clearly identify the onsite circulation pattern to minimize unnecessary on-site vehicular travel.
c. Signs shall be installed at all truck exit driveways directing truck drivers to the truck route as indicated in the Truck Routing Plan and State Highway System.
15. Roofing.
a. All building roofs shall be solar-ready, which includes designing and constructing buildings in a manner that facilitates the maximum
installation of a rooftop solar photovoltaic (PV) system after the building has been constructed.
16. Warehouse electrical rooms shall be sufficiently sized to accommodate the potential need for additional electrical panels, either a secondary electrical room shall be provided in the building, or the primary electrical room shall be sized $25 \%$ larger than is required to satisfy the service requirements of the building, or the electrical gear shall be installed with the initial construction with $25 \%$ excess demand capacity.

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### 9.14.100 Land division dedications, improvements, fees and reservations.

A. Dedications.

1. All streets, highways and alleys, and other parcels of land intended for public use including, but not limited to, access road easements required for flood control and utilities intended for public use, shall be offered for dedication to the public by owners certificate as a part of a final land division map. No utility easement or other rights-of-way shall be granted within proposed street dedication subsequent to the date of filing of a preliminary tentative map. Necessary right-of-way outside of the tract boundary must be processed by separate instruments.
2. Whenever a minor arterial or higher classification is designated on the circulation element of the general plan of the city for Moreno Valley as requiring an ultimate right-of-way of eighty-eight (88) feet or greater and such highway either adjoins or crosses a proposed land division, access rights may be required to be offered for dedication to the city or otherwise restricted. The note "ACCESS RESTRICTED" shall be shown along the highway frontages on the final land division map, as provided herein. Access rights shall be restricted except for limited access openings as approved by the city engineer. However, the location of access opening(s) to commercially zoned property may be postponed to the development stage as approved by the city engineer.
B. Land Division Improvements.
3. Improvements installed in land divisions shall be constructed in conformance with city standards.
4. In the absence of a standard for an improvement, the city engineer may establish a standard in keeping with good construction and engineering practices.
5. When asphalt-concrete dikes are permitted and drainage is required to cross at intersecting streets, concrete curb returns and cross-gutters shall be installed.
6. Structural roadbed section shall be designed using recognized design methods, employing engineering soils analysis and determination of traffic evaluations.
7. The street pattern in the land development shall not land lock adjacent property or preclude access to public land.
8. When located under the pavement, utility mains and utility services shall be installed before the final street surfacing is installed.
9. When an existing underground utility or pipeline crosses a proposed land division or an access to a land division, the land divider shall adequately protect the utility or pipeline as directed by the utility owner as part of the conditional approval of the land division.
10. Projects which are located in high fire hazard areas shall require special fire mitigation measures. These fire mitigation measures shall be as per city ordinance.
C. Improvements Plans Required.

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1. All improvements constructed or installed in a land division shall be in accordance with detailed plans and specifications as approved in writing by the city engineer prior to commencement of such improvement work.
2. All plans shall be submitted to the city engineer and shall be approved by him before submitting a final land division map to the city council. Upon approval of such plans, they shall become the property of the city.
3. All improvements constructed or installed in land divisions shall be in accordance with plans and specifications as approved by the city engineer.
4. Contractors shall secure an encroachment permit for all work done in connection with land division projects within city right-of-way and Riverside County flood control right-of-way prior to commencing such work.
5. The improvement plans shall show the location of all existing improvements, gas and any other service facilities.
6. Improvements proposed or required on state highway right-of-way shall be located in the improvement plans and designed to Department of Transportation standards. Prior to approval by the city engineer, the land divider's engineer shall obtain the Department of Transportation's approval for such improvements.
D. Improvement for Subdivision. The minimum improvements which a land divider shall install, or enter into an agreement to install, for subdivisions shall be as hereinafter set forth in Schedule "A," "B," "C," and "D" for tentative map subdivisions and in Schedule "E," "F," "G," "H" and "I" for parcel map divisions.
7. Exemptions:

The City Engineer may determine an exemption is appropriate if the improvement is infeasible or:
a. If there is insufficient real property to construct full-width improvements and the project developer cannot acquire the requisite real property from the applicable property owner(s) after making a good faith effort, and if the project involves a subdivision, then the City will either obtain said property or this requirement shall be waived by the City Engineer pursuant to the provisions of the Subdivision Map Act.
b. If there is insufficient real property to construct full-width improvement and the project developer cannot acquire the requisite real property from the applicable property owner(s) after making a good faith effort, and if the project does not involve a subdivision, then the City Engineer may waive the full-width improvement requirement.
2. If the full-width improvements are located on a street that are subject to improvement via development impact fees, the developer may receive Development Impact Fee credits for improvements in accordance with Chapters 3.38 (Residential Development Impact Fees) and 3.42 (Commercial and Industrial Development Impact Fees) and any applicable City Policies.
E. Schedule "A" Subdivision. Any division of land into five or more parcels, where any parcel is less than eighteen thousand $(18,000)$ square feet in net area, shall be

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defined as a Schedule "A" subdivision. The minimum improvements for a Schedule "A" subdivision shall be as follows:

1. Streets. Unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width. The minimum improvements for streets are established as follows:
a. Divided Major Arterial. One hundred ten (110) feet in width, designed and constructed in conformance with city standards;
b. Modified Divided Major Arterial. One hundred two (102) feet in width, designed and constructed in conformance with city standards;
c. Divided Arterial. Eighty-six (86) feet in width, designed and constructed in conformance with city standards;
d. Arterial. Seventy-six (76) feet in width, designed and constructed in conformance with city standards;
e. Minor Arterial. Sixty-four (64) feet in width, designed and constructed in conformance with city standards;
f. Industrial Collector. Fifty-six (56) feet in width, designed and constructed in conformance with city standards;
g. Collector Streets. Forty-four (44) feet in width, designed and constructed in conformance with city standards;
h. General Local Streets. Forty (40) feet in width, designed and constructed in conformance with city standards;
i. Short Local or Circulatory Interior Street. Thirty-six (36) feet in width, designed and constructed in conformance with city standards;
j. Restricted Local or Noncirculatory Interior Streets. Thirty-two (32) feet in width, designed and constructed in conformance with city standards;
k. Access Road. Thirty-two (32) feet in width, designed and constructed in conformance with city standards;
I. Frontage roads designed and constructed in conformance with city standards;
m. Cul-de-sac streets shall be designed and constructed in conformance with city standards;
n. Alleys. Twenty (20) feet in width, designed and constructed in conformance with city standards;
o. If exempted from full street improvements: Part-width streets shall be one-half of the required improvements plus an additional twelve (12) feet, but not less than twenty-eight (28) feet, designed and constructed in conformance with city standards;
p. Street Name Signs. Type and placement shall conform with city standards;
q. Barricades shall be placed at the end of dead-end streets in accordance with city standards;
r. Sidewalks shall be required to be constructed unless they are determined by the approving body to be unnecessary considering the design of the development. Sidewalk construction shall be in accordance with city standards.

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2. Domestic Water. The minimum requirements for domestic water supply and distribution system are as follows:
a. Water Supply. Water shall be provided to meet the requirements as set forth in the California Administrative Code, Title 22, Chapter 16 (California Waterworks Standards); and
b. Piped water systems.
3. Fire Protection. The minimum requirement for fire protection facilities in residential zones that do not allow multifamily residential uses shall be as follows:
a. Type of fire hydrant and connection as approved by the agency providing fire protection;
b. The water system shall be capable of providing a fire flow of one thousand five hundred $(1,500)$ GPM for two hours duration at a minimum of twenty (20) PSI operating pressure from each fire hydrant;
c. The fire protection system shall be installed and operational prior to any combustible building material being placed on the job site; and
d. In zones that allow multifamily residential uses, the minimum fire protection shall be as set forth in applicable city ordinance or ordinances.
4. Sewage Disposal. The minimum requirement for sewage disposal shall be as follows:
a. Sewage disposal shall be provided by connection to an existing collection system capable of accepting waste load, or, if an existing collection system is not available, by the development of individual subsurface sewage disposal systems that meet health department and the regional water quality control board standards and requirements;
b. Improvement plans for sewage collection systems shall be reviewed as required by this chapter; and
c. Dry sewer may be required as set forth in Section 9.14.120 when subsurface sewage disposal is approved.
5. Fences. Minimum fencing requirements shall be as follows: six-foot high chain link galvanized wire fence shall be installed along any canal, drain, expressway or other feature deemed to be hazardous.
6. Electrical and Communication Facilities. Minimum requirement for electrical and communication facilities shall be as follows: electrical and communication facilities shall be installed in conformity with the provision of Section 9.14.130.
F. Schedule "B" Subdivision. Any division of land into five or more parcels, where any parcel is not less than eighteen thousand $(18,000)$ square feet in net area up to two acres in gross area, shall be defined as a Schedule "B" subdivision. The minimum improvements for a Schedule " $B$ " subdivision shall be as follows:
7. Streets. Unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width. The minimum improvements for streets are established as follows:

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a. Divided Major Arterial. One hundred ten (110) feet in width, designed and constructed in conformance with city standards;
b. Modified Divided Major Arterial. One hundred two (102) feet in width, designed and constructed in conformance with city standards;
c. Divided Arterial. Eighty-six (86) feet in width, designed and constructed in conformance with city standards;
d. Arterial. Seventy-six (76) feet in width, designed and constructed in conformance with city standards;
e. Minor Arterial. Sixty-four (64) feet in width, designed and constructed in conformance with city standards;
f. Industrial Collector. Fifty-six (56) feet in width, designed and constructed in conformance with city standards;
g. Collector Streets. Forty-four (44) feet in width, designed and constructed in conformance with city standards;
h. General Local Streets. Forty (40) feet in width, designed and constructed in conformance with city standards;
i. Short Local or Circulatory Interior Streets. Thirty-six (36) feet in width, designed and constructed in conformance with city standards;
j. Restricted Local or Noncirculatory Interior Streets. Thirty-two (32) feet in width, designed and constructed in conformance with city standards;
k. Access Roads. Thirty-two (32) feet in width, designed and constructed in conformance with city standards;
I. Frontage roads designed and constructed in conformance with city standards;
m. Cul-de-sac streets shall be designed and constructed in conformance with city standards;
n. Alleys. Twenty (20) feet in width, designed and constructed in conformance with city standards;
o. If exempted from full street improvements: Part-width street shall be one-half of the required improvement, plus an additional twelve (12) feet, but not less than twenty-eight (28) feet, designed and constructed in conformance with city standards;
p. Street Name Signs. Type and placement shall conform with city standards;
q. Barricades shall be placed at end of dead-end streets in conformance with city standards.
2. Domestic Water. The minimum requirement for a domestic water supply and distribution system is as follows:
a. Water Supply. Water shall be provided to meet the requirements as set forth in the California Administrative Code, Title 22, Chapter 16 (California Waterworks Standards);
b. Piped water systems.
3. Fire Protection Systems. The minimum requirement for protection facilities in residential zones that do not allow multifamily residential uses shall be as follows:

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a. Type of fire hydrant and connection as approved by the agency providing fire protection;
b. Approved fire hydrants shall be located on all city streets, and spaced as approved by Moreno Valley fire services;
c. The water system shall be capable of providing a fire flow of one thousand five hundred $(1,500)$ GPM for two hours at a minimum of twenty (20) PSI operating pressure from each fire hydrant;
d. The fire protection system shall be installed and operational prior to any combustible building material being placed on the job site; and
e. In zones that allow multifamily residential uses, the minimum fire protection shall be as set forth in applicable city ordinances.
4. Sewage Disposal. The minimum requirements for sewage disposal shall be as follows:
a. Sewage disposal shall be provided by connection to an existing collection system capable of accepting the waste load, or, if an existing collection system is not available, by the development of individual subsurface sewage disposal systems that meet the Riverside County health department and the regional water quality control board standards and requirements;
b. Improvement plans for sewage collection systems shall be reviewed as required by this chapter; and
c. Dry sewer may be required as set forth in this chapter when subsurface sewage disposal is approved.
5. Fences. Minimum fencing requirement shall be as follows: six-foot high chain link galvanized wire fence shall be installed along any canal, drain, expressway or other feature deemed to be hazardous.
6. Electrical and Communication Facilities. Minimum requirement for electrical and communication facilities shall be as follows: electrical and communication facilities shall be installed in conformity with the provisions of Section 9.14.130.
G. Schedule "C" Subdivision. Any division of land into five or more parcels where any parcel is not less than two acres in gross area up to five acres in gross area. The minimum improvement of Schedule "C" subdivision shall be as follows:

1. Streets. Unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width. All streets shall be thirty-two (32) feet in width, improved with asphalt concrete and paving, designed and constructed in conformance with city standards, unless further improvements are required on boundary streets to achieve compatibility with contiguous existing streets or street improvement requirements set forth on adjacent land division.
2. Domestic Water. The minimum requirement for a domestic water supply and distribution system is as follows:
a. No water system required. If a water system is installed, the requirements shall be as follows:
i. Water Supply. Water shall be provided to meet the requirements as set forth in the California Administrative

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Code, Title 22, Chapter 16 (California Waterworks Standards). Improvement plan review shall be as required by this chapter;
ii. Piped water systems.
b. If no water system is installed, the following statement shall be placed on each map sheet of the environmental constraints sheet, in letters not less than one-fourth inch high:
NO WATER SYSTEM IS PROVIDED FOR THE LAND DIVISION AS OF THE DATE OF RECORDATION OF THIS MAP.
3. Fire Protection. If a water system is installed, the minimum requirement for fire protection facilities in single-family residential zones shall be as approved by the fire chief as follows:
a. Type of fire hydrant and connection as approved by the agency providing fire protection;
b. Approved fire hydrants shall be located on all city streets and spaced as approved by Moreno Valley fire services;
c. The water system shall be capable of providing a fire flow of one thousand five hundred $(1,500)$ GPM for two hours duration at a minimum of twenty (20) PSI operating pressure from each fire hydrant; and
4. Sewage Disposal. The minimum requirements for sewage disposal shall be as follows:
a. No sewage disposal collection system is required; and
b. The land divider will be required to provide the Riverside County health department with a sewage disposal feasibility report in conformance with health department and the regional water quality control board standards.
5. Electrical and Communication Facilities. The minimum requirements for electrical and communication facilities shall be as follows:
a. No electrical and communication facilities are required; and
b. If installed, they shall be installed in conformance with the provisions of Section 9.14.130.
H. Schedule "D" Subdivision. Any division of land into five or more parcels, where any parcel is not less than 5 acres in gross area up to twenty (20) acres in gross area, shall be defined as a Schedule "D" subdivision. The minimum improvements of a Schedule "D" subdivision shall be as follows:

1. Streets. Unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width.
a. If the streets are not to be accepted for maintenance by the city, all streets shall be improved with twenty-four (24) feet of suitable aggregate base, four inches thick, on a forty-foot graded roadway section. Vertical grades and horizontal alignments shall be held to an acceptable tolerance as determined by the city engineer;
b. If the streets are to be accepted for maintenance by the city, the improvements shall be the same as those required for Schedule "C" subdivisions;

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c. Access road shall be a minimum eighteen-foot wide graded roadbed section engineered to a profile and alignment as approved by the city engineer, which provides access to a paved and maintained street or highway.
2. Domestic Water. The minimum requirement for a domestic water supply and distribution system is as follows:
a. No Water System Required. If a water system is installed, the requirements shall be as follows:
i. Water Supply. Water shall be provided to meet the requirements as set forth in the California Administrative Code, Title 22, Chapter 16 (California Waterworks Standards). Improvement plan review shall be as required by this chapter;
ii. Piped water systems.
b. If no water system is installed, the following statement shall be placed on each map sheet of the recorded land division map, in letters no less than one-fourth inch high:
NO WATER SYSTEM IS PROVIDED FOR THE LAND DIVISION AS OF THE DATE OF RECORDATION OF THIS MAP.
3. Fire Protection.
a. If a water system is installed, the minimum requirements for fire protection facilities in single-family residential zones shall be as approved by the fire chief or as follows:
i. The water system shall be capable of providing a fire flow of one thousand five hundred $(1,500)$ GPM for two hours duration at a minimum of twenty (20) PSI operating pressure from each fire hydrant; and
ii. Approved fire hydrants shall be located on all city streets and spaced as approved by the fire prevention bureau.
4. Sewage Disposal. The minimum requirements for sewage disposal shall be as follows:
a. No sewage disposal collection system is required; or
b. The land divider will be required to provide the health department with a sewage disposal feasibility report in conformance with the Riverside County health department and the regional water quality control board standards.
5. Electrical and Communication Facilities. The minimum requirements for electrical and communication facilities shall be as follows:
a. No electrical and communication facilities are required; and
b. If installed, they shall be installed in conformance with the provisions of Section 9.14.130.
I. Improvements for Parcel Map Divisions.

1. The minimum improvements which a land divider shall install, or enter into an agreement to install, for parcel map divisions shall be as hereinafter set forth in Schedule "E," "F," "G," "H" and "I".

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J. Schedule "E" Parcel Map Division. Any division of land into two or more parcels in commercial or industrial zones, regardless of parcel size shall be described as a Schedule " $E$ " parcel map division. The minimum improvements for a Schedule " $E$ " parcel map division shall be as follows:

1. Streets. Unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width. The minimum improvements for streets are established as follows:
a. All through streets shall be sixty-four (64) feet in width, designed and constructed in conformance with city standards;
b. No circulatory streets shall be less than fifty-six (56) feet in width, designed and constructed in conformance with city standards;
c. If exempted from full street improvements: No part-width interior street shall be less than thirty-four (34) feet in width;
d. Concrete curb and gutter shall be required in all cases;
e. Industrial collector streets shall be fifty-six (56) feet in width, designed and constructed in conformance with city standards;
f. Sidewalks may be required to be constructed unless they are determined by the approving body to be unnecessary considering the design of the development. Sidewalk construction shall be in accordance with city standards;
g. Access roads, thirty-two (32) feet in width, designed and constructed in conformance with city standards.
2. Domestic Water. The minimum requirements for domestic water supply and distribution system is as follows:
a. Water Supply. Water shall be provided to meet the requirements as set forth in the California Administrative Code, Title 22, Chapter 16 (California Waterworks Standards). Improvement plan review shall be as required by this chapter; and
b. Piped water systems.
3. Fire Protection. The minimum fire protection requirements shall be as provided in applicable city ordinances.
4. Sewage Disposal. The minimum requirement for sewage disposal shall be as follows:
a. Sewage disposal shall be provided by connection to an existing collection system capable of accepting the waste load, or, if an existing collection system is not available, by the development of individual subsurface sewage disposal systems that meet health department and the regional water quality control board standards and requirements;
b. Improvement plans for sewage collection systems shall be reviewed as required in this chapter;
c. Dry sewer may be required as set forth in Section 9.14.120 when subsurface sewage disposal is approved.
5. Fences. Minimum requirement for fencing shall be as follows: six-foot high chain link galvanized wire fence shall be installed along any canal, drain, expressway or other feature deemed to be hazardous.

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6. Electrical and Communication Facilities. The minimum requirements for electrical and communication facilities shall be as follows: electrical and communication facilities shall be installed in conformity with the provisions of Section 9.14.130.
K. Schedule "F" Parcel Map Division. Any division of land into four or less parcels, where any parcel is less than eighteen thousand $(18,000)$ square feet in net area, shall be defined as a Schedule "F" parcel map division. The minimum improvements for a Schedule "F" parcel map division shall be as follows:
7. Streets. Unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width. The minimum improvements for streets are established as follows:
a. Divided Major Arterial. One hundred ten (110) feet in width, designed and constructed in conformance with city standards;
b. Modified Divided Major Arterial. One hundred two (102) feet in width, designed and constructed in conformance with city standards;
c. Divided Arterial. Eight-six (86) feet in width, designed and constructed in conformance with city standards;
d. Arterial. Seventy-six (76) feet in width, designed and constructed in conformance with city standards;
e. Minor Arterial. Sixty-four (64) feet in width, designed and constructed in conformance with city standards;
f. Industrial Collector. Fifty-six (56) feet in width, designed and constructed in conformance with city standards;
g. Collector Streets. Forty-four (44) feet in width, designed and constructed in conformance with city standards;
h. General Local Streets. Forty (40) feet in width, designed and constructed in conformance with city standards;
i. Short Local or Circulatory Interior Streets. Thirty-six (36) feet in width, designed and constructed in conformance with city standards;
j. Restricted Local or Noncirculatory Interior Streets. Thirty-two (32) feet in width, design and constructed in conformance with city standards;
k. Access Roads. Thirty-two (32) feet in width, designed and constructed in conformance with city standards;
I. Frontage roads designed and constructed in conformance with city standards;
m . Cul-de-sac streets shall be designed and constructed in conformance with city standards;
n. Alleys. Twenty (20) feet in width, designed and constructed in conformance with city standards;
o. If exempted from full street improvements: Part-width streets shall be one-half of the required improvement, plus an additional twelve (12) feet, but not less than twenty-eight (28) feet, designed and constructed in conformance with city standards;
p. Street Name Signs. Type and placement shall conform with city standards;

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q. Barricades shall be placed at end of dead-end streets in conformance with city standards.
2. Domestic Water. The minimum requirement for a domestic water supply and distribution system is as follows:
a. Water Supply. Water shall be provided to meet the requirements as set forth in the California Administrative Code, Title 22, Chapter 16 (California Waterworks Standards). Improvement plan review shall be as required by this chapter;
b. Piped water systems.
3. Fire Protection Systems. The minimum requirement for protection facilities in residential zones that do not allow multifamily residential uses shall be as follows:
a. Type of fire hydrant and connection as approved by the agency providing fire protection;
b. Approved fire hydrants shall be located on all city streets and spaced as approved by the fire prevention bureau;
c. The water system shall be capable of providing a fire flow of one thousand five hundred $(1,500)$ GPM for two hours at a minimum of twenty (20) PSI operating pressure from each fire hydrant;
d. The fire protection system shall be installed and operational prior to any combustible building material being placed on the job site; and
e. In zones that allow multifamily residential uses, the minimum fire protection shall be as set forth in city standards.
4. Sewage Disposal. The minimum requirements for sewage disposal shall be as follows:
a. Sewage disposal shall be provided by connection to an existing collection system capable of accepting the waste load, or, if an existing collection system is not available, by the development of individual subsurface sewage disposal systems that meet the Riverside County health department and the regional water quality control board standards and requirements;
b. Improvement plans for sewage collection systems shall be reviewed as required by this chapter; and
c. Dry sewer may be required as set forth in Section 9.14.120 when subsurface sewage disposal is approved.
5. Fences. Minimum fencing requirement shall be as follows: six-foot high chain link galvanized wire fence shall be installed along any canal, drain, expressway or other feature deemed to be hazardous.
6. Electrical and Communication Facilities. Minimum requirement for electrical and communication facilities shall be as follows: electrical and communication facilities shall be installed in conformity with the provisions of Section 9.14.130.
L. Schedule "G" Parcel Map Division. Any division of land into four or less parcels, where any parcel is not less than eighteen thousand $(18,000)$ square feet in net area up to one acre in gross area, shall be defined as a Schedule "G" parcel map

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division. The minimum improvements for Schedule "G" parcel map division shall be as follows:

1. Street. Unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width. The minimum improvements for streets are established as follows:
a. Divided Major Arterial. One hundred ten (110) feet in width, designed and constructed in conformance with city standards;
b. Modified Divided Major Arterial. One hundred two (102) feet in width, designed and constructed in conformance with city standards;
c. Divided Arterial. Eighty-six (86) feet in width, designed and constructed in conformance with city standards;
d. Arterial. Seventy-six (76) feet in width, designed and constructed in conformance with city standards;
e. Minor Arterial. Sixty-four (64) feet in width, designed and constructed in conformance with city standards;
f. Industrial Collector. Fifty-six (56) feet in width, designed and constructed in conformance with city standards;
g. Collector Streets. Forty-four (44) feet in width, designed and constructed in conformance with city standards;
h. General Local Streets. Forty (40) feet in width, designed and constructed in conformance with city standards;
i. Short Local or Circulatory Interior Streets. Thirty-six (36) feet in width, designed and constructed in conformance with city standards;
j. Restricted Local or Noncirculatory Interior Streets. Thirty-two (32) feet in width, designed and constructed in conformance with city standards;
k. Access Roads. Thirty-two (32) feet in width, designed and constructed in conformance with city standards;
I. Frontage roads designed and constructed in conformance with city standards;
m. Cul-de-sac streets shall be designed and constructed in conformance with city standards;
n. Alleys. Twenty (20) feet in width, designed and constructed in conformance with city standards;
o. If exempted from full street improvements: Part-width streets shall be one-half of the required improvement, plus an additional twelve (12) feet, but not less than twenty-eight (28) feet, designed and constructed in conformance with city standards;
p. Street Name Signs. Type and placement shall conform with city standards;
q. Barricades shall be placed at end of dead-end streets in conformance with city standards.
2. Domestic Water. The minimum requirement for a domestic water supply and distribution system is as follows:
a. No Water System Required. If a water system is installed, the requirements shall be as follows:

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i. Water Supply. Water shall be provided to meet the requirements as set forth in the California Administrative Code, Title 22, Chapter 16 (California Waterworks Standards). Improvement plan review shall be as required by this chapter; and
ii. Piped water systems.
b. If no water system is installed, the following statement shall be placed on each map sheet of the environmental constraints sheet, in letters no less than one-fourth inch high:
NO WATER SUPPLY IS PROVIDED FOR THE LAND DIVISION AS OF THE DATE OF RECORDATION OF THIS MAP.
3. Fire Protection. The minimum improvements for fire protection shall be as required by the city fire prevention bureau and applicable city ordinances.
4. Sewage Disposal. The minimum requirements for sewage disposal shall be as follows:
a. No sewage disposal collection system is required; however, the land divider may be required to provide the Riverside County health department with a sewage disposal feasibility report in conformance with health department and regional water quality control board standards.
b. Construct a dry sewer system as approved by the city engineer.
5. Electrical and Communication Facilities. Minimum requirement for electrical and communication facilities shall be as follows:
a. No electrical and communication facilities are required; and
b. If installed, they shall be installed in conformity with the provision of Section 9.14.130.
M. Schedule "H" Parcel Map Division. Any division of land into four or less parcels, where all parcels are not less than one acre in gross area, shall be defined as a Schedule "H" parcel map division. The minimum improvements for a Schedule "H" parcel map division shall be as follows:

1. Streets. Unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width. The minimum improvements for streets shall be as follows:
a. If the streets are not to be accepted for maintenance by the city, all streets shall be improved with twenty-four (24) feet in width of fourinch thick base material (minimum R of 60 , minimum sand equivalent of 20) on a thirty-two-foot minimum graded roadway section, unless difficult topography dictates a lesser graded section no less than eighteen (18) feet in width. Vertical grades and horizontal alignment shall be shown on an improvement plan detailing the construction requirement for grading and drainage as approved by the city engineer.
b. If the streets are to be accepted for maintenance by the city, the improvement shall be as follows:
i. All streets except as noted in subsection (M)(1)(b)(ii) of this section shall be not less than thirty-two (32) feet in width,

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improved with asphalt concrete paving, designed and constructed in conformance with city standards, unless further improvements are required on boundary streets to achieve compatibility with contiguous existing streets or street improvement requirements set forth on adjacent land divisions; and
ii. Noncirculatory streets located in an area where the geography will not sustain parcels of lesser size may have the streets section reduced to twenty-eight (28) feet in width. The street shall be improved with asphalt concrete paving, designed and constructed in conformance with city standards.
c. Improvements required on general plan streets, collector or greater, shall be at the same level as exists, or for which improvements have been bonded on a contiguous parcel of land.
d. Access roads shall be a minimum eighteen-foot wide graded roadbed section designed and constructed to a profile and alignment as approved by the city engineer which provides access to a paved and maintained street or highway.
2. Other Improvements. Domestic water, fire protection facilities and electrical and communication facilities shall be as necessary per applicable city ordinances.
3. Sewage Disposal. The minimum requirements for sewage disposal shall be as follows: no sewage disposal collection system is required; however, the land divider may be required to provide the health department with a sewage disposal feasibility report in conformance with health department and regional water quality control board standards.
4. Agricultural Lands. The following agricultural lands shall be exempt from all improvement requirements specified within this section:
a. Lands lying within an established agricultural preserve formed pursuant to the Williamson Act;
b. Lands (parcels) zoned AG and identified in the general plan as agriculture and not less than five acres in size.
5. Exceptions. For the purpose of this section, any parcel map division located in its entirety within a community services district, the following exception shall apply:
Whenever in this title reference is made to any street design, standard, minimum improvements, maintenance, access, or dedication thereof, the adopted street standards of the city shall apply in meeting any street requirements for land division approval, provided the city engineer has previously approved such standards. The land divider shall submit to the city engineer a street construction permit issued by the city approving the proposed street construction.
N. Schedule "I" Parcel Map Division. Any division of land, where all parcels are not less than twenty (20) acres in gross area, shall be defined as a Schedule "I" parcel map division. The land divider may be required to provide soil percolation tests in conformity with city requirements and the regional water quality control board. No

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improvements are required on a Schedule "l" parcel map division, subject to the condition that an adequate circulation system is retained or replaced. If replaced, unless otherwise determined by the City Engineer, subdivision street improvements shall be constructed to full-width.
O. Drainage Fees.

1. This section is adopted pursuant to Sections 66483 et seq., of the Government Code which provides for the payment of fees for the construction of drainage facilities as a condition to the division of land.
2. Whenever land that is proposed to be divided lies within the boundaries of an area drainage plan, a drainage fee in the amount required by the plan for the area, as adopted or thereafter amended, shall be required as a condition of approval of the division of land in that drainage area.
3. Each area drainage plan as adopted, pursuant to the provision of Government Code Sections 66483 et seq., shall cover a particular drainage area; shall contain an estimate of the total cost of constructing the drainage facilities required by the plan, and include a map of the area that shows the boundaries of the drainage area and the location of the required facilities serving the drainage area. As a part of the adoption of a plan, the city shall find and determine that the subdivision and development of land within the plan area will require construction of the facilities described in the plan. The city shall further find and determine that the drainage fees are fairly apportioned within the local drainage area, on the basis of benefits conferred on property proposed for subdivision or on the land for local drainage facilities created by the proposed subdivision and development of other properties within the adopted drainage area, and may provide for varying fees; provided, however, the fee as to any property proposed for subdivision within a drainage area shall not exceed the pro rata share of the amount of the total actual or estimated cost of all facilities within the drainage area apportioned uniformly on a per acre basis.
4. Drainage fees shall be paid at the time of the filing of the final map or parcel map, or as a condition of the waiver of the filing of a parcel map; provided, however, at the option of the land divider the fee may be paid, in pro rata amounts, at the time of the issuance of grading permits for the approved parcels or at the time of issuance of building permits if no grading permits are issued for the parcels. The amount of the drainage fee required to be paid shall be the amount that is in effect for the particular area drainage plan at the time of actual payment of the fee. If the land divider elects to have payment made at the time of issuance of grading permits for the approved parcels or at the time of issuance of building permits if no grading permits are issued for the parcels, the amount of the drainage fee required to be paid shall be the amount that is in effect for the particular area drainage plan at the time of actual payment of the fee. If the land divider elects to have payment made at the time of issuance of a grading or building permit, the recorded final map or parcel map or certificate of compliance evidencing the waiver of the filing of a parcel map shall specifically state that payment of a drainage fee is required to be paid prior to issuance of a grading permit or

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building permit for the parcels that have been created by the land divider. In addition, a separate instrument shall be recorded by the land divider in the office of the county recorder of Riverside County, at the time of the filing of the final map or parcel map, which gives notices that the drainage fee is required to be paid by any person owning such parcels prior to issuance of a grading or building permit, if a grading permit is not required.
5. If the drainage fee is paid at the time of filing of the final map or parcel map or certificate of compliance evidencing the waiver of the parcel map, it shall be paid to the Riverside County flood control district. If the drainage fee is paid at the time of issuance of a grading or building permit, it shall be paid to the Riverside County flood control district. All fees that are collected shall thereafter be deposited into a local drainage facilities fund maintained under the jurisdiction of the Riverside County flood control and water conservation district. A separate fund shall be established by the district for each adopted local drainage area. Money in such funds shall be expended for construction or reimbursement for construction, including acquisition of right-of-way necessary for construction, of the drainage facilities serving the drainage areas for which the fees are collected, or to reimburse the district for the cost of engineering and administrative services to design and construct and acquire any necessary right-of-way for the facilities.
6. Under the direction of the city engineer, considerations such as dedications of right-of-way, actual construction, or design work by a civil engineer may be accepted in lieu of the payment of drainage fees, upon a determination that the alternative is acceptable and is equal to or greater in value than the required fee.
7. Money may be advanced by the Riverside County flood control and water conservation district to design or construct drainage facilities or to acquire necessary right-of-way within an adopted drainage area; therefore, money so advanced may be reimbursed to the district from the fund for the local drainage area in which the facilities are located.
8. When required for the implementation of an adopted area plan, an agreement may be entered into between a developer and the Riverside County flood control and water conservation district whereby the developer may advance money for the construction of facilities, or design or construct facilities within a local drainage area; provided that the sole security to the developer for repayment of money or other consideration advanced shall be for the amount agreed upon in advance only and shall not include interest or other charges. This agreement shall expire fifteen (15) years after the date it was entered into, and any subsequent money paid into the fund shall accrue to the fund without obligation to developers whose agreements have expired.
9. The drainage plan area, the required facilities and the drainage fee in an adopted plan may be amended by the county board of supervisors at any time upon a determination that it is necessary to do so in order to correctly reflect the drainage area, the required facilities or estimated cost of the facilities.

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P. Interchange and Bridge Construction Fees.

1. This section is adopted pursuant to Section 66484 of the Government Code which provides for the payment of fees to defray the actual or estimated costs for the construction of bridges and interchanges as identified in the circulation element of the general plan and as a condition of approval of a final map or as a condition of issuing a building permit.
2. Whenever land that is proposed to be divided or for which a building permit is sought lies within the boundaries of an area of benefit, as hereinafter defined and established, a fee in the amount specified by the resolution establishing the area of benefit as adopted or thereafter amended, shall be required as a condition of approval and recordation of any final subdivision or parcel map or for the issuance of a building permit. No property shall be assessed a fee under this section for both a final map and a building permit.
3. Setting the Matter For Public Hearing. The city council may, by resolution, set a public hearing at any time to determine whether an area of benefit is to be established and to designate the bridge and interchange(s) from fees collected from owners of real property within such area of benefit. The city clerk shall notify all owners of real property within the proposed boundaries of the area of benefit, as shown by the last equalized assessment roll of the county, of the time and place of the hearing at least twenty-one (21) days prior to the date of the hearing, by U.S. mail, postage prepaid, and by publication once in a newspaper of general circulation published in the city. Such notice shall contain information setting forth the proposed boundaries of the area of benefit, identifying the interchange(s) and/or bridge(s) to be constructed and the estimated cost of each, and setting forth the proposed method for equitably apportioning the fee amount to property owners.
4. Public Hearing and Protest. At the public hearing the city council will consider the preliminary plan prepared by the city engineer that outlines the area to be included within the area of benefit, designates those bridge(s) and/or major interchange(s) to be constructed, the cost estimate with regard to each improvement, and the method of apportioning fees within the area of benefit. The city council will also consider testimony from interested persons, written protest and all relevant evidence submitted. All protests are to be in writing and may be filed with the city clerk at any time period or the close of the public hearing. Each protest may be filed by a person or entity owning property within the proposed boundaries of the proposed area of benefit and describe the property with sufficient specificity that the parcel may be identified. If the person or entity filing the protest is not shown on the latest equalized assessment roll as the owner of the parcel, the protest may contain or be accompanied by documentary evidence establishing ownership. A protest may be withdrawn in writing at any time prior to the conclusion of the public hearing. If written protests are filed with the city clerk from persons or entities owning more than fifty (50) percent of the land area to be included within the proposed area of benefit and, by the conclusion of the public hearing, a sufficient number of such protests have not been withdrawn so as to reduce the land area whose owners are

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protesting to less than fifty (50) percent, then all proceedings with regard to the area of benefit shall be abandoned and the city council shall not, for one year from the date of the hearing, commence or carry on any proceeding for the same improvement or area of benefit under the provisions of this section. If any majority protest is directed against only a portion of the designated improvement, then all further proceedings under the provisions of this section to construct that portion of the designated improvement so protested against shall be barred for a period of one year, but the city council shall not be barred from commencing new proceedings not including any part of the designated improvements or acquisition so protested against. The city council may, within a one-year period following a majority protest, commence new proceedings for the construction of the portion of the designated improvements so protested against, if it finds by the affirmative vote of four-fifths of its members, that the owners of more than one-half of the property to be benefitted are in favor of going forward with such portion of the designated improvements.
5. Establishment of Areas of Benefit. The city council, by resolution, within a reasonable time after the close of public hearing, may establish the area of benefit. Such resolution shall set forth the boundaries of the area of benefit, specify the designated improvements to be constructed, the cost, actual or estimated, for each of the designated improvements, and establish the fee schedule by which such cost is to be equitably apportioned among the parcels comprising the area of benefit. The decision of the city council represented by such resolution shall be final. A certified copy of such resolution shall be recorded in the office of the county recorder. The method of fee apportionment, in the case of major thoroughfares, shall not provide for higher fees on land which abuts the designated improvement except where the abutting property is provided direct usable access to the adjoining thoroughfare. The resolution establishing an area of benefit, may be amended from time to time by the city council to reflect modification in either the facilities to be constructed or the area to be included within the area of benefit due to alternation in land use and to reflect adjustments in the fee schedule necessitated by any amendment or increase in construction costs. Such amendments shall be adopted in the same manner as the original resolution. If the area of benefit includes lands not subject to the payment of fees, the city council shall make provisions for payment of the fees that would otherwise be chargeable to such lands from other sources. The designation of such alternative funding need not be addressed in the resolution establishing the area of benefit.
6. Payment of Fees.
a. Interchange improvement fees for areas of benefit shall be paid as follows:
i. Interchange improvement fees shall be paid to the city engineer prior to the recordation of a final subdivision or parcel map. If the recordation of a final parcel map is waived, road improvement fees shall be paid as a condition of the waiver

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prior to recordation of a certificate of compliance evidencing the waiver of the final parcel map. The fees paid shall be based on the fee schedule in effect on date of payment;
ii. At the option of the land divider, upon filing a required affidavit requesting deferment of the payment of fees, the road improvement fees shall be paid to the city engineer prior to issuance of a building permit for each approved parcel; however, should a building permit have been obtained or construction initiated by the land divider prior to the recordation of the final subdivision or parcel map or the receipt of a waiver to record a final parcel map, this option is not available to the land divider; and
iii. For any parcel or lot created prior to the adoption of the resolution establishing the area of benefit, road improvement fees shall be paid to the city engineer prior to the issuance of a building permit for any new construction on such parcel or lot that creates additional dwelling units or increases the value of nonresidential structures by more than one-half of their current market value, as determined by the community development director. All fees collected shall be deposited in a separate account designated for each area of benefit. Any fees once collected shall not be returned, except as reimbursement for the construction of designated improvements. Road improvement fees which are deferred to the time of issuance of a building permit shall be based upon the fee schedule in effect at the time of issuance of the permit.
b. Nothing in this section is intended to relieve a subdivision or application for a building permit from the requirements imposed under other provision of this title or other city ordinances to dedicate and improve roads as a condition of approval of a tentative map or building permit.
c. Notwithstanding the provisions of subsection $(P)(6)$ of this section, payment of fees shall not be required for the following:
i. An application for a building permit for the alteration or enlargement of any existing building or structure, or the erection of one or more buildings or structures accessory thereto, or both, on the same lot or parcel of land; provided, however, that the total value, as determined by the community development director; of all such alterations, enlargement or construction which is complete within any one-year period shall not exceed one-half of the current market value of the land, as determined by the community development director; or
ii. The following accessory buildings and structures: private garages, children's playhouses, radio and television receiving antennas, windmills, silos, tank houses, shops or barns or

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buildings that are accessory to one-family or two-family dwellings; or
iii. Outdoor advertising structures; or
iv. Wells.
d. Notwithstanding the provision of subsection $(P)(6)$ of this section, payment of fees shall not be required unless the designated interchange(s) are in addition to, or a reconstruction of any existing interchange(s) serving the area of benefit at the time of the adoption of the boundaries for the area of benefit.
e. Notwithstanding the provisions of subsection $(P)(6)$ of this section, payment of fees shall not be required unless the designated bridge is an original bridge serving the area or an addition to any existing bridge facility serving the area of benefit. Fees imposed by this subsection shall not be expended to reimburse the cost of existing bridge facility construction.
7. Use of Funds.
a. Fees shall be deposited in a designated bridge or interchange fund. A separate fund shall be established for each designated bridge or interchange project, provided, however if the area of benefit is one in which more than one bridge or interchange is required to be constructed, a fund may be established covering all of the bridge or interchange projects in the area of benefit. Moneys in such fund shall be expended solely for the construction or reimbursement for construction of the improvement serving the area to be benefitted and from which the fees comprising the fund were collected, or to reimburse the city for the cost of constructing the improvement.
b. The city may advance money from its general fund or road fund to pay the cost of constructing the designated bridge or interchange(s) and may reimburse the general fund or road fund for such advances from the bridge or interchange funds established pursuant to this section.
c. The city may incur an interest bearing indebtedness for the construction of a designated bridge or an interchange planned pursuant to this section; provided, that the sole security for repayment of such indebtedness shall be money in the specific fund established for that designated bridge or interchange.
d. At the discretion of the city council, considerations such as dedication of right-of-way, actual construction or design work by a civil engineer, may be accepted in lieu of the payment of fees, upon a determination that the alternative is acceptable and is equal to or greater in value than the required fee.
e. When required to implement the construction of a specific facility, a project agreement shall be entered into between a developer and the city whereby the developer may advance money for the construction of a facility, or design or construct a facility within the area of benefit; provided, that the sole security to the developer for repayment of

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money or other consideration advanced over and above his fair share shall be money subsequently accruing to the fund that has been established for the specific facility. Reimbursement shall be for the amount agreed upon in advance only and the right to reimbursement shall expire fifteen (15) years after the agreement was entered into, and any subsequent money paid into the fund shall accrue to the fund without obligation to developers whose agreements have expired.
8. Amendments. The resolution establishing an area of benefit may be amended by the city council as to boundaries of the area of benefit, the designation of facilities to be constructed or the estimated cost thereof, or any other aspect thereof, by following the same procedure required to establish an area of benefit.
Q. Park and Recreation Fees and Dedications.

1. This section is adopted pursuant to Section 66477 of the Government Code which provides for the dedication of land for park and recreational facilities as a condition of approval of a tentative map or parcel map.
2. Whenever land that is proposed to be divided for residential use lies within the boundaries of the city, the dedication of land may be required as a condition of approval of the division of land, as herein provided. The city shall have the option of requiring dedication of land for park purposes as a condition of approval of subdivisions of fifty (50) parcels or more. Such dedication shall be in lieu of park land impact mitigation fees.
3. It is found and determined by the city council that the public interest, convenience, health, welfare and safety requires that five acres of land for each one thousand $(1,000)$ persons residing within the city shall be devoted to neighborhood and community park and recreational facilities, based upon the determination by the city council that the amount of existing neighborhood and community park areas, as calculated pursuant to Government Code Section 66477, exceeds the limit set forth therein, and the calculated amount of five acres per one thousand $(1,000)$ persons residing within a subdivision subject to this section is established. No credit shall be given to a subdivider for provision of private open space, private parks, private recreational areas, landscaped setbacks or landscaped road dividers within or adjacent to the proposed subdivision.
4. Exemptions. This section shall not apply to the following land divisions:
a. Commercial or industrial;
b. Condominium projects or stock cooperatives which consist of the subdivision of airspace in an existing apartment building which is more than five years old and as to which no new dwelling units have been added by the subdivision;
c. Subdivisions containing less than five parcels and not used for residential purposes; provided, however, that a condition of approval shall be placed on those maps that if a building permit is requested for the construction of a residential structure or structures on one or more of the parcels within four years after recordation of the

## Exhibit G

subdivision map, the park land impact mitigation fees shall be required to be paid by the owner of each parcel as a condition to issuance of such permit.
5. Dedication Requirements of Subdividers.
a. Whenever a tentative tract map which is subject to the provisions of this section is submitted to the community development director, it shall be accompanied by a written statement from the applicant stating whether it is intended to dedicate land for park and recreational purposes. If the developer desires to dedicate land for this purpose, he shall first consult with the community development director and parks and recreation director as to the appropriate area to be dedicated, and such area shall be shown on the proposed tentative tract map as submitted. All dedications must be approved and accepted by the city council.
b. The conditions of approval of a tentative tract map subject to the provisions of this section shall require the dedication of land for park and recreational purposes. If land is to be dedicated, the proposed dedication shall be shown on the approved tentative map.
c. The amount and location of property to be dedicated shall be recommended by the parks and recreation director and determined by the city council.
d. All dedications of land shall be in accordance with the Subdivision Map Act. Land shall be conveyed in fee simple to the city by grant deed free and clear of all encumbrances, except those which will not interfere with the use of the property for its intended purposes and which the city agrees to accept. All deeds shall be delivered to the city before the approval of the final map. If the final map is disapproved, or if it is withdrawn by the subdivider, the deeds shall be returned to the subdivider. If the final map is approved, the deeds shall be recorded by the city at the time the final map is recorded. No deed for the dedication of land shall be accepted unless it is accompanied by a policy of title insurance, secured by and at the expense of the subdivider, in an amount equal to the value of the land dedicated.
e. Whenever land has been conveyed to the city and a final map is not recorded, or, if recorded, the land is thereafter reverted to acreage, the city shall, at its option, either reconvey all land dedicated to it, allow the developer a credit for any land dedicated to be applied only to a new subdivision on the same property, or make other arrangements with the subdivider.
6. Determination of Land Dedication. When the conditions of approval for a land division require the dedication of land, the conditions shall be based on the following:
a. The natural features of the area; available access; the location, size and shape of the subdivision; the location, size and shape of the land available for dedication; the feasibility of dedication; the location of

## Exhibit G

existing and proposed park sites and trailways; and the compatibility of dedication with the city general plan;
b. Whenever the actual amount of land to be dedicated is less than the amount of land required to be dedicated, the subdivider shall pay park land impact mitigation fees for the value of any additional land that otherwise would have been required to be dedicated;
c. The amount and location of the land to be dedicated shall bear a reasonable relationship to the use of the park and recreational facilities by the future inhabitants of the subdivision;
d. The amount of land to be dedicated shall be based on the residential density of the subdivision. The residential density shall be determined by multiplying the number of dwelling units of the subdivision by the average number of persons per unit by the ratio which the number of acres of park land required for each one thousand $(1,000)$ persons bears to one thousand $(1,000)$ (i.e., .005). The average number of persons per unit shall be the most recent such average established by the Department of Finance of the state of California;
e. Whenever land is dedicated pursuant to this section, the subdivider shall, without credit and without cost to the city, provide the following for the benefit of the land dedicated:
i. Full street improvements and utility connections, including, but not limited to, curbs, gutters, relocation or undergrounding of existing public utility facilities, street paving, traffic control devices, street trees and sidewalks to the dedicated land;
ii. Block wall fencing along the property lines of the subdivision which are contiguous to the park;
iii. Improve the drainage through the park site;
iv. Provide minimal physical improvements, not including recreational facilities, building or equipment, which the parks and recreation director determines are necessary for acceptance of the land for park and recreational purposes;
v. Provide access from the park and recreational facilities to an existing or proposed public street, unless the parks and recreation director determines that such access is unnecessary for maintenance of the park area or use of the park by the residents of the area;
vi. Grading and drainage improvements, and irrigation and planting improvements, as required under applicable city ordinances. All land to be dedicated and improvements to be made shall be approved by the city prior to the approval or disapproval of a subdivision by the city;
vii. All grading plans for land to be dedicated shall be reviewed and approved by the parks and recreation director for conformance with the city parks and recreation plan and the needs of the city;

## Exhibit G

viii. No grading, drainage, irrigation, planting, street or utility improvements required under this section shall be eligible for a credit against the land to be dedicated; however, park and recreational improvements to a dedicated park land shall be a credit against the required dedication.
f. Land which has been dedicated and accepted may be sold by the city if the subdivider has not begun substantial construction on the subdivision within two years after recordation of the final map and the city determines that another site would be more suitable for park or recreational facilities. The proceeds from the sale of the dedicated land must be used for the purpose or improvement of the more suitable site.

## Exhibit H

## Article IV. Applications for Hillside Development Permit

### 9.16.170 Generally.

Hillside development can offer opportunities for spectacular views from building sites around the valley's perimeter. It is important, however, to ensure that all are protected when designing hillside building sites. The guidelines in this section apply to the hillside areas illustrated in the general plan and official zoning atlas. Applicant's compliance with this chapter shall be reviewed during the planning application review process for any entitlements subject to this chapter. No separate planning application or fee is required for hillside development projects.

Report to City Council
TO: Mayor and City Council
FROM: Launa Jimenez, Chief Financial Officer
AGENDA DATE:
December 19, 2023
TITLE:
RECEIVE THE ANNUAL AB1600 COMPLIANCE REPORT FOR FISCAL YEAR 2022-23

## RECOMMENDED ACTION

## Recommendations:

1. Receive and file the Annual AB 1600 Compliance Report for FY 2022-23 in compliance with California Government Code sections 66006 and 66001.
2. Approve the finding that staff has demonstrated a continuing need to hold unexpended Development Impact Fees.

## SUMMARY

Government Code Section 66006 requires cities that impose impact fees to render an annual accounting of the fees and to provide findings that support the retention of any fees that have been held in excess of five years and remain unexpended or have not been committed to projects. The City has no Development Impact Fees (DIF) that are unexpended and uncommitted for a period of five years or more.

Government Code Section 66001 requires cities that impose impact fees must make certain findings described in section 66001(d)(1) every five years as a component of the annual report.

The information included in this staff report is provided to comply with State law.

## DISCUSSION

Government Code Section 66006 requires cities imposing impact fees to undertake an annual accounting of such fees and that the accounting be made available for public review. The accounting must provide the beginning and ending balances for the fiscal
year, receipts, disbursements, interest earned and any other income that was received. The report must also include a description of how the fees were expended during the past year. If fees are unexpended, whether committed or uncommitted for a period of five or more years, the report must include a finding regarding the continuing need for the fees. If a continuing need cannot be shown, State law requires that the City refund the unused, uncommitted fees. The City's report contains no such instances of Development Impact Fees that remain unexpended and uncommitted.

The attached Annual AB 1600 Compliance Report is for the fiscal year ended June 30, 2023, and has been prepared in compliance with the California Government Code Section 66006 regarding the annual accounting for impact fees.

This report does not include any findings that require the return of unexpended or uncommitted DIF fees. This report does make a finding for continuing to hold previously collected development impact fees since all funds collected and held by the City as of June 30, 2023, within each of the 13 respective Development Impact Fee funds, have been designated for specific capital projects, consistent with the Development Impact Fee Study Final Report approved by the City Council on February 15, 2022, and the Capital Improvement Plan approved by the City Council on June 6, 2023.

Government Code Section 66001(d)(1) requires that at least every five years certain findings be made with respect to each impact fee being assessed. The following information is provided to satisfy the four requirements of this code section:
(A) Identify the purpose to which the fee is to be put - The purpose of the development impact fee program is to ensure that new development is paying its share of the transportation infrastructure and facility costs associated with the growth resulting from that development. The program includes projects related to Arterial Street Improvements, Traffic Signal Improvements, Fire Facilities, Police Facilities, Park Improvements, Recreation Centers, Libraries, City Hall, Corporate Yard, Interchange Improvements, Maintenance Equipment, Animal Shelter Facilities, Workforce Development, Public Art and Impact Fee Administration.
(B) Demonstrate a reasonable relationship between the fee and the purpose for which it is charged - The fees are based on the relationship between the needed infrastructure and facility costs associated with the growth resulting from new development.
(C) Identify all sources and amounts of funding anticipated for incomplete improvements - Facilities to be funded from development impact fees are also funded by other sources including gas tax, Measure A, General Fund, and grant funding. The specific funding sources utilized for each project depend on funds availability at the time a project is moved forward.
(D) Designate the approximate dates on which the funding is expected to be deposited into the appropriate account or fund - The receipt of funding and the construction of improvements is dependent upon when undeveloped

Page 2
land remaining in the City is developed. Facilities constructed utilizing development impact fee funding are constructed when all required funding is available and the City Engineer has determined that it is appropriate for the project to move forward.

## ALTERNATIVES

The following alternatives are available to the City Council:

1. Approve and accept the Annual AB 1600 Compliance Report for FY 2022/23 in compliance with California Government Code Section 66006 and approve the finding that staff has demonstrated a continuing need to hold unexpended Development Impact Fees. Staff recommends this alternative to comply with the reporting requirements of the California Government Code.
2. Approve and accept the Annual AB 1600 Compliance Report for FY 2022/23 in compliance with California Government Code Section 66006 but reject the finding that staff has demonstrated a continuing need to hold unexpended Development Impact Fees. Staff does not recommend this alternative in that this action could result in the need to refund unexpended fees such that projects and debt service intended to be funded through these fees would be left without a funding source.

## FISCAL IMPACT

There is no fiscal impact resulting from the recommended action; the information included in the staff report is provided to comply with State law.

## NOTIFICATION

Publication of the agenda. The Annual AB 1600 Compliance Report for FY 2022/23 has been made available for public review in the City Clerk's Office.

## PREPARATION OF STAFF REPORT

## CITY COUNCIL GOALS

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. Annual AB 1600 Compliance Report Fiscal Year Ended June 30, 2023

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved |  |
| :--- | :--- | :--- |
|  | 12/11/23 1:08 PM |  |
| City Attorney Approval |  |  |
| City Manager Approval | $\checkmark$ Approved <br>  |  |

## City of Moreno Valley

Annual AB 1600

## Compliance Report

For the Fiscal Year Ended June 30, 2023


## City of Moreno Valley <br> Annual AB1600 Compliance Report For the Fiscal Year Ended June 30, 2023

Pursuant to Government Code Section 66006, the following report on the receipt, use and retention of development impact fees for fiscal year ended June 30, 2023 is hereby presented to the City Council for review and approval.

| Fund Number / Fund Name | Beginning Fund Balance July 1, 2022 |  | Receipts |  | Disbursements |  | Transfers In |  | Interest Earnings * |  | Ending Fund Balance June 30, 2023 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2901 Arterial Streets Development Impact Fee | \$ | 4,511,027.68 | \$ | 2,560,792.43 |  | $(1,059,115.00)$ | \$ | 1,059,115.00 | \$ | 63,977.48 | \$ | 7,135,797.59 |
| 2902 Traffic Signal Development Impact Fee | \$ | 1,678,631.75 | \$ | 525,449.39 | \$ | - | \$ | - | \$ | 23,279.00 | \$ | 2,227,360.14 |
| 2903 Fire Facility Development Impact Fee | \$ | 4,979,666.32 | \$ | 498,315.92 |  | $(241,362.00)$ | \$ | - | \$ | 102,177.49 | \$ | 5,338,797.73 |
| 2904 Police Facility Development Impact Fee | \$ | (5,140,849.08) | \$ | 326,410.50 |  | (642,235.00) | \$ | - | \$ |  | \$ | $(5,456,673.58)$ |
| 2905 Parkland Facilities Development Impact Fee | \$ | 2,415,640.04 | \$ | 137,349.88 | \$ | $(585,325.00)$ | \$ | 236,847.00 | \$ | 82,669.77 | \$ | 2,287,181.69 |
| 2907 Recreation Center Development Impact Fee | \$ | 875,586.07 | \$ | 301,931.48 |  | $(1,100,000.00)$ | \$ | - | \$ |  | \$ | 77,517.55 |
| 2908 Libraries Development Impact Fee | \$ | 5,136,571.12 | \$ | 226,726.72 | \$ |  | \$ | - | \$ | 108,117.59 | \$ | 5,471,415.43 |
| 2909 City Hall Development Impact Fee | \$ | 866,174.46 | \$ | 135,978.24 | \$ | - | \$ | - | \$ | 15,779.93 | \$ | 1,017,932.63 |
| 2910 Corporate Yard Development Impact Fee | \$ | 2,696,658.09 | \$ | 266,168.01 | \$ | (600,000.00) | \$ | - | \$ | 62,332.95 | \$ | 2,425,159.05 |
| 2911 <br> Interchange Improvements Development Impact Fee | \$ | 1,692,977.93 | \$ | 1,372,278.86 | \$ | $(400,000.00)$ | \$ | - | \$ | 15,334.04 | \$ | 2,680,590.83 |
| 2912 <br> Maintenance Equipment Development Impact Fee | \$ | 1,231,248.10 | \$ | 76,802.46 | \$ | - | \$ | - | \$ | 24,323.64 | \$ | 1,332,374.20 |
| 2913 Animal Shelter Development Impact Fee | \$ | 366,343.04 | \$ | 30,354.31 | \$ | (375,000.00) | \$ | - | \$ | - | \$ | 21,697.35 |
| 2914 Administration Development Impact Fee | \$ | 479,680.34 | \$ | 167,160.17 | \$ | $(50,000.00)$ | \$ | - | \$ | - | \$ | 596,840.51 |
| 2915 <br> Workforce Development Development Impact Fee | \$ | - | \$ | 7,458.23 | \$ | - | \$ | - | \$ | - | \$ | 7,458.23 |
| 2916 Public Art Development Impact Fee | \$ | - | \$ | 87,209.04 | \$ | - | \$ | - | \$ | - | \$ | 87,209.04 |

[^0]The reservation of Fund Balance and disbursement information for each of the above funds is as follows:

| Disbursements: | \% Funded by Impact Fees |  |  | O <br> 0 <br> 0 <br> 0 |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
| Debt Service - 2013 Refunding Lease Revenue Bonds Current Year | \$ | 629,973.00 | 100\% | 4 |
| Debt Service - 2014 Refunding Lease Revenue Bonds Current Year | \$ | 429,142.00 | 100\% | - |
|  | \$ | 1,059,115.00 |  | 4 |
| Fund Balance Designations: |  |  |  |  |
| Existing Debt Service and Future Arterial Streets Development | \$ | 7,135,797.59 |  | ! |
| Unreserved Fund Balance |  | None |  |  |
| Funds unexpended or uncommitted for five years or more |  | None |  | Ш |
| Fund 2902-Traffic Signal Development Impact Fee |  |  |  | 0 |
| Disbursements: |  |  | \% Funded by | In |
|  |  |  | Impact Fees | - |
| No Disbursements | \$ | - |  | + |
|  | \$ | - |  | $\bullet$ |
| Fund Balance Designations: |  |  |  |  |
| Future Traffic Signal Development | \$ | 2,227,360.14 |  | 응 |
| Unreserved Fund Balance |  | None |  | ¢ |
| Funds unexpended or uncommitted for five years or more |  | None |  | $\underline{\sim}$ |
| Fund 2903 - Fire Facility Development Impact Fees |  |  |  | N |
| Disbursements: |  |  | \% Funded by Impact Fees | - |
| Debt Service - 2013 Refunding Lease Revenue Bonds | \$ | 143,623.00 | 100\% | E |
| Debt Service - 2014 Refunding Lease Revenue Bonds | \$ | 97,739.00 | 100\% | 5 |
|  | \$ | 241,362.00 |  | 8 |
| Fund Balance Designations: |  |  |  | 은 |
| Future Fire Facility | \$ | 5,338,797.73 |  | + |
| Unreserved Fund Balance |  | None |  | $\geqslant$ |
| Funds unexpended or uncommitted for five years or more |  | None |  |  |
| Fund 2904 - Police Facility Development Impact Fee |  |  |  | 立 |
| Disbursements: |  |  | \% Funded by Impact Fees | - |
| Debt Service - 2013 Refunding Lease Revenue Bonds | \$ | 382,846.00 | 100\% | ロ |
| Debt Service - 2014 Refunding Lease Revenue Bonds | \$ | 259,389.00 | 100\% | 0 |
|  | \$ | 642,235.00 |  | $\stackrel{1}{0}$ |
| Fund Balance Designations: |  |  |  | 을 |
| Future Police Facility | \$ | (5,456,673.58) |  | 0 |
| Unreserved Fund Balance <br> None |  |  |  | 8 |
| Funds unexpended or uncommitted for five years or more |  | None |  | $\underline{\square}$ |
| Fund 2905 - Parkland Facilities Development Impact Fee |  |  |  | 4 |
| Disbursements: |  |  | \% Funded by Impact Fees | C |
| Victoriano Lighting Project 8070053 | \$ | 585,325.00 | 100\% | 4 |
|  | \$ | 585,325.00 |  | E |
| Fund Balance Designations: |  |  |  | 틀 |
| Future Parkland Facility | \$ | 2,287,181.69 |  | O |
| Unreserved Fund Balance |  | None |  | 4 |
| Funds unexpended or uncommitted for five years or more |  | None |  |  |




## Five-Year Reporting Requirements

Government Code Section 66001(d)(1) requires that at least every five years certain findings be made with respect to each impact fee being assessed. The following information is provided to satisfy this requirement:
(A) Identify the purpose to which the fee is to be put - The purpose of the development impact fee program is to ensure that new development is paying its share of the transportation infrastructure and facility costs associated with the growth resulting from that development. The program includes projects related to Arterial Street Improvements, Traffic Signal improvements, Fire Facilities, Police Facilities, Park Improvements, Recreation Centers, Libraries, City Hall, Corporate Yard, Interchange Improvements, Maintenance Equipment, Animal Shelter Facilities and Impact Fee Administration.
(B) Demonstrate a reasonable relationship between the fee and the purpose for which it is charged - The fees are based on the relationship between the needed transportation infrastructure and facility costs associated with the growth resulting from new development.
(C) Identify all sources and amounts of funding anticipated for incomplete improvements - Facilities to be funded from development impact fees are also funded by other sources including gas tax, Measure A, General Fund, and grant funding. The specific funding sources utilized for each project depend on funds availability at the time a project is moved forward.
(D) Designate the approximate dates on which the funding is expected to be deposited into the appropriate account or fund - The receipt of funding and the construction of improvements is dependent upon when undeveloped land remaining in the City is developed. Facilities constructed utilizing development impact fee funding are constructed when all required funding is available and the City Engineer has determined that it is appropriate for the project to move forward.

## Development Impact Fee Rate Table

RESIDENTIAL IMPACT FEES
City-Wide (Except as otherwise noted)

| Impact Fee Description | Single Family <br> (DU) |  | $\begin{array}{\|c\|} \hline \text { Single Family - } \\ \text { Affordable } \\ \text { (DU) } \end{array}$ |  | Multi-family (DU) |  | Multi-family Affordable (DU) |  | Mobile/Senior (DU) |  | Mobile/Senior Affordable (DU) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Police Facilities | \$ | 760.25 | \$ | 380.13 | \$ | 369.75 | \$ | 184.88 | \$ | 261.75 | \$ | 130.88 |
| Fire Facilities |  | 1,264.25 |  | 632.13 |  | 467.50 |  | 233.75 |  | 533.75 |  | 266.88 |
| Libraries |  | 487.25 |  | 243.63 |  | 376.50 |  | 188.25 |  | 207.00 |  | 103.50 |
| Recreation Centers |  | 753.00 |  | 376.50 |  | 478.00 |  | 239.00 |  | 343.00 |  | 171.50 |
| Arterial Streets |  | 3,533.75 |  | 1,766.88 |  | 2,508.75 |  | 1,254.38 |  | 1,325.75 |  | 662.88 |
| Traffic Signals |  | 748.00 |  | 374.00 |  | 534.00 |  | 267.00 |  | 257.00 |  | 128.50 |
| Interchange Improvements |  | 1,725.75 |  | 862.88 |  | 1,224.25 |  | 612.13 |  | 662.50 |  | 331.25 |
| City Hall |  | 337.00 |  | 168.50 |  | 152.25 |  | 76.13 |  | 147.75 |  | 73.88 |
| Animal Shelter |  | 77.00 |  | 38.50 |  | 49.00 |  | 24.50 |  | 37.00 |  | 18.50 |
| Corporate Yard |  | 746.25 |  | 373.13 |  | 287.75 |  | 143.88 |  | 317.50 |  | 158.75 |
| Maintenance Equipment |  | 214.25 |  | 107.13 |  | 83.50 |  | 41.75 |  | 91.75 |  | 45.88 |
| Parks - Subdivisions |  | 4,622.75 |  | 2,311.38 |  | 3,494.25 |  | 1,747.13 |  | 1,994.00 |  | 997.00 |
| Parks - Infill |  | 4,399.25 |  | 2,199.63 |  | 3,352.00 |  | 1,676.00 |  | 1,887.00 |  | 943.50 |
| Total-Subdivisions | \$ | 15,269.50 | \$ | 7,634.79 | \$ | 10,025.50 | \$ | 5,012.75 | \$ | 6,178.75 | \$ | 3,089.38 |
| Total - Infill | \$ | 15,046.00 | \$ | 7,523.04 | \$ | 9,883.25 | \$ | 4,941.63 | \$ | 6,071.75 | \$ | 3,035.88 |

NON-RESIDENTIAL IMPACT FEES
City-Wide (Except as otherwise noted)

| Impact Fee Description | CommercialGeneral(KSF) |  |  |  | Industrial (KSF) |  | $\begin{aligned} & \text { High-Cube } \\ & \text { (KSF) } \end{aligned}$ |  | Office (KSF) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Police Facilities | \$ | 214.00 | \$ | 214.00 | \$ | 104.00 | \$ | 64.00 | \$ | 281.00 |
| Fire Facilities |  | 474.00 |  | 474.00 |  | 271.00 |  | 168.00 |  | 461.00 |
| Libraries |  | 10.50 |  | 10.50 |  | 5.00 |  | 3.00 |  | 13.75 |
| Recreation Centers |  | 16.00 |  | 16.00 |  | 8.00 |  | 4.75 |  | 21.00 |
| Arterial Streets |  | 6,741.25 |  | 7,099.25 |  | 1,811.75 |  | 481.50 |  | 3,424.25 |
| Traffic Signals |  | 1,337.00 |  | 1,261.75 |  | 341.00 |  | 97.00 |  | 744.00 |
| Interchange Improvements |  | 5,075.00 |  | 4,969.25 |  | 977.50 |  | 258.75 |  | 1,827.25 |
| City Hall |  | 91.25 |  | 91.25 |  | 58.00 |  | 36.00 |  | 90.00 |
| Animal Shelter |  | - |  | - |  | - |  | - |  | - |
| Corporate Yard |  | 170.00 |  | 170.00 |  | 83.00 |  | 51.00 |  | 210.00 |
| Maintenance Equipment |  | 51.00 |  | 51.00 |  | 24.00 |  | 15.00 |  | 60.25 |
| Parks - Subdivisions |  | 159.00 |  | 159.00 |  | 77.25 |  | 48.00 |  | 207.75 |
| Parks - Infill |  | 159.00 |  | 159.00 |  | 77.25 |  | 48.00 |  | 207.75 |
| Total-Subdivisions | \$ | 14,339.00 | \$ | 14,516.00 | \$ | 3,760.50 | \$ | 1,227.00 | \$ | 7,340.25 |
| Total - Infill | \$ | 14,339.00 | \$ | 14,516.00 | \$ | 3,760.50 | \$ | 1,227.00 | , | 7,340.25 |

City-Wide except MV Ranch and TownGate SP
See Planning staff for projects within TownGate Specific Plan (SP200)
DU=Dwelling Unit
$K S F=1,000$ gross square feet of building space

# Report to City Council 

TO: Mayor and City Council
FROM: Jeremy Bubnick, Parks \& Community Services Director

AGENDA DATE:
TITLE:

December 19, 2023
AUTHORIZATION TO AWARD AN AGREEMENT FOR PROFESSIONAL CONSULTANT SERVICES TO MICHAEL BAKER INTERNATIONAL FOR THE ENGINEERING DESIGN AND ENVIRONMENTAL SERVICES FOR THE PUMP TRACK AND SITE IMPROVEMENTS, PROJECT NO. 807 0058-3015

## RECOMMENDED ACTION

## Recommendations:

1. Award a Professional Consultant Services Agreement to Michael Baker International, to provide Engineering Design and Environmental Services for the Pump Track and Site Improvements (Project No. 807 0058-3015); and
2. Authorize the Executive Director to execute the Professional Consultant Services Agreement with Michael Baker International, in the amount of $\$ 405,780.00$; and
3. Authorize the Executive Director to execute any subsequent Amendments to the Agreement with Michael Baker International within Council approved annual budgeted amounts, including the authority to authorize the associated purchase orders in accordance with the terms of the Agreement, subject to the approval of the City Attorney.

## SUMMARY

This report recommends approval of an agreement with Michael Baker International to provide engineering design and environmental services for a new Pump Track and Site Improvements as part of Morrison Park Expansion Phase 1 Improvements. This project will include a new asphalt pump track, parking lot, pre-fabricated restroom building, site lighting, site furnishings, and a walking trail. These new park amenities are key to improving the quality of our park system and in providing a foundation for a healthy
thriving community. The Pump Track Project (807 0058-3015) was previously approved by City Council as part of the Capital Improvement Plan FY 2021/22 \& 2022/23, which was carried forward as part of the Capital Improvement Plan FY 2023/24 \& 2024/25.

## DISCUSSION

A pump track is a circuit of rollers, banked turns and features designed for bike riders using an up and down body movement generating the momentum to move around the track without pedaling or pushing. Pump Tracks are generally used by bikes but can be used by any type of non-motorized wheeled object. The pump track will be designed for multiple skill levels, with a large track for all skill levels and a smaller track for younger or inexperienced riders to develop their skills and confidence. Staff determined the need for the smaller track once neighboring cities shared the feedback from parents that younger riders needed a track for their skill level.

City Staff identified a vacant City lot on the northeast corner of Morrison Street and Cottonwood Avenue as the most suitable location as it is centrally located and also previously identified for future expansion of Morrison Park.

The new park amenities in expanding Morrison Park are consistent with Momentum MoVal, the City Council's strategic vision for Moreno Valley. The pump track will bring a new and unique recreation experience to Moreno Valley and will be a destination recreation feature for the City.

American Ramp Company is the initial provider of the conceptual design for the pump track only, City Staff identified additional site improvements needed to enhance and complement the new pump track, such as including a new parking lot, a pre-fabricated restroom building, site lighting, site furnishings, and a walking trail connecting to Morrison Park.

On November 7, 2023, staff advertised a Request for Proposals (RFP) to retain a consultant to provide engineering design services for this project. In response to the advertisement, two (2) proposals were received on November 21,2023. The staff selection team evaluated the proposals and ranked the firms as follows:

1. Michael Baker International
2. TKE Engineering, Inc.

Staff recommends the award of a professional consultant design services contract with Michael Baker International as they are deemed to be most qualified firm for completing the requested services. The scope of work for the consultant includes completing the design, construction plans and project bid package, environmental clearance and permitting, and other design related tasks necessary to complete the work.

The anticipated project schedule is as follows:
Begin Design
January 2024
Complete Design.
May 2024

Page 2


#### Abstract

Bid Docs June 2024 RFB for Construction July 2024 Groundbreaking \& Site Improvements Construction Begin ........................... August 2024 Pump Track Construction Begin............................................................November 2024 Construction End \& Ribbon Cutting February 2025

\section*{ALTERNATIVES} 1. Approve and authorize the recommended actions as presented in this staff report. Staff recommends this alternative as this will allow for the completion of the design, construction plans, and bid package for the Pump Track and Site Improvements Project. 2. Do not approve and authorize the recommended actions as presented in this staff report. Staff does not recommend this alternative which may delay the design and construction of much needed park amenities for the City.


## FISCAL IMPACT

There is no impact to the General Fund. The Pump Track Project (Project no. 807 0058-3015) was approved for funding as part of the Capital Improvement Plan for FY 2021/22 \& 2022/23 and included in the Capital Improvement Plan for FY 2023/24 \& 2024/25 as well. No additional funding is being requested at this time.

## PROJECT BUDGET:

Account: 3015-50-57-80007-720199 (Project No. 807 0058-3015-99)
Total Approved Project Budget ........................................................\$1,249,400.00
Total FY 23/24 Available Budget ......................................................\$1,131,248.75

## NOTIFICATION

Publication of the agenda.

## PREPARATION OF STAFF REPORT

```
Prepared By:
Department Head Approval:
Allen Yun Jeremy Bubnick
Parks Project Manager Parks \& Community Services Director
Concurred By:
Patty Yhuit
PCS Admin \& Financial Services Division Manager
CITY COUNCIL GOALS
```

Public Facilities and Capital Projects. Ensure that needed public facilities, roadway improvements, and other infrastructure improvements are constructed and maintained.

Positive Environment. Create a positive environment for the development of Moreno Valley's future.

Community Image, Neighborhood Pride and Cleanliness. Promote a sense of community pride and foster an excellent image about our City by developing and executing programs which will result in quality development, enhanced neighborhood preservation efforts, including home rehabilitation and neighborhood restoration.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

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## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

See the Discussion section above for details of how this action supports the City Council's Strategic Priorities.

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. Agreement for Services - Michael Baker International - (12.01.23)

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved |  |
| :--- | :--- | :--- |
|  | Approved |  |
| City Attorney Approval |  |  |
| City Manager Approval | $\checkmark$ Approved <br> 12/11/23 11:19 AM |  |

City of Moreno Valley

## AGREEMENT FOR ENGINEERING DESIGN AND ENVIRONMENTAL SERVICES FOR THE PUMP TRACK AND SITE IMPROVEMENTS PROJECT NO. 8070058

This Agreement is made by and between the Moreno Valley Community Services District, California, a municipal corporation, with its principal place of business at 14177 Frederick Street, Moreno Valley, CA 92552, hereinafter referred to as the "City", and Michael Baker International, Inc., a CORPORATION, with its principal place of business at 40810 COUNTY CENTER DRIVE, TEMECULA, CA 92591, hereinafter referred to as the "Vendor," based upon City policies and the following legal citations:

## RECITALS

A. Government Code Section 53060 authorizes the engagement of persons to perform special services as independent Vendors;
B. Vendor desires to perform and assume responsibility for the provision of professional ENGINEERING DESIGN AND ENVIRONMENTAL contracting services required by the City on the terms and conditions set forth in this Agreement. Vendor represents that it is experienced in providing professional ENGINEERING DESIGN AND ENVIRONMENTAL contracting services, is licensed in the State of California, if applicable;
C. City desires to engage Vendor to render such services for the ENGINEERING DESIGN AND ENVIRONMENTAL as set forth in this Agreement;
D. The public interest, convenience, necessity and general welfare will be served by this Agreement; and
E. This Agreement is made and entered into effective the date the City signs this Agreement.

## TERMS

1. VENDOR INFORMATION:

Vendor's Name: __MICHAEL BAKER INTERNATIONAL, INC.
Address: _ 40810 COUNTY CENTER DRIVE, SUITE 200
City: TEMECULA State: _CA Zip: _ 92591

Business Phone: 951-506-2057 Fax No: __ 951-506-2057
Other Contact Number: N/A
Business License Number: $\qquad$
Federal Tax I.D. Number: $\qquad$

## 2. VENDOR SERVICES, FEES, AND RELEVANT DATES:

A. The Vendor's scope of service is described in Exhibit "A" attached hereto and incorporated herein by this reference.
B. The City's responsibilities, other than payment, are described in Exhibit " $B$ " attached hereto and incorporated herein by this reference.
C. Payment terms are provided in Exhibit "C" attached hereto and incorporated herein by this reference.
D. The term of this Agreement shall be from DECEMBER 19, 2023 to JUNE 30, 2025 unless terminated earlier as provided herein. The City acknowledges that it will not unreasonably withhold approval of the Vendor's requests for extensions of time in which to complete the work required. The Vendor shall not be responsible for performance delays caused by others or delays beyond the Vendor's reasonable control (excluding delays caused by non-performance or unjustified delay by Vendor, his/her/its employees, or subcontractors), and such delays shall extend the time for performance of the work by the Vendor.

## 3. STANDARD TERMS AND CONDITIONS:

A. Control of Work. Vendor is solely responsible for the content and sequence of the work and will not be subject to control and direction as to the details and means for accomplishing the anticipated results of services. The City will not provide any training to Vendor or his/her/its employees.
B. Intent of Parties. Vendor is, and at all times shall be, an independent Vendor and nothing contained herein shall be construed as making the Vendor or any individual whose compensation for services is paid by the Vendor, an agent or employee of the City, or authorizing the Vendor to create or assume any obligation or liability for or on behalf of the City, or entitling the Vendor to any right, benefit, or privilege applicable to any officer or employee of the City.
C. Subcontracting. Vendor may retain or subcontract for the services of other necessary Vendors with the prior written approval of the City. Payment for such services shall be the responsibility of the Vendor. Any and all subcontractors shall be subject to the terms and conditions of this Agreement, with the exception that the City shall have no obligation to pay for any subcontractor services rendered. Vendor shall be responsible for paying prevailing wages where required by law [See California Labor Code Sections 1770 through 1777.7].
D. Conformance to Applicable Requirements. All work prepared by Vendor shall be subject to the approval of City.
E. Substitution of Key Personnel. Vendor has represented to City that certain key personnel will perform and coordinate the services under this Agreement. Should one or more of such personnel become unavailable, Vendor may substitute other personnel of at least equal competence upon written approval of City. In the event that City and Vendor cannot agree as to the substitution of key personnel, City shall be entitled to terminate this Agreement for cause. As discussed below, any personnel who fail or refuse to perform the services in a manner acceptable to the City, or who are determined by the City to be uncooperative, incompetent, a threat to the adequate or timely completion of the project or a threat to the safety of persons or property, shall be promptly removed from the project by the Vendor at the request of the City. The key personnel for performance of this Agreement are as follows: WILLIAM POPE.
F. City's Representative. The City hereby designates the City Manager, or his or her designee, to act as its representative for the performance of this Agreement ("City's Representative"). Vendor shall not accept direction or orders from any person other than the City's Representative or his or her designee.
G. Vendor's Representative. Vendor hereby designates WILLIAM POPE, or his or her designee, to act as its representative for the performance of this Agreement ("Vendor's Representative"). Vendor's Representative shall have full authority to represent and act on behalf of the Vendor for all purposes under this Agreement. The Vendor's Representative shall supervise and direct the services, using his or her best skill and attention, and shall be responsible for all means, methods, techniques, sequences and procedures and for the satisfactory coordination of all portions of the services under this Agreement.
H. Legal Considerations. The Vendor shall comply with applicable federal, state, and local laws in the performance of this Agreement. Vendor shall be liable for all violations of such laws and regulations in connection with services. If the Vendor performs any work knowing it to be contrary to such laws, rules and regulations and without giving written notice to the City, Vendor shall be solely responsible for all costs arising therefrom. Vendor shall defend, indemnify and hold City, its officials, directors, officers, employees and agents free and harmless, pursuant to the indemnification provisions of this Agreement, from any claim or liability arising out of any failure or alleged failure to comply with such laws, rules or regulations.
I. Standard of Care; Performance of Employees. Vendor shall perform all services under this Agreement in a skillful and competent manner, consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California. Vendor represents and maintains that it is skilled in the profession
necessary to perform the services. Vendor warrants that all employees and subcontractor shall have sufficient skill and experience to perform the services assigned to them. Finally, Vendor represents that it, its employees and subcontractors have all licenses, permits, qualifications and approvals of whatever nature that are legally required to perform the services and that such licenses and approvals shall be maintained throughout the term of this Agreement. Any employee of the Vendor or its subcontractors who is determined by the City to be uncooperative, incompetent, a threat to the adequate or timely completion of the project, a threat to the safety of persons or property, or any employee who fails or refuses to perform the services in a manner acceptable to the City, shall be promptly removed from the project by the Vendor and shall not be re-employed to perform any of the services or to work on the project.
J. Vendor Indemnification. Vendor shall indemnify, defend and hold the City, the Moreno Valley Housing Authority, and the Moreno Valley Community Services District (CSD), their officers, agents and employees harmless from any and all claims, damages, losses, causes of action and demands, including, without limitation, the payment of all consequential damages, expert witness fees, reasonable attorney's fees and other related costs and expenses, incurred in connection with or in any manner arising out of Vendor's performance of the work contemplated by this Agreement and this Agreement. Acceptance of this Agreement signifies that the Vendor is not covered under the City's general liability insurance, employee benefits, or worker's compensation. It further establishes that the Vendor shall be fully responsible for such coverage. Vendor's obligation to indemnify shall survive expiration or termination of this Agreement, and shall not be restricted to insurance proceeds, if any, received by the City, the Moreno Valley Housing Authority, and the CSD, and their officers, agents and employees.
K. Additional Indemnity Obligations. Vendor shall defend, with counsel of City's choosing and at Vendor's own cost, expense and risk, any and all claims, suits, actions or other proceedings of every kind covered by Section "J" that may be brought or instituted against City, the Moreno Valley Housing Authority, and the CSD, and their officers, agents and employees. Vendor shall pay and satisfy any judgment, award or decree that may be rendered against City, the Moreno Valley Housing Authority, and the CSD, and their officers, agents and employees as part of any such claim, suit, action or other proceeding. Vendor shall also reimburse City for the cost of any settlement paid by City, the Moreno Valley Housing Authority, and the CSD, and their officers, agents and employees as part of any such claim, suit, action or other proceeding. Such reimbursement shall include payment for City's attorney's fees and costs, including expert witness fees. Vendor shall reimburse City, the Moreno Valley Housing Authority, and the CSD, and their officers, agents and employees for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided.
L. CalPERS Indemnity. To the fullest extent permitted by law, in addition to obligations set forth in this section, in the event that any person providing services under this Agreement is determined by a court of competent jurisdiction or CalPERS to be eligible for enrollment in CalPERS as an employee of the City, to the fullest extent of the law, VENDOR shall indemnify, defend, and hold harmless City for any costs and expenses incurred by City, including without limitation, payment that City is required as a result to make to CalPERS, whether in the form of employee and/or employer contributions, taxes, or any similar obligations, as well as for the payment of any penalties and interest.
M. CalPERS Participation. As set forth in this Agreement and in the Request for Qualifications, City has an obligation to treat all persons working for or under the direction of VENDOR as an independent Vendor of City and agents and employees of VENDOR, and not as agents or employees of City. VENDOR and City acknowledge and agree that City participates in a defined benefit plan ("CalPERS"), and that it is possible that CaIPERS may find that persons providing services pursuant to this Agreement are employees of City and should be registered with the CaIPERS as employees of City.
N. CalPERS Retiree Disclosure. VENDOR hereby expressly agrees to clearly and conspicuously disclose to City in writing any and all persons working for VENDOR who are retirees under the California Public Employees' Retirement System (CaIPERS) whom receives a monthly CalPERS retirement allowance, and whom are, subject to City approval, assigned by VENDOR to provide services to City under the Agreement, prior to such person performing any services hereunder. Nothing herein shall be deemed or interpreted to limit a CaIPERS retiree's obligations under applicable law, rules or regulations.
O. Joint Cooperation. In the event that CalPERS initiates an inquiry that includes examination of whether individuals providing services under this Agreement to City are City's employees, VENDOR shall within five days and share all communications and documents from CalPERS that it may legally share. In the event that either VENDOR or City files an appeal or court challenge, VENDOR and City each agree to cooperate with each other in responding to the inquiry and any subsequent administrative appeal or court challenge of an adverse determination.
P. Insurance Requirements. Throughout the life of this AGREEMENT, Vendors shall pay for and maintain in full force and effect all insurance as required.

If at any time during the life of this AGREEMENT or any extension, VENDOR or any of its subcontractors fail to maintain any required insurance in full force and effect, all services and work under this AGREEMENT shall be discontinued immediately, and all payments due or that become due to VENDOR shall be withheld until notice is received by CITY that the required insurance has been restored to full force and effect
and that the premiums therefore have been paid for a period satisfactory to CITY. Any failure to maintain the required insurance shall be sufficient cause for CITY to terminate this AGREEMENT. No action taken by CITY pursuant to this section shall in any way relieve VENDOR of its responsibilities under this AGREEMENT. The phrase "fail to maintain any required insurance" shall include, without limitation, notification received by CITY that an insurer has commenced proceedings, or has had proceedings commenced against it, indicating that the insurer is insolvent.

The fact that insurance is obtained by VENDOR shall not be deemed to release or diminish the liability of VENDOR, including, without limitation, liability under the indemnity provisions of this AGREEMENT. The duty to indemnify CITY shall apply to all claims and liability regardless of whether any insurance policies are applicable. The policy limits do not act as a limitation upon the amount of indemnification to be provided by VENDOR. Approval or purchase of any insurance contracts or policies shall in no way relieve from liability nor limit the liability of VENDOR, its principals, officers, agents, employees, persons under the supervision of VENDOR, suppliers, invitees, consultants, sub-consultants, subcontractors, or anyone employed directly or indirectly by any of them.

Upon request of CITY, VENDOR shall immediately furnish CITY with a complete copy of any insurance policy and associated documentation required under this AGREEMENT, including all endorsements, with said copy certified by the underwriter to be a true and correct copy of the original policy. This requirement shall survive expiration or termination of this AGREEMENT

Where determined applicable by the CITY, VENDOR will comply with the following insurance requirements at its sole expense. Insurance companies shall be rated (A Minus: VII-Admitted) or better in Best's Insurance Rating Guide and shall be legally licensed and qualified to conduct business in the State of California.

Minimum Scope of Insurance: Coverage shall be at least as broad as:

1) The most current version of Insurance Services Office (ISO) Commercial General Liability Coverage Form CG 0001 covering on an "occurrence" basis, which shall include insurance for "bodily injury," "property damage" and "personal and advertising injury" with coverage for premises and operations, products and completed operations, and contractual liability.
2) The most current version of Insurance Service Office (ISO) Business Auto Coverage Form CA 00 01, which shall include coverage for all owned, hired, and non-owned automobiles or other licensed vehicles (Code 1- Any Auto).
3) Workers' Compensation insurance as required by the State of California, California Labor Code and Employer's Liability Insurance, with Statutory Limits, and

Employer's Liability Insurance with limits of no less than \$1,000,000 per accident for bodily injury or disease.
4) Professional Liability (Errors and Omissions) insurance appropriate to VENDOR'S profession.

## Minimum Limits of Insurance:

a. General Liability Insurance. Without limiting the generality of the forgoing, to protect against loss from liability imposed by law for damages on account of bodily injury, including death, and/or property damage suffered or alleged to be suffered by any person or persons whomever, resulting directly or indirectly from any act or activities of the VENDOR, sub-contractor, or any person acting for the VENDOR or under its control or direction. Such insurance shall be maintained in full force and effect throughout the terms of this AGREEMENT and any extension thereof in the minimum amounts provided below:

- $\$ 1,000,000$ per occurrence for bodily injury and property damage
- $\$ 1,000,000$ per occurrence for personal and advertising injury
- \$2,000,000 aggregate for products and completed operations
- \$2,000,000 general aggregate
b. Automobile Liability
- $\$ 1,000,000$ per accident for bodily injury and property damage
c. Emplover's Liability (Worker's Compensation)
- $\$ 1,000,000$ each accident for bodily injury
- $\$ 1,000,000$ disease each employee
- \$1,000,000 disease policy limit
d. The Workers' Compensation insurance policy: In such amounts as will fully comply with the laws of the State of California and which shall indemnify, insure and provide legal defense for both the VENDOR and the CITY, HA, and CSD against any loss, claim or damage arising from any injuries or occupational diseases happening to any worker employed by the VENDOR in the course of carrying out this AGREEMENT. Workers' Compensation insurance policy is to contain, or be endorsed to contain, the following provision: VENDOR and its insurer shall waive any right of subrogation against City of Moreno Valley, CSD, Housing Authority and each of their officers, officials, employees, agents and volunteers.
e. Professional Liability (Errors and Omissions): Limits of no less than $\$ 1,000,000$ per occurrence or claim, \$2,000,000 aggregate.
f. Endorsements. Unless otherwise specified hereunder, each insurance policy required herein shall be with insurers possessing a Best's rating of no less than $\mathrm{A}, \mathrm{VII}$ and shall be endorsed with the following specific language:
- The insurer waives all rights of subrogation against the City, its appointed officials, officers, employees or agents.

Other Insurance Provisions: The General Liability, Automobile Liability and Workers Compensation insurance policies are to contain, or be endorsed to contain, the following provisions:
a. City of Moreno Valley, the City of Moreno Valley Community Services District, the Moreno Valley Housing Authority and each of their officers, officials, employees, agents and volunteers are to be covered as additional insureds.
b. The coverage shall contain no special limitations on the scope of protection afforded to CITY, CSD, Housing Authority and each of their officers, officials, employees, agents and volunteers.

All polices of insurance required hereunder shall be endorsed to provide that the coverage shall not be cancelled, non-renewed, reduced in coverage or in limits except after 30 calendar day written notice by certified mail, return receipt requested, has been given to the CITY. Upon issuance by the insurer, broker, or agent of a notice of cancellation, non-renewal, or reduction in coverage or in limits, VENDOR shall furnish the CITY with a new certificate and applicable endorsements for such policy(ies). In the event any policy is due to expire during the work to be performed for the CITY, VENDOR shall provide a new certificate, and applicable endorsements, evidencing renewal of such policy not less than 15 calendar days prior to the expiration date of the expiring policy.

Acceptability of Insurers: All policies of insurance required hereunder shall be placed with an insurance company(ies) admitted by the California Insurance Commissioner to do business in the State of California and rated not less than "A- VII" in Best's Insurance Rating Guide; or authorized by the City Manager or designee.

Verification of Coverage: VENDOR shall furnish CITY with all certificates(s) and applicable endorsements effecting coverage required hereunder. All certificates and applicable endorsements are to be received and approved by the City Manager or designee prior to CITY'S execution of this AGREEMENT and before work commences. The following applicable endorsements will be required:

1. Additional Insured endorsement for ongoing operations, completed operations and primary \& non-contributory endorsement for general liability coverage
2. Additional Insured endorsement for auto liability coverage
3. Waiver of Subrogation for workers compensation coverage
Q. Intellectual Property. Any system or documents developed, produced or provided under this Agreement, including any intellectual property discovered or developed by Vendor in the course of performing or otherwise as a result of its work, shall become the sole property of the City unless explicitly stated otherwise in this Agreement. The

Vendor may retain copies of any and all material, including drawings, documents, and specifications, produced by the Vendor in performance of this Agreement. The City and the Vendor agree that to the extent permitted by law, until final approval by the City, all data shall be treated as confidential and will not be released to third parties without the prior written consent of both parties.
R. Entire Agreement. This Agreement constitutes the entire agreement between the parties. There are no understandings, agreements, or representations of warranties, expressed or implied, not specified in this Agreement. This Agreement applies only to the current proposal as attached. This Agreement may be modified or amended only by a subsequent written Agreement signed by both parties. Assignment of this Agreement is prohibited without prior written consent.
S. (a) The City may terminate the whole or any part of this Agreement at any time without cause by giving at least ten (10) days written notice to the Vendor. The written notice shall specify the date of termination. Upon receipt of such notice, the Vendor may continue work through the date of termination, provided that no work or service(s) shall be commenced or continued after receipt of the notice which is not intended to protect the interest of the City. The City shall pay the Vendor within thirty (30) days after receiving any invoice after the date of termination for all non-objected to services performed by the Vendor in accordance herewith through the date of termination.
(b) Either party may terminate this Agreement for cause. In the event the City terminates this Agreement for cause, the Vendor shall perform no further work or service(s) under the Agreement unless the notice of termination authorizes such further work.
(c) If this Agreement is terminated as provided herein, City may require Vendor to provide all finished or unfinished documents and data and other information of any kind prepared by Vendor in connection with the performance of services under this Agreement. Vendor shall be required to provide such documents and other information within fifteen (15) days of the request.
(d) In the event this Agreement is terminated in whole or in part as provided herein, City may procure, upon such terms and in such manner as it may determine appropriate, similar to those terminated.
T. Payment. Payments to the Vendor pursuant to this Agreement will be reported to Federal and State taxing authorities as required. The City will not withhold any sums from compensation payable to Vendor. Vendor is independently responsible for the payment of all applicable taxes. Where the payment terms provide for compensation on a time and materials basis, the Vendor shall maintain adequate records to permit inspection and audit of the Vendor's time and materials charges under the

Agreement. Such records shall be retained by the Vendor for three (3) years following completion of the services under the Agreement.
U. Restrictions on City Employees. The Vendor shall not employ any City employee or official in the work performed pursuant to this Agreement. No officer or employee of the City shall have any financial interest in this Agreement in violation of federal, state, or local law.
V. Choice of Law and Venue. The laws of the State of California shall govern the rights, obligations, duties, and liabilities of the parties to this Agreement, and shall govern the interpretation of this Agreement. Any legal proceeding arising from this Agreement shall be brought in the appropriate court located in Riverside County, State of California.
W. Delivery of Notices. All notices permitted or required under this Agreement shall be given to the respective parties at the following address, or at such other address as the respective parties may provide in writing for this purpose:

## Vendor:

MICHAEL BAKER INTERNATIONAL, INC.
40810 COUNTY CENTER DRIVE
TEMECULA, CA 92591
Attn: WILLIAM POPE

## City:

City of Moreno Valley
14177 Frederick Street
P.O. Box 88005

Moreno Valley, CA 92552
Attn: JEREMY BUBNICK

Such notice shall be deemed made when personally delivered or when mailed, forty-eight (48) hours after deposit in the U.S. Mail, first class postage prepaid and addressed to the party at its applicable address. Actual notice shall be deemed adequate notice on the date actual notice occurred, regardless of the method of service.
X. Time of Essence. Time is of the essence for each and every provision of this Agreement.
Y. City's Right to Employ Other Vendors. City reserves right to employ other Vendors in connection with this project.
Z. Amendment; Modification. No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing and signed by both parties.

AA. Waiver. No waiver of any default shall constitute a waiver of any other default or breach, whether of the same or other covenant or condition. No waiver, such attempted assignment, hypothecation or transfer.

BB. Supplementary General Conditions (for projects that are funded by Federal programs). The following provisions, pursuant to 44 Code of Federal Regulations, Part 13 , Subpart C, Section 13.36, as it may be amended from time to time, are included in the Agreement and are required to be included in all subcontracts entered into by VENDOR for work pursuant to the Agreement, unless otherwise expressly provided herein. These provisions supersede any conflicting provisions in the General Conditions and shall take precedence over the General Conditions for purposes of interpretation of the General Conditions. These provisions do not otherwise modify or replace General Conditions not in direct conflict with these provisions. Definitions used in these provisions are as contained in the General Conditions.

1. VENDOR shall be subject to the administrative, contractual, and legal remedies provided in the General Conditions in the event VENDOR violates or breaches terms of the Agreement.
2. CITY may terminate the Agreement for cause or for convenience, and VENDOR may terminate the Agreement, as provided the General Conditions.
3. VENDOR shall comply with Executive Order 11246 of September 24, 1965, entitled Equal Employment Opportunity, as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR chapter 60). (All construction contracts awarded in excess of $\$ 10,000$ by CITY and/or subcontracts in excess of $\$ 10,000$ entered into by VENDOR.)
4. VENDOR shall comply with the Copeland Anti-Kickback Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3) (All contracts and subcontracts for construction or repair.)
5. VENDOR shall comply with the Davis-Bacon Act (40 U.S.C. 276a to 276a7) as supplemented by Department of Labor regulations (29 CFR Part 5).
6. VENDOR shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327330) as supplemented by Department of Labor regulations (29 CFR Part 5).
7. VENDOR shall observe CITY requirements and regulations pertaining to reporting included in the General Conditions.
8. Patent rights with respect to any discovery or invention which arises or is
developed in the course of or under the Agreement shall be retained by the CITY.
9. Copyrights and rights in data developed in the course of or under the Agreement shall be the property of the CITY. FEMA/CaIOES reserve a royaltyfree, nonexclusive, irrevocable license to reproduce, publish or otherwise use or authorize to others to use for federal purposes a copyright in any work developed under the Agreement and/or subcontracts for work pursuant to the Agreement.
10. VENDOR shall provide access by the City, the Federal grantor agency, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers, and records of the Vendor which are directly pertinent to that specific contract for the purpose of making audit, examination, excerpts, and transcriptions.
11. VENDOR shall retain all required records for three years after CITY makes final payments and all other pending matters relating to the Agreement are closed.
12. VENDOR shall comply with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act ( 33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15). (This provision applies to contracts exceeding $\$ 100,000$ and to subcontracts entered into pursuant to such contracts.)
13. VENDOR shall comply with mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94163, 89 Stat. 871).
CC. Authority To Execute. The representative executing this Agreement on behalf of each party hereby represents and warrants that he or she has full power and authority to execute this Agreement on behalf of such party and that all approvals and other actions necessary in connection with the effective execution by him or her have been obtained and are in full force and effect as of his or her execution hereof.

## SIGNATURE PAGE TO FOLLOW

IN WITNESS HEREOF, the parties have each caused their authorized representative to execute this Agreement.

City of Moreno Valley

BY:
Mike Lee, Executive Director
$\overline{\text { Date }}$

| INTERNAL USE ONLY |
| :---: |
| APPROVED AS TO LEGAL FORM: |
| $\frac{\text { Steven Quintanilla }}{\text { City Attorney }}$ |
| $\frac{12 / 01 / 2023}{\text { Date }}$ |
| $\frac{\text { RECOMMENDED FOR APPROVAL: }}{\text { Jeremy Bubnick, Parks \& Community Services Dir. }}$ |

MICHAEL BAKER INTERNATIONAL, INC.

BY:

TITLE:
(President or Vice President)

BY:

TITLE:
(Corporate Secretary)

EXHIBIT A
VENDOR SCOPE OF SERVICES

MORENOVALLEY<br>CALIFORNIA

## Pump Track and Site Improvements

 Project 801 0058, RFP 2023-031

## Michael Baker

## Michael Baker

## I NTERNATIONAL

November 21, 2023

City of Moreno Valley<br>14177 Frederick Street<br>Moreno Valley, CA 92552

Re: Proposal for 2023-031, Pump Track and Site Improvements Project 8010058

The City of Moreno Valley (City) is expanding Morrison Park and incorporating a new asphalt pump track on vacant City property. Michael Baker International, Inc. (Michael Baker) takes immense pride in providing needed services to our local municipalities. We are excited to provide this scope and fee to provide professional engineering design and environmental services for this project.

The project design will be facilitated under the direction of Mr. William Pope. Mr. Pope brings 30 years of both public and private experience in development and expansion of infrastructure. Serving as Project Manager, Mr. Chad Adachi, PE, brings 7 years of engineering experience. The team, as identified in the organizational chart, has worked on numerous land development and infrastructure expansion projects throughout the Inland Empire.

Michael Baker will complete the tasks outlined herein for the total fee on the attached Task/Hour breakdown invoiced monthly on a percent complete basis. This proposal will remain valid for a period of 60 days from the date of submittal. We appreciate the opportunity to propose on this project and look forward to supporting the City on this Please contact me at (951) 506-2057 or Chad.Adachi@ mbakerintl.com if you have any questions.

## PRIMARY CONTACT INFORMATION

Firm Name:
Michael Baker International

## Address:

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Suite 200,
Temecula, CA 92591

## Contact:

Chad Adachi, PE

## Phone:

(951) 506-2057

Email:
Chad.Adachi@mbakerintl.com

Sincerely,
MICHAEL BAKER INTERNATIONAL


Chad Adachi, PE
Project Manager


Associate Vice President / Project Director

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## 1. EXECUTIVE SUMMARY

Michael Baker International (Michael Baker) offers clients an integrated team of professionals well versed in land development engineering. Michael Baker is also a recognized leader in providing the practical aspects of operating and maintaining safe and efficient infrastructure for the clients we serve. The firm maintains a professional staff of over 550 employees located in 11 offices throughout California and over 3,500 employees nationwide.

Within the Inland Empire, Michael Baker has played a significant role in the development of the expansive land development network for more than two decades. We have recently or are currently supporting many other

## Types of Services Offered <br> - Planning / Environmental <br> - Civil Engineering <br> - Traffic / Transportation <br> - Land Development <br> - Water Resources <br> - Survey <br> - Construction Management / Inspection <br> Year Founded 1940 <br> Form of Organization <br> Corporation <br> Contact <br> Chad Adachi, PE <br> Project Manager <br> 951-506-2057 <br> Chad.Adachi@mbakerintl.com

## Authorized Signer

William Pope
Associate Vice President
760-776-6131
billpope@mbakerintl.com
 public agencies with similar engineering services, including the cities of Chino Hills, Yucaipa, Eastvale, Claremont, Indian Wells, Palm Desert, Rancho Mirage, and Coachella, Rancho Cucamonga as well as Riverside County Transportation Department, and San Bernardino County Public Works. Michael Baker possesses the full range of disciplines necessary to provide turnkey services and continue to meet City needs. Our understanding of local, county, and state procedures will benefit the City by ensuring projects are completed on time and within budget as demonstrated with aforementioned task orders.

Michael Baker works collaboratively with clients, regulatory agencies, and the public to deliver solutions that reduce congestion and enhance the quality of life for local communities. We accomplish this by assigning strong project and task managers who are excellent leaders and technical experts. We also maintain leadership continuity throughout the life of a project, stay abreast of client objectives through active involvement in the industry, and maintain comprehensive internal leadership and technical training programs.
Michael Baker is a strong, financially secure firm and does not have any bankruptcies, pending litigation, planned office closures or impending mergers that may impede our ability to complete projects resulting from this solicitation.

## 2．TECHNICAL PROPOSAL

## Project Approach and Understanding

Michael Baker International，Inc．has provided professional engineering design and environmental services to agencies for over 30＋years．Our design services include conceptual， preliminary，and final design plans and estimates for site civil precise grading．These same services will be used for the Pump Track and Site Improvements．

Currently，the proposed location for the asphalt pump track and associated site improvements is a vacant City Lot on the northeast corner of Morrison Street and Cottonwood Avenue as part of the phase 1 of Morrison Park Expansion． The asphalt pump track and associated site improvements will include an Asphalt Pump Track（Conceptual design to be provided by City），Commercial Driveway，Parking Lot with 40－50 Parking Spaces，Pre－Fabricated Restroom（4 Stalls Total）with Drinking Fountain，Site Lighting，Site Furnishings， Site Drainage Improvements，and an Asphalt Trail connecting new site to existing Morrison Park Parking Lot．


## Detailed Work Plan and Deliverables

## TASK 1 PROJECT KICK－OFF MEETING

Michael Baker＇s design team shall meet with City staff virtually to review the parameters and goals for the pump track design and obtain any data or information that may be needed．Michael Baker will prepare the agenda for the meeting and compile notes of the meeting to document decisions made．

## TASK 2 TOPOGRAPHIC AND MAPPING SURVEY， GEOTECHNICAL SERVICES，CEQA SERVICES，AND STORMWATER

## Task 2．1 Aerial Topographic Mapping and Record Data Map Preparation

Michael Baker shall prepare an Aerial Topographic Map of the project site，at a scale of 1 ＂$=40^{\prime}$ ，with one－foot contour intervals．The work shall include：
－Preparation of a flight plan and layout of ground control targets．
－Field surveying services to set ground control panels and survey their precise positions on the appropriate coordinate system basis．
－Aerial photogrammetric and aero triangulation services．
－Compilation of planimetric and topographic features to digital medium．
－Perform field survey check profile observations and office analysis of said observations to check ground truth of the compiled map within accepted standards．

In order to include and plot the record position of the project boundary in approximate orientation with a specific coordinate system，compiled aerial topographic base data or other overlay features，Consultant shall perform the following tasks：
－Michael Baker shall perform research of the available public records via on－line services to obtain maps and other items that affect the boundary location of the property；
－Baker shall prepare a preliminary record data map to be used by the field survey crew to search for a sampling of boundary monuments；
－Baker shall perform a field survey of said monuments in order to establish orientation of the record survey data in relation to the coordinate system used in the topographic mapping；
－Baker shall plot the record boundary lines on the aerial base map，with the understanding of the Client that said record boundary is NOT the result of a
comprehensive boundary survey and analysis, and that it's orientation may disagree from the position determined by a full boundary survey and analysis;

- The budget for this scope of work is based upon an assumption that adequate and accessible boundary monumentation exists in the immediate project vicinity to control this record data survey.

Any cost associated with the preparation and processing of a Record of Survey Map, if one becomes necessary as a legal requirement, shall be covered by Client.

## Task 2.2 Geotechnical Services

## Limited Geotechnical Services

For the purpose of design support, Leighton proposed to provide the following subtasks:

- Review available information relative to this project site including published geologic maps and any provided site-specific geologic reports.
- Site reconnaissance and visual observations of current surface conditions to evaluate any potential localized settlement and surface distresses.
- Perform 3 to 4 in-situ density tests to evaluate relative compaction of existing surface soils conditions of the site. In-situ and disturbed soil samples will be collected during drilling and those samples will be transported to our laboratory for testing.

Leighton will conduct geotechnical testing on the sampled soils in our laboratory, for soil classification and to evaluate the engineering properties. This testing is anticipated to include 1) in-situ moisture contents and dry densities, 2) maximum dry density and optimum moisture content, 3) Expansion Index (EI), 4) R-value for pavement design and 5) particle size/sieve analysis, if warranted.

This task will involve engineering review and analysis of the collected data. The results of Leighton's review will be presented in a geotechnical exploration report that will include all laboratory test results and will be signed and stamped by a California licensed Professional Engineer. A draft report and one review iteration is included in our fee.

## Observation and Testing Services During Construction

Proposed scope for observation and testing during construction will include the following tasks:

- Attendance at a pre-construction onsite meeting, if requested.
- Field observation and compaction testing performed by Leighton's Soil/Field Technician on a part-time
and/or as-needed basis. Leighton anticipates that field observation and compaction testing will be required for subgrade preparation, aggregate base, and AC placement.
- Laboratory testing of subgrade soils and aggregate base for maximum density, as well as asphalt conformance testing. Leighton assumes no field or lab testing of concrete.
- Office project management and quality control of field and laboratory testing.
- A final summary compaction report documenting the earthwork performed based upon the projects plans and specifications, if needed.


## Geotechnical Schedule

Assuming we have unhindered access to the site for our reconnaissance and exploration, our geotechnical report can be submitted within about 2 to 3 weeks from completion of fieldwork or 4 to 5 weeks from your Notice-To-Proceed (NTP). The proposed services outlined above under Limited Geotechnical Services Task will be performed for a fixed fee. Our services during construction will be perform on a Time-and-Expense basis.

## Additional Services

If additional field or laboratory services are required, these services will be provided in accordance with Leighton's Amended Professional Fee Schedule. For the purpose of budget control and time schedule, the following is assumed:

- No inclement weather or environmental issues are to preclude drilling.
- This project is subject to the Prevailing Wage Law.
- Field investigation can be performed during normal weekday daylight-hours and Leighton will have legal and unhindered access to the site.
- Responding to County/City review comments, if any, or geotechnical testing and observation during construction will be performed for extra charges. No meetings included in this scope or fee.


## Task 2.3 CEQA Services

## Proposed Scope of Work

Our approach to preparing the California Environmental Quality Act (CEQA) documentation for the proposed project is to first and foremost work collaboratively with the City of Moreno Valley to prepare documentation that satisfies CEQA requirements and is legally defensible, assists the City in the decision-making process, and meets
the City's needs in terms of schedule and budget by following an efficient and effective project delivery process. To accomplish these objectives, our approach is founded on the following principles:

- Conduct a technically adequate, complete, and defensible environmental analysis.
- Create a reader friendly CEQA document that utilizes a combination of narrative, tables, and exhibits to help the reader understand the environmental consequences of the project.
- Establish and achieve a milestone/critical path project schedule.

Based on our understanding of the project, existing conditions, and previous projects under review by the City, including the MoVal 2040 General Plan Environmental Impact Report (EIR), the project may qualify for a Categorical Exemption under CEQA. Our proposed scope of work includes the preparation of a CEQA Exemption and supporting technical studies as backup documentation to support the necessary discretionary approvals by the City for the proposed development. Should a higher-level CEQA document be deemed necessary, we would work with the City to seek a mutually agreeable scope, schedule, and budget augmentation. The Environmental Scope of Work is described in detail below.

## Project Kickoff

After issuance of the Notice to Proceed, Michael Baker will coordinate with the City and project team to obtain all site plans, specifications, existing environmental documents, existing permits, and existing technical reports related to the project and nearby areas. All existing documentation and background materials, including the City's MoVal 2040 General Plan EIR, will be reviewed by Michael Baker.

Deliverables: Data needs list (electronic)

## Notice of Exemption and Backup Documentation Memorandum

Section 21084 of the Public Resources Code requires the CEQA Guidelines to include a listing of types of projects that are determined not to have a significant effect on the environment and which, therefore, are exempt from CEQA clearance. Sections 15301 through 15333 of the CEQA Guidelines describes the 33 classes of projects, also known as Categorical Exemptions. The project could qualify for a CEQA exemption under CEQA Guidelines Section 15332 for In-Fill Development Projects (Class 32 Exemption). As defined by CEQA Guidelines Section 15332, Class 32 in-fill
development projects are characterized by the following criteria:

- The project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.
- The proposed development occurs within city limits on a project site of no more than five acres substantially surrounded by urban uses.
- The project site has no value as habitat for endangered, rare, or threatened species.
- Approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality.
- The site can be adequately served by all required utilities and public services.

Michael Baker will prepare the Notice of Exemption (NOE) form and the Backup Documentation for the NOE which includes the technical analyses described under Task 3 to support our findings. Two rounds of comment are assumed as part of this scope of work.

NOE Form: The NOE would include a brief description of the project, the location of the project, a finding that the project is exempt from CEQA, including a citation to the State Guidelines section(s) or statute(s) under which it is found to be exempt, and a brief statement of reasons to support the finding (with reference to the backup documentation) pursuant to CEQA Guidelines Section 15062.

Backup Documentation for the NOE: The backup documentation memorandum for the NOE would include a description of the project and project background, a discussion of the CEQA Regulatory Setting and exemption criteria, an Environmental Review to assess the potential for the proposed project to result in environmental effects and whether the proposed project qualifies for a Categorical Exemption, and Findings and Conclusion.
Michael Baker will provide an administrative draft of the NOE Form and backup documentation memorandum to the City for review and will discuss any relevant issues or concerns. One administrative draft of the NOE Form and backup documentation memorandum will be submitted electronically (in Word format) to the City for review and comment. Michael Baker will make any revisions to the documents based on comments or suggestions received from the City. Michael Baker will finalize the NOE Form and backup documentation memorandum and submit to the

City for approval. Michael Baker assumes the City will file the NOE with the County Clerk or the Office of Planning and Research once the project has been approved. Pursuant to CEQA Guidelines Section 15062, the filing of the NOE starts a 35-day statute of limitations period on legal challenges to the agency's decision that the project is exempt from CEQA. If the NOE is not filed, a 180-day statute of limitations will apply. Additionally, per CEQA Guidelines Section 15300, projects declared to be categorically exempt are exempt from the provisions of CEQA; therefore, this document will not be circulated for public review and no public meetings will occur.

## Deliverables:

- Administrative Draft NOE Form and backup documentation memorandum (electronic)
- Draft NOE Form and backup documentation memorandum, incorporating the City's comments (electronic)
- Final NOE Form and backup documentation memorandum (electronic)


## Technical Analyses to Support NOE Backup Documentation

To ensure the project meets the criteria of CEQA Guidelines Section 15332 Class 32 Categorical Exemption In-Fill Development Projects, Michael Baker will prepare technical analyses for air quality, greenhouse gas (GHG) emissions, noise, habitat and Multiple Species Habitat Conservation Plan (MSHCP) consistency, cultural resources, and vehicle miles traveled (VMT) screening analysis to appropriately demonstrate that the project satisfies the exemption criteria that the project would not result in any significant effects relating to traffic, noise, air quality, or has no value as habitat for endangered, rare or threatened species. Based on our understanding of the project and the applicable CEQA exemptions, we assume that no other technical analyses will be needed for this project. Should the City require additional technical analyses, a scope of work and budget augmentation would be required. One round of comment is assumed for the technical analyses, which would be included in the review of the backup documentation memorandum described in Task 2.

## Subtask: Air Quality and Greenhouse Gas Emissions Assessment

ECORP Consulting, Inc. (ECORP), as a subconsultant to Michael Baker, will conduct technical investigations to evaluate the project's potential impacts related to air
quality and GHG emissions. The assessment of air quality and GHG emissions will quantify short-term (i.e., construction) and long-term (i.e., operational) emissions generated by the proposed project using the most recent version of the California Emissions Estimator Model (CalEEMod) software. CalEEMod is a statewide land use emissions computer model designed to quantify pollutant emissions associated with a variety of land use projects. Project criteria air pollutant and GHG emissions will be compared to the thresholds of significance promulgated by the South Coast Air Quality Management District (SCAQMD), including SCAQMD's recommended Localized Significance Thresholds (LSTs). LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The project's contribution of GHG emissions will also be compared to the City of Moreno Valley Energy Efficiency and Climate Action Strategy and associated City of Moreno Valley Greenhouse Gas Analysis, which promulgates GHGreduction measures.

ECORP will document potential air quality and GHG emission-related impacts in a technical report. The analysis will be supported by modeling documentation, which would be included as an appendix to the technical report.

## Subtask: Noise Analysis

ECORP, as a subconsultant to Michael Baker, will conduct technical investigations to evaluate the project's potential impacts related to noise. The applicable noise criteria for the project area will be reviewed and discussed for land uses adjacent to and nearby the project site as they will be the basis for the project impact determination and whether mitigation is necessary. In order to establish the existing ambient noise levels currently experienced at and around the project site, ECORP will conduct up to three (3) short-term (15 minutes) measurements in the project vicinity.

Construction would occur during implementation of the proposed project. Noise levels from construction sources will be analyzed using the Federal Highway Administration Roadway Construction Noise Model and based on the anticipated equipment to be used. In order to evaluate the potential health-related effects (physical damage to the ear) from construction noise, construction noise will be evaluated in terms of hourly equivalent continuous noise levels (Leq) and the frequency of occurrence at the nearby receptors (Valley View High School and residences). In addition to construction noise, an analysis of vibration
impacts will be prepared based on the California Department of Transportation's vibration analysis guidance.

The evaluation of the project's contribution to noise increases over existing conditions will be addressed. The predominate source of onsite noise would include activities associated with the pump track and standard parking lot noise. The analysis of onsite noise will rely on the SoundPLAN 3D noise model, which will be used to calculate the propagation/spread of onsite project noise levels from onsite Project operations. The SoundPLAN 3D noise model predicts noise levels based on the location, noise level, and frequency spectra of the noise sources as well as the geometry and reflective properties of the local terrain, buildings, and barriers. A noise contour graphic will be prepared to depict the noise levels at the surrounding receptors. The modeling results and noise contour graphics will be discussed and summarized in the analysis. The project also has the potential to increase off-site traffic noise. According to the 2020 Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol, doubling of traffic on a roadway is required in order to increase noise to a perceptible level for humans. In the case that traffic is predicted to double the amount of existing traffic on vicinity roadways, off-site mobile source noise impacts from vehicular traffic will be assessed using the U.S. Federal Highway Traffic Noise Prediction Model (FHWA-RD-77-108). Otherwise, off-site traffic noise will be addressed qualitatively.

ECORP will document potential noise impacts in a technical report. Where appropriate, the analysis would be supported by modeling documentation, which would be included as an appendix to the report.

## Subtask: Habitat Assessment and MSHCP Consistency Analysis

Michael Baker will conduct a database search of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database, the California Native Plant Society (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California listings, and the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation online system and Critical Habitat mapper to preliminarily identify any special-status biological resources known to occur within the general vicinity of the project site. A review of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) will be conducted for implications on the
proposed project. In addition, Michael Baker will review the 2040 MoVal General Plan EIR, the U.S. Department of Agriculture/Natural Resources Conservation Service Soil Survey, as well as historic/current aerial photographs and topographic maps, to further assess current conditions and any ecological changes that the project site has undergone.

Following the literature review, Michael Baker will conduct a field survey of the project site to document baseline biological conditions from which to evaluate the site's potential to support special-status plant and wildlife species, including habitats covered under the MSHCP (e.g., vernal pools, riparian/riverine habitat). The field survey will be conducted by a qualified biologist(s) to document the presence/absence of special-status biological resources, or to determine the potential for occurrence of such resources that may not be detectable when the literature review is conducted. Notes will be taken on all plant and wildlife species observed on-site during the field survey. In addition, the location of any special-status plant and wildlife species and special-status vegetation communities will be mapped, if present on-site. Vegetation communities occurring within the project site will be classified in accordance with the vegetation descriptions provide in the MSHCP and cross-referenced with A Manual of California Vegetation (Sawyer et al. 2009). Data collected during the field survey will provide an overall understanding of the project setting and biological resources potentially occurring in the area.

Michael Baker will then prepare a technical letter report to summarize the information and results obtained during the literature review and field survey, document all plant, wildlife, and vegetation communities observed, and determine the potential for any special-status species to occur on or within the vicinity of the project site. In addition, the report will provide an analysis of anticipated project-related impacts to biological resources and identify any additional biological surveys, recommendations, and/or permit requirements that may be required prior to implementation of the proposed project. Further, the report will document compliance with the MSHCP and identify potential impacts to MSHCP covered species, habitats (e.g., vernal pools, riparian/riverine habitat), and conservation areas. The final report will be sufficient to make the appropriate consistency determination to demonstrate compliance with CEQA and the MSHCP. Site photographs taken during the field survey and Geographic Information Systems

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figures will be included in the report to further enhance written text and visually identify specific biological information as it relates to the project site.

This task assumes one (1) field survey will be conducted and that the City of Moreno Valley will provide full access to the project site, as well as keys to locked gates and advance notice to existing property tenants of our right of entry. This task excludes focused surveys for special-status plant and wildlife species and the preparation of a Determination of Biologically Equivalent or Superior Preservation (DBESP) Report. Additionally, based on a preliminary review of the project site, aquatic features potentially falling under federal, or State jurisdiction do not appear to occur on-site; therefore, this task does not include preparation of a formal jurisdictional delineation report.

## Subtask: Cultural Resources Investigation

Michael Baker will complete a cultural resources records search of the project site with a $1 / 2$-mile search radius at the Eastern Information Center; literature, historic map, and aerial photo review; archaeological survey; and archaeological sensitivity analysis of the project area. The intent of the cultural resources identification efforts is to determine if there are historical resources, as defined in Section 15064.5(a) of CEQA, within the project area. The findings of the cultural resource's identification efforts will be summarized in a memo intended to satisfy the terms of a CEQA exemption.

Michael Baker will prepare a cultural resources technical memo describing the project site, methods and results of the cultural resources identification efforts, and recommendations, as applicable. Further studies may be recommended if cultural resources are identified. It is assumed that the results of the cultural resources identification effort will be negative, and thus, no resources will require an evaluation for listing in the California Register of Historic Resources. Finally, it is assumed that the project will be exempt from CEQA, so no Assembly Bill 52 consultation or other Native American outreach will be required.

## Subtask: VMT Screening Analysis

Michael Baker will conduct a VMT screening analysis for the proposed project consistent with the City of Moreno Valley's Transportation Impact Analysis Preparation Guide for Vehicle Miles Traveled and Level of Service Assessment dated June 2020. An evaluation of project size, project
type, and project location will be conducted to evaluate if the project meets any of the screening criteria. Michael Baker anticipates that the project will be exempt from a full VMT assessment based on an initial review of the screening criteria and therefore a VMT calculation is not anticipated.

Michael Baker will document the full VMT screening analysis to determine if the project can be presumed to have a less-than-significant transportation impact based on project size, location, or type in support of the CEQA analysis. The screening criteria identified in the City guidelines will be utilized, specifically Transit Priority Area, Low VMT Area, and Project Type. As part of this analysis, Michael Baker will calculate the trip generation estimate for the project.

If the project meets one or more of the screening criteria, the project can be presumed to have a less-thansignificant transportation impact and a full VMT assessment and calculation would not be required and the VMT Screening Memorandum would be sufficient for CEQA analysis purposes. It is anticipated that the project will screen out of the full VMT analysis based on the Project Type Screening criteria (i.e., Local Park). In the event that the project does not screen out, Michael Baker will prepare a full VMT assessment under a separate scope of work and fee if requested by the City.

The VMT screening process, assumptions, and findings along with appropriate exhibits and maps will be summarized in a technical memorandum.

## Deliverables:

- Air Quality and GHG Emissions Assessment Report included in the backup documentation memorandum with data modeling sheets attached (electronic)
- Noise Impact Assessment Report included in the backup documentation memorandum with data modeling sheets attached (electronic)
- Habitat Assessment and MSHCP Consistency Analysis Technical Letter Report included in the backup documentation memorandum (electronic)
- Cultural Resources Technical Memorandum included in the backup documentation memorandum (electronic)
- VMT Technical Memorandum included in the backup documentation memorandum (electronic)


## Project Management and Meetings

In addition to the kickoff meeting, coordination meetings may be conducted to review the City's comments on administrative draft documents and in preparation for public hearings. We have budgeted for two coordination meetings (in addition to the kickoff meeting) with the City. Additional management activities include monitoring the project schedule and budget, ensuring critical timeline milestones are met, and providing quality control review of all completed work products.

## Schedule

Michael Baker is available to start work immediately after issuance of the Notice to Proceed for the project. Our proposed schedule below shows the major project milestones and outlines the approach to complete the NOE, backup documentation memorandum, and supporting technical analyses in approximately 15 weeks. During the kickoff meeting, we will work with the City to update the schedule as necessary, review milestones and expectations for deliverables, and discuss any "critical path" items and information needs critical to the schedule.

## Task $2.4 \quad$ Stormwater

## Preliminary Water Quality Management Plan

Michael Baker will prepare a Preliminary Water Quality Management Plan (WQMP) for the Project in accordance with the Guidance Document for the Santa Ana Region of Riverside County. The development qualifies as a Priority Development Project which requires preparation, approval, and implementation of a compliant Project Specific WQMP. The Pump Track and Site Improvements propose a parking lot with 40-50 parking spaces which will place the Project under the category of 'Parking Lots' which is defined as 5,000 square feet or more exposed to stormwater. Another category that may apply to the Project is 'New Development Projects' which is applicable to new developments that create 10,000 square feet or more of impervious surface. A Preliminary WQMP document will be developed and prepared using the Santa Ana Watershed WQMP template and will include postconstruction Best Management Practices (BMPs) applicable to the project that will be implemented to reduce and/or eliminate the discharge of pollutants from the completed project into the storm drain system to help protect receiving waters. The various BMP selections and sizing where applicable will be performed for the development. Preliminary design of BMPs will be prepared
sufficient for cost estimating and BMP footprint determination.

## Deliverables: PDF of Preliminary WQMP

## Preliminary Hydrology and Hydraulics Report

Michael Baker will prepare a Preliminary Hydrology Report for the Project in accordance with the requirements of the City of Moreno Valley and the Riverside County Flood Control and Water Conservation District (RCFC\&WCD), based on the Preliminary Grading Plan, for submittal to the City. As part of this task the necessary calculations will be performed in accordance with the RCFC\&WCD Hydrology Manual to show the flood protection criteria is met on a preliminary level.

Deliverables: PDF of Preliminary Hydrology and Hydraulics Report

## Final Water Quality Management Plan

Michael Baker will prepare a Final WQMP based on the Final Site Plan, Grading and Drainage Plan, and Hydrology and Hydraulics Report. The Final WQMP shall be processed through the City of Moreno Valley for final approval and will include all necessary components for approval including certifications and agreements.

| Task/Milestones | Duration <br> (Weeks) | Timeline |
| :--- | :--- | :--- |
| Project Kickoff | 1 | Week 1 |
| Michael Baker Prepares Administrative Draft <br> NOE/Backup Documentation including <br> technical analyses (AQ/GHG, Noise, <br> Habitat/MSHCP, Cultural, VMT) | 8 | Weeks 2-9 |
| City Reviews Administrative Draft <br> NOE/Backup Documentation | 2 | Weeks 10-11 |
| Michael Baker Prepares Revised NOE/Backup <br> Documentation for City Review | 1 | Week 12 |
| City Reviews Revised Addendum | 1 | Week 13 |
| Michael Baker Prepares Final NOE/Backup <br> Documentation for City Approval | 1 | Week 14 |
| City Files NOE following Approval of Final <br> NOE/Backup Documentation | 1 | Week 15 |

## Deliverables: pdf of Final WQMP

## Final Hydrology and Hydraulics Report

Michael Baker will prepare a Final Hydrology \& Hydraulics Report for the development in accordance with the requirements of the City of Moreno Valley and the RCFC\&WCD, the Precise Grading Plan, and the approved Preliminary Hydrology Report. This report will finalize the determined on-site stormwater runoff calculations and the
drainage facilities necessary to accommodate projected stormwater flows and the City's Conditions of Approval.

Deliverables: pdf of Final Hydrology and Hydraulics Report

## Stormwater Pollution Prevention Plan

Michael Baker will prepare and submit a Notice of Intent (NOI) and a Stormwater Pollution Prevention Plan (SWPPP) for the Project to the State Water Resources Control Board (SWRCB). A copy of the SWPPP and the Waste Discharge Identification Number (WDID No.) shall be supplied to the client.

Michael Baker will comply with the Construction General Permit (CGP), 2022-0057-DWQ effective after September 1st, 2023. Michael Baker will comply with the CGP by preparing and submitting the project registration documents online to the SWRCB. These documents include a risk analysis and the SWPPP document.

This task assumes any further updates or actions necessary for upkeep, inspections, or maintenance of the SWPPP shall be prepared by the general contractor, erosion control contractor, or other party. This includes but is not limited to Annual Reporting, Rain Event Action Plans, Inspection Logs, Changes of Information, and the Notice of Termination.

Deliverables: pdf of SWPPP Report

## TASK 3 CIVIL ENGINEERING PLANS, LANDSCAPE ARCHITECTURE PLANS, ELECTRICAL AND LIGHTING PLAN, SPECIFICATIONS, AND ENGINEERING ESTIMATES

## Civil Engineering Plans

CADD Base -_Michael Baker shall prepare an overall CADD base for use in the Final Engineering Documents as well as for coordination between sub-consultant and engineering. The digital site base will be based on as-builts provided by the client. This CADD base will include existing utilities, proposed utilities, and site improvements. The City shall provide the proposed asphalt pump track site plan improvements.

Precise Grading Plans - Michael Baker shall prepare one set of grading plans in accordance with the standard requirements and guidelines of the City of Moreno Valley. The Plans will be prepared at 10 scale and shall depict General Notes, Index Map, Vicinity Map, Legend, Construction Notes, Quantities, Details, and Precise Grading. Erosion Control Plan and Horizontal Control Plan will also be implemented to supplement the grading plans at 20 scale.

Utility Plans - Michael Baker shall prepare one set of utility plans in accordance with the standard requirements and guidelines of the City of Moreno Valley. The Plans will be prepared at 20 scale plan view only and shall depict General Notes, Legend, Construction Notes, Quantities, and Details. Sewer and Water service laterals will be designed to serve the Pre-Fabricated Restroom and Drinking Fountain proposed for the Pump Track. Scope assumes that tie-in points to existing off-site sewer and water facilities are reasonably proximate and that these facilities are adequately sized to accommodate the project requirements. Any improvement plans for offsite main extensions or other major transmission mains, pump stations, reservoirs, offsite pressure regulating stations or other major facilities required by the appropriate governmental jurisdictional agency will be completed under separate contract for an additional fee.

Drainage Plans - Michael Baker shall prepare one set of drainage plans in accordance with the standard requirements and guidelines of the City of Moreno Valley. The Plans will be prepared at 20 scale plan view only and shall depict General Notes, Legend, Construction Notes, Quantities, and Details. Storm Drain will be designed to facilitate grading plan and be consistent with drainage study reports. Scope assumes drainage facilities are proximate to the site and detention storage can be accommodated onsite. Offsite improvements, basins, storm drain extensions and modeling of downstream outlet facilities is excluded from project scope.

## Landscape Architect Plans

Hardscape Layout / Materials Plans and Details
Consultant will prepare plans and details indicating the locations and materials to be used for the park amenities, site furnishings, fencing, paving materials, walkways, and prefabricated restroom. Locations of hardscape areas, planting areas, and parking will also be identified.

Consultant will coordinate the preliminary design of the prefabricated restroom building with a nationally recognized manufacturer to prepare biddable construction drawings. The drawings will include preliminary plans and details provided by the manufacturer, but final structural plans and calculations will be deferred submittals by the contractor post bid award.

Planting Plans and Details - Consultant will prepare $1^{\prime \prime}=20^{\prime}$ scale planting plans indicating the species, quantity, and size of plant material to be used. Native and low water use
plant materials that are suited to the local environment will be used. A planting legend and planting details will be included as part of this task.

Irrigation Plans and Details - Consultant will prepare $1^{\prime \prime}=20^{\prime}$ scale irrigation plans indicating type of irrigation equipment to be used after the water meter, such as the backflow preventer, master valve, pipe, flow-sensor, sleeves, valves, quick-couplers, and low-precipitation rate dripline or bubblers. The irrigation design will comply with local Water Conservation requirements. It is assumed that the water meter and electrical service for the irrigation controller will be provided by others. An irrigation legend, irrigation details, and water use calculations will be included as part of this task.

## Electrical and Lighting Plan

Michael Baker International will prepare electrical drawings for the site improvement project. The deliverables will be prepared and sealed by an engineer registered in the state of California.

The items will include:

- Research and Investigation of Existing site
- Site plan drawing showing service location, service size, voltage/size of main panel
- Approved Lighting Plans
- One-Line Diagram
- Photometric Study


## Technical Specifications

Michael Baker shall prepare Project Technical Specifications to supplement the Standards found in the Greenbook Standard Specifications for Public Works Construction ("Greenbook"). Michael Baker shall prepare a section in the Technical Specifications for each item listed in the Bid Sheet. In each section, Michael Baker shall at least provide measurement and payment clauses to reinforce or supplement those found in the Greenbook. Project Technical Specifications will be provided at the 95\% Design Documents Phase.

## Cost Estimate and Earthwork Quantities

Michael Baker shall prepare an Opinion of Probable Construction Costs, which will be provided at the 95\% Design Documents Phase. This opinion shall be developed in the form of a Contract Item List (Bid Sheet) using the standard forms provided by the City of Moreno Valley.

Michael Baker shall prepare a Raw Estimate of Earthwork Quantities based upon the Precise Grading Plans and

Geotechnical Report recommendations as described herein. Allowances for shrinkage and subsidence and quantities for corrective grading work shall be accounted for based upon the available Geotechnical Soils Engineer's Report, or as directed by the City Engineer. Raw Cut and Fill Quantities shall be depicted on the Precise Grading Plans at the 95\% Design Documents Phase.

Development of this opinion shall be accomplished through the use of CADD or other mathematic means and listed in detail for the City of Moreno Valley to use during bidding and construction administration. The goal for the final opinion is a contingency of $10 \%$.

Unit prices for these items shall be developed through the judicial use of City of Murrieta, Riverside County, and/or Caltrans recent and historical data. Local materials suppliers and contractors may be used to identify unit prices.

Michael Baker makes no representation concerning the estimated quantities and cost figures made in connection with maps, plans, specifications, or drawings other than that all such figures are estimates only, and Michael Baker shall not be responsible for fluctuations in cost factors.

## Task $3.11^{\text {st }}$ Review - Conceptual Design Documents

This task shall include the conceptual design documents for Civil Engineering Plans, Landscape Architecture Plans, and Electrical and Lighting Plans to be presented for the $1^{\text {st }}$ Review to City staff for review, analysis, and recommendations.

## Task $3.22^{\text {nd }}$ Review - 35\% Design Documents

The 35\% Design phase of work will incorporate comments resulting from the review of the Conceptual Design Documents. During this effort Michael Baker shall advance the Civil Engineering Plans, Landscape Architecture Plans, and Electrical and Lighting Plans to $35 \%$ complete. The intention of $35 \%$ complete plans is a set of documents that is substantially complete with previous City comments addressed.

## Task $3.33^{\text {rd }}$ Review - 95\% Design Documents

The 95\% Design phase of work will incorporate comments resulting from the review of the 35\% Design Documents. During this effort Michael Baker shall advance the Civil Engineering Plans, Landscape Architecture Plans, and Electrical and Lighting Plans to 95\% complete. The intention of $95 \%$ complete plans is a set of documents that

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is substantially complete with previous City comments addressed.

It is expected that at this level of design all Agency comments have been addressed and no new comments will be provided. This submittal is intended to ensure the City that the design package is ready to list for advertisement. Technical Specifications, Cost Estimates, and Earthwork Quantities will be provided at this phase of work as well.

## TASK 4 FINALSUBMITTALS

## Final Design (Bid Ready Improvement Plans)

The Bid Ready Final Design phase of work will incorporate Regulatory, and Resource Agency comments resulting from their review of the $95 \%$ Design documents. During this effort Michael Baker shall prepare bid ready documents. The following plan listed under "deliverables" are included as part of this task.

- Submit two full-size and two half-size (bond paper) final plan set master with the design engineer's seal and signature on each plan sheet and title sheet of specifications.
- Submit an electronic copy of all plans in AutoCAD and Adobe Acrobat format on a Flash Drive.
- Submit contract document in Microsoft Word format on a Flash Drive.
- Submit one set of quantity calculations and final engineering estimate in Microsoft Excel format on a Flash Drive.
- Submit all electronic files, including correspondence, photolog, and analyses, used in project design on a Flash Drive. Files that are not in electronic format shall be scanned into commonly used digital format and saved to the Flash Drive.


## TASK 5 PROJECT COORDINATION DURING DESIGN PROCESS

Michael Baker shall work with the City of Moreno Valley to schedule a project kickoff meeting (pre-design meeting) as well as planned status meetings with the City for Conceptual, 35\%, and 95\% Design Documents stages. Additional meetings with City Departments, City of Moreno Valley's sub-consultants as well as other key stakeholders will be scheduled and attended as necessary. Michael Baker shall provide meeting agendas with input from the City for each meeting and will prepare and distribute meeting minutes. A total of five (5) meetings is
assumed in this task. This scope also includes coordination items with Client, other Consultants, and Internal Team.

On a monthly basis, Michael Baker will issue invoices and progress reports to the City detailing major items worked on during the billing period as well as percentage complete for each task. This report will include all necessary back up and will serve to establish internal accounting methods and procedures acceptable to the City for documenting and monitoring contract costs.

It is understood that the City explicitly understands that project management, meetings, and coordination will be billed on a time and materials basis. Should the budgetary hours be exceeded, Michael Baker will notify the City and request a contract amendment for additional hours.

## TASK 6 DESIGN SUPPORT DURING BIDDING PHASE

Michael Baker shall work with the City of Moreno Valley to schedule a pre-bid meeting and respond to contractor requests for clarification when needed. Michael Baker shall also record and distribute among potential bidder's answers and clarifications given to contractors and prepare formal construction documentation addenda, if necessary.

It is understood that the City explicitly understands that design support during bidding phase will be billed on a time and materials basis. Should the budgetary hours be exceeded, Michael Baker will notify the City and request a contract amendment for additional hours.

## TASK 7 DESIGN SUPPORT DURING CONSTRUCTION PHASE

Michael Baker shall work with the City of Moreno Valley to schedule a pre-construction meeting and clarify questions related to the project when needed. These answers to questions during the pre-construction meeting or during construction that were not brought up in the preconstruction meeting will be distributed as necessary.

It is understood that the City explicitly understands that design support during construction phase will be billed on a time and materials basis. Should the budgetary hours be exceeded, Michael Baker will notify the City and request a contract amendment for additional hours.

## ADDITIONAL SERVICES:

Services which are not specifically identified herein as services to be performed by Michael Baker are considered "Additional Services" for purposes of this Agreement. Client may request that Michael Baker perform services
which are Additional Services. However, Michael Baker is not obligated to perform such Additional Services unless an amendment to this Agreement has been fully executed setting forth the scope, schedule, and fee for such Additional Services. In the event Michael Baker performs Additional Services before receipt of such executed amendment, Client acknowledges its obligation to pay for such services at Michael Baker's standard rates, within 30 days of receipt of Michael Baker's invoice.

## EXCLUSIONS:

Although the following tasks are not included in this scope of work, Michael Baker is available to provide consulting services relating to any of the following items if determined to be necessary:

- Public outreach;
- Structural Design and Calculations;
- Exhibits not specifically outlines in this scope of work;
- Demolition Plans;
- Any other specific services not described within this scope of work.


## Quality Assurance and Quality Control Procedures

Effective quality management is a key to Michael Baker's success. Success is measured not only by timely completion and quality work, but most importantly by meeting or exceeding client expectations in thoroughness, completeness, clarity, and accuracy of deliverables. These measures can only be provided on a consistent basis with an effective quality management program. Project managers develop a Project Specific Quality Management Plan (PSQMP) based upon the complexity of the project. The PSQMP provides project specific guidelines for quality control reviews. This plan is scalable for the size and type of project to be executed. QC and QA are enforced through the use of guidelines established under the system, ensuring consistent, high-quality services to our clients. The PSQMP includes QC procedures for project phases and submittal documents. In addition to QC protocols, the process includes separate checklists for all QC
requirements. Miguel Gonzalez, PE is serving as Michael Baker's QA/QC Manager for this contract. Mr. Gonzalez will be responsible for the QA reviews as well as internal audits of the quality management process and PSQMP. Regardless, the Contract Manager is ultimately accountable for the quality of deliverables submitted to the client. All milestone deliverables to City will bear the signature of each reviewer and/or step in the review process. This program consists of the following key elements: Project Manager Supported by Permanent Design Teams, Design Discipline Scope of Work/ Responsibilities, Design Criteria Establishment, "Over the Shoulder" Reviews, In-House Project Team Meetings/Coordination, Project Communication/ Documentation, Milestone Submittal Reviews, InterDiscipline and Constructability Reviews, Utility Location Cross Check, and QA.


## Related Experience with References

Below are a few examples of projects that our team have delivered that are similar to this Project:
Centinela Bike Pump Track Project, Inglewood, California. Velosolutions. Michael Baker, partnering with Grow Cycle Foundation, provided design and engineering services to develop a bike pump track for the Edwin Vincent Park. The track is an asphalt paved, closed loop track, consisting of undulating rollers, banked turns, and features to enhance the play experience, serving a wide range of age groups and nonmotorized wheeled vehicles (such as bicycles and scooters). The
track will be inset two feet below grade with a starting platform height of two feet above grade. For the project, Michael Baker prepared precise grading plans, drainage plans, and the low-impact development plan. Also provided were construction drawings and a cost estimate as well as design and layout of the storm drain system.

During construction, a 72 -inch corrugated metal storm drain was discovered 6 inches below grade. The pipe had deteriorated to a point where it could not be repaired or support the machinery needed to construct the track. Michael Baker worked with Grow Cycle Foundation, Velosolutions (the bike track contractor), and the city to determine the best course of action. Ultimately, a new 72 -inch corrugated metal pipe was placed through the site in order to allow for the track to be constructed.

Value-Added - Michael Baker was brought in late in the process and committed to completing the work in under one month. Due to the time constraints, Torrent Resources was brought in to design the drywells for the project, allowing the low-impact development plan to be approved and

## Reference:

Velosolutions | 5411 Shady Oak Lane
Fort Lauderdale, FL 33312
Alon Karpman, CEO | 917-304-2566
Velosolutions.com implemented in an expeditious fashion.

## Reference:

Orange County Public Works | 300 N. Flower Street
Santa Ana, CA 92702
Robert Sanchez | 714-245-4566
Robert.Sanchez@ocpw.ocgov.com

Santa Ana River Parkway Trails Extension, Orange County, California. Orange County Public Works. Michael Baker prepared final design plans, specifications, and estimate (PS\&E) for the Santa Ana River Parkway Extension project, which will construct a 2.6 -mile extension of bikeway, riding, and hiking trails systems from Gypsum Canyon Road to the Orange County Line, in coordination with OCPW, Orange County Parks, and the Army Corps of Engineers.

Venta Spur Trail Bicycle and Pedestrian Bridge over SR 133, Irvine, California. City of Irvine. Michael Baker assisted with the preliminary design and environmental documentation for the extension of the Venta Spur Trail across S.R. 133 and Marshburn Channel. The trail extension was a key element of the city's Master Plan of Open Space and Trails and

## Reference:

City of Irvine | P.O. Box 19575, One Civic Center Plaza Irvine, CA 92606
Cheryl Lea | 949-724-7313
clea@cityofirvine.org constructed a Class I Bikeway between the existing trail in the Village of Woodbury East and an Irvine Ranch Water District (IRWD) maintenance road that connects to future Venta Spur Trail in the Great Park Neighborhoods.

## Resource Allocation Matrix

|  |  | Principal Bill Pope | QA/QC Manager Miguel Gonzalez | Project <br> Manager Chad Adachi | Civil Land Development Designer Jerry Miller Kyle Eubanks Sheryl Bermudez | Electrical Engineer Joshua Parker Jordan Johnston | Surface Water Engineer Kyle Gallup Danielle Peltier | Surveying/Mapping John Duquette Connie Barrett Xavier Hughes | Environmental Planning Kathalyn Tung Jennifer Wu | Landscape Architect Jeremy Franzini Alaa Chaabani Josh VanDuyn Elise Caille | Michael Baker Hours |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1.0 | Kick-off Meeting | 3 | 1 | 4 | 3 | 2 | 2 | 3 | 2 | 4 | 24 |
| 2.0 | Topographic and Mapping Survey, Geotechnical Services, CEQA Services, and Stormwater | 14 | 13 | 30 | 17 | 0 | 224 | 77 | 240 | 0 | 615 |
| 2.1 | Topographic and Mapping Survey | 2 | 2 | 8 | 4 | 0 | 4 | 77 | 0 | 0 | 97 |
| 2.2 | Geotechnical Services | 2 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 8 |
| 2.3 | CEQA Services | 5 | 5 | 10 | 0 | 0 | 0 | 0 | 240 | 0 | 260 |
| 2.4 | Stormwater | 5 | 5 | 10 | 10 | 0 | 220 | 0 | 0 | 0 | 250 |
| 3.0 | Civil Engineering Plans, Landscape Architecture Plans, Electrical and Lighting Plan, Specifications, and Engineering Estimates | 20 | 36 | 95 | 174 | 110 | 0 | 0 | 0 | 255 | 690 |
| 3.1 | Concept Design Documents | 5 | 8 | 15 | 29 | 20 | 0 | 0 | 0 | 65 | 142 |
| 3.2 | 35\% Design Documents | 5 | 12 | 25 | 55 | 30 | 0 | 0 | 0 | 117 | 244 |
| 3.3 | 95\% Design Documents | 10 | 16 | 55 | 90 | 60 | 0 | 0 | 0 | 73 | 304 |
| 4.0 | Final Submittals | 5 | 10 | 16 | 20 | 15 | 0 | 0 | 0 | 50 | 116 |
| 5.0 | Project Coordination during Design Phase | 10 | 5 | 25 | 2 | 2 | 0 | 0 | 11 | 10 | 65 |
| 6.0 | Design Support during Bidding Phase | 5 | 2 | 6 | 4 | 4 | 0 | 0 | 0 | 4 | 25 |
| 7.0 | Design Support during Construction Phase | 10 | 5 | 20 | 17 | 8 | 0 | 0 | 0 | 20 | 80 |
|  | TOTAL HOURS: | 67 | 72 | 196 | 237 | 141 | 226 | 80 | 253 | 343 | 1615 |

## 3. PROPOSED STAFF/TEAM

## Project Team Introduction

Michael Baker's team will be directed by Mr. William Pope. Knowledge, experience, and responsiveness are key elements of a strong team needed to meet and exceed the City's goals and expectations. Our Project Director has served in the role as lead for land development and infrastructure improvement contracts with municipalities, both from the private side as well as the public side for 30 years. Bill is able to leverage his public and private
experience to the benefit of the City, as he is able to draw upon experience from both sides of the table.

Mr. Chad Adachi, PE, will provide the City with boots-on-the-ground Project Management. Mr. Adachi brings 7 years of infrastructure experience in the Inland Empire to the team, specializing in strong communication and team coordination skills.

## Organization Chart

The Michael Baker team brings a depth of experience through our multi-disciplinary team. The organization chart identifies our Project Manager / Main Point of Contact and key personnel, related lines of authority and responsibility, and roles. A large majority of the work performed under this contract will be handled out of the local Temecula Office.


Key Team resumes are located in the Appendix.

## Personnel Qualifications Matrix

| Team Member Role | Yrs of Exp | Education | License/Registration |
| :---: | :---: | :---: | :---: |
| Chad Adachi Project Manager | 7 | B.S.C.E., 2016, Civil Engineering, California Baptist University | ```Professional Engineer - Civil, California, 2019, 90835``` |
| William Pope Project Director | 30 | Vocational/Technical, 2005, Surveying and Mapping Course, Mount San Jacinto Community College |  |
| Miguel Gonzalez QA/QC | 37 | M.S., 1995, Civil Engineering, San Diego State University <br> C.A., 1991, Industrial Electricity, San Diego City College <br> B.S., 1985, Civil Engineering, University of Guanajuato, Mexico | ```Professional Engineer - Civil, California, 2001, 6 1 5 6 1``` |
| John Duquette Survey/Mapping | 18 | A.S., 1996, Surveying and Mapping, Santa Ana College | Professional Land Surveyor, California, 1999, 7566 |
| Connie Barrett Survey/Mapping | 32 | B.S., 1987, Surveying and Mapping, CU GKD Coursework, Land Surveying, Rancho Santiago College | Professional Land Surveyor, California, 2021, 9646 |
| Joshua Parker Electrical | 8 | B.S.E.E., 2015, Electrical Engineering, Washington State University | Professional Engineer - Electrical, California, 2021, E23757 |
| Jeremy Franzini Landscape | 21 | M.L.A., 1996, Landscape Architecture, Texas A\&M University B.S., 1993, Environmental Studies, University of California, Santa Barbara | Landscape Architect, California, 2001, 4514 |
| Kathalyn Tung Environmental | 18 | M.S., 2009, City/Urban Community and Urban Planning, University of Southern California B.S., 2004, Environmental Sciences, University of California, Berkeley |  |
| Kyle Gallup Stormwater | 18 | B.S., 2005, Civil Engineer, San Diego State University | ```Professional Engineer - Civil, California, 2009, 74610 Certified Floodplain Manager, 2018, US-18- 10783 Water Treatment Operator, 2023, 46140 Water Distribution Operator, D1, 2023, 53919``` |

## 4. REQUIRED STATEMENTS

A. RFP \#2023-031 shall be incorporated in its entirety as a part of Michael Baker's proposal.
B. Both the RFP and our Proposal will jointly become part of the Agreement for Professional Consultant Services for this project when said Agreement is fully executed by Michael Baker and the Mayor or City Manager of Moreno Valley.
C. Michael Baker's Services to be provided, and fees therefore, will be in accordance with the City's RFP except as otherwise specified in our Proposal under the heading "ADDITIONS OR EXCEPTIONS TO THE CITY'S REQUEST FOR PROPOSAL."
D. See Appendix - ADDITIONS OR EXCEPTIONS TO THE CITY'S REQUEST FOR PROPOSAL.
E. A statement of qualifications applicable to this project including the names, qualifications and proposed duties of Michael Baker's Staff to be assigned to this project; a listing of recent similar projects completed including the names, titles, addresses and telephone numbers of the appropriate persons whom the City could contact. If one or more of the Consultant's staff should become unavailable, Michael Baker may substitute other staff of at least equal competence only after prior written approval by the City.
F. See Section 2. Technical Proposal, for a resource allocation matrix.
G. See Section 2. Technical Proposal, for a statement of sub-consultant's (include relief personnel) qualifications applicable to this project including the names, qualifications and proposed duties of the sub-consultant's staff to be assigned to this project; a listing of recent similar projects completed including the names, titles, addresses, and telephone numbers of the appropriate persons whom the City could contact.
H. Michael Baker acknowledges and understands that we will not be allowed to change the sub-consultant without written permission from the City.

- All charges for Michael Baker (construction) services is a "Not-to-Exceed Fee" and includes conservatively estimated reimbursable expenses, as submitted with and made a part of this Proposal.
- Michael Baker will document and provide the results of the work to the satisfaction of the City. This may include preparation of field and final reports, or similar evidence of attainment of the Agreement objectives.
- Michael Baker will immediately document and notify the City of any defects or hazardous conditions observed in the vicinity of the project site prior, during, or after the construction work.
L. A copy of Michael Baker's hourly rate schedule is included in the Cost Proposal provided under separate cover. Said hourly rate schedule is part of Michael Baker's Proposal for use in invoicing for progress payments and for extra work incurred that is not part of this RFP. An itemized cost breakdown for the work described herein is submitted in a separate file, entitled Cost file, as part of Michael Baker's Proposal submittal. All extra work will require prior approval from the City.
M. Michael Baker will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.
N. All federal laws and regulations shall be adhered to notwithstanding any state or local laws and regulations. In a case of conflict between federal, state or local laws or regulations the strictest shall be adhered to.
O. Michael Baker shall allow all authorized federal, state, county, and City officials access to place of work, books, documents, papers, fiscal, payroll, materials, and other relevant contract records pertinent to this special project. All relevant records shall be retained for at least three years.
P. Michael Baker shall comply with the Davis-Bacon Fair Labor Standards Act (40 USC 276-a through a-7), and the implementation regulations issued pursuant thereto ( 29 CFR Section 1, 5) , any amendments thereof and the California Labor Code. Pursuant to the said regulations, entitled "Federal Labor Standards Provisions," Federal Prevailing Wage Decision" and State of California prevailing wage rates, respectively.
Q. Michael Baker shall comply with the Copeland Anti-Kickback Act (18 USC 874) and the Implementation Regulation (29 CFR 3) issued pursuant thereto, and any amendments thereof.
R. Michael Baker offers and agrees to assign to the City all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 USC Sec. 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works or the subcontract. This assignment shall be made and become effective at the time the City tenders final payment to Michael Baker, without further acknowledgment by the parties.

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## APPENDIX

## Additions or Exceptions to the City's Request for Proposal

## AGREEMENT FOR PROFESSIONAL CONSULTANT SERVICES, PROJECT NO. 8010058

Item 14. Indemnification.
a. Design Professional Services. To the fullest extent permitted by Civil Code Section 2782.8, in performing "design professional services" as defined in Section 2782.8, the Consultant agrees to indemnify, defend, and save, the City, the Moreno Valley Community Services District (CSD), and the Moreno Valley Housing Authority (MVHA), their officers, agents and employees harmless from third party any and all liability, claims, demands, direct damages, or injuries to any person, including injury to the Consultant's employees and all claims to the extent which arise directly from or are connected with the negligent, reckless, or willful misconduct in the performance of or failure to perform the work or other obligations of the Consultant under this RFP and/or related Agreement, or are directly caused or claim to be causedby the negligent acts of the Consultant, its officers, agents or employees, or its subconsultant(s) or any person for whom Consultant is legally liable; acting for the Consultantor underitsentrolor direction; provided, however, that this indemnification and hold harmless shall not include claims to the extent arising from the sole negligence, active negligence, or willful misconduct of the City, MVHA, and CSD, their officers, agents or employees; and does not apply to any passive negligence of City unless caused at least in part by Consultant.
b. Non-Design Professional Services. For all non-design professional services, Consultant shall indemnify, defend, and save the City, the Moreno Valley Community Services District (CSD), and the Moreno Valley Housing Authority (MVHA), their officers, agents and employees from third party and liability, claims, demands, direct damages, or injuries to any person, including injury to the Consultant's employees and all claims which arise directly from or are connected with the performance of or failure to perform the work or other obligations of the Consultant, or are caused or claim to be caused by the negligent acts of the Consultant, its officers, agents or employees, or its subconsultant(s) or any person acting for the Consultant or under its control or direction for whom Consultant is legally liable in Consultant's performance under this Agreement; provided, however, that this indemnification and hold harmless shall not include claims arising from the sole negligence or willful misconduct of the City, MVHA, and CSD, their officers, agents or employees.
c. If Consultant should subcontract all or any portion of the services to be performed under this Agreement, Consultant shall require each subconsultant to indemnify City, CSD, Housing Authority and each of their officers, officials, employees, agents and volunteers in accordance with the terms of the preceding paragraph.
16. ...challenge, Consultant and City each agree to reasonably cooperate with each...

## 17. Insurance

(a) ...by the City Manager and his/her designee by mutual written agreement signed by both Parties.
(d) Upon request of City, Consultant shall immediately furnish City with a complete copy of any insurance policy required under this Agreement, including allendorsements, with said copycertified by the underwriter to be a true and correct copy of the original policy. This requirement shall survive expiration or termination of this Agreement. RESERVED

Explanation: Michael Baker does not provide insurance policies to outside firms due to security and confidentiality concerns. We will provide the widely accepted Standard Acord insurance certificate with proper endorsements provided by our carriers.
20. (a) The Consultant shall deliver to the Public Works Director/City Engineer of the City or his designated representative, fully completed and detailed project-related documents which shall become the property of the City upon receipt of final payment. The Consultant may retain, for its files, copies of any and all material, including drawings, documents, and specifications, produced by the Consultant in performance of this Agreement. Nothing herein shall be construed to grant ownership or any other rights to City of any of Consultant's pre-existing and/or background Intellectual Property or of any information, data, or property that was in Consultant's possession prior to the execution of this Agreement.
20. (c) The City agrees to indemnify and hold the Consultant free and harmless from any claim arising from any unauthorized use of computations, maps, and other documents prepared or provided by the Consultant under this Agreement, if modified by City of used by the City on other work without the permission of the Consultant. Consultant acknowledges that Consultant work product produced under this agreement may be public record under State law.
21. (a) This Agreement shall terminate without any liability of City to Consultant upon the earlier of: (i) Consultant's filing for protection under the federal bankruptcy laws, or any bankruptcy petition or petition for receiver commenced by a third party against Consultant; (ii) 10 calendar days prior written notice or without cause by City to Consultant; (iii) City's non-appropriation of funds sufficient to meet its obligations hereunder during any City fiscal year of this Agreement. In the event that Consultant materially defaults on any of its obligations under this Agreement, City shall provide written notice of such default and Consultant shall have no less than ten (10) business days from receipt of notice to cure such default. Should Consultant fail to cure within the time period, City may terminate this Agreement for cause upon written notice to Consultant., or incufficient funding for the Project; or (iv) expiran of this Agreement. The written notice shall specify the date of termination. Upon receipt of such notice, the Consultant may continue services on the project through the date of termination, provided that no service(s) shall be commenced or continued after receipt of the notice, which is not intended to protect the interest of the City. The City shall pay the Consultant within thirty (30) days after the date of termination for all non-objected to-services performed by the Consultant in accordance with the Standard of Care herewiththrough the date of termination. Consultant shall not be paid for any work or services performed or costs incurred which reasonably could have been avoided
(b) RESERVED In the event of termination due to failure of Consultant to satisfactorily perform in accordance with the terms of this Agreement, City may withhold an amount that would otherwise be payable as an offset to, but not inexeess of, City's damages caused by such failure. In no event shall any payment by City pursuant to this Agreement constitute a waiver by City of any breach of this Agreement which may then exist on the part of Consultant, nor shall such payment impair or prejudice any remedy available to-City with respect to the breach.

Explanation: Any such claims would be settled via dispute resolution procedures and no monies should be withheld or otherwise due prior to such resolution.
(c) Provided that City has provided notice and cure period to Consultant, and Consultant has failed to cure, as required under paragraph 21(a) above. Upon any material breach of this Agreement...
...to enforce the terms of the Agreement; and/or (iii) recover all direct,-indirect, consequential, economic and incidentaldamages for the breach...
(d) Consultant shall not be liable for its nonperformance if such nonperformance is caused by an occurrence beyond the reasonable control of Consultant and without its fault or negligence such as, but not limited to, acts of God...

Explanation: Michael Baker cannot agree to any liability prior to dispute resolution proceedings, so it would be better to phrase what Michael Baker will not be liable for instead.
27. (d) ...for complying with Section 257(a), above.
27. (e) ...provisions of this Section 257 in each...
27. (f) This Section 257 shall survive expiration...
28. All Plans, drawings, Specifications, reports, logs, and other documents prepared by the Consultant exclusively in its performance under this Agreement shall, upon completion of the project Consultant's receipt of final payment, be delivered to and be the property of the City, provided that the Consultant shall be entitled, at its own expense, to make copies thereof for its own use. Any reuse of Consultant's work product without written verification or adaptation by Consultant will be at the City's own risk and without liability or legal exposure to Consultant. The City shall indemnify and hold harmless Consultant from all claims, damages, losses, and expenses, including reasonable attorneys' fees, arising out of or resulting therefrom. Any such verification or adaptation will entitle Consultant to further compensation at rates to be agreed upon by the City and Consultant. Nothing herein shall be construed to grant ownership or any other rights to City of any of Consultant's pre-existing and/or background Intellectual Property or of any information, data, or property that was in Consultant's possession prior to the execution of this Agreement.
30. RESERVED Consultant expressly waives any and all rights and benefits conferred upon it by the provisions of Section 1542 of the Galifornia CivilCode which reads as follows:
"A general release does not extend to claims that the creditor or releasing party does not know or suspect to exist in his or her favor at the time of executing the release and that, ifknown by him or her, would have materially affected his or her settlement with the debtor or released party."

This waiver shall be effective as a bar to any and all actions, fees, damages, losses, claims, liabilities and demands of whatsoever character, nature and kind that are known or unknown, or suspected or unsuspected, including, without limitation, claims of entitlements under the California Public Employees' Retirement System (GalPERS) that are only afforded to employees and not
independent contractors. Consultant further represents and warrants that it understands this waiver and that if it does not understand this waiver, it shall seek the advice of a qualified attorney before executing this Agreement.

STANDARD OF CARES. The standard of care for all professional services performed or furnished by Consultant under this Agreement will be the care and skill used by members of Consultant's profession practicing under similar circumstances at the same time and in the same locality. Consultant makes no warranties, express or implied, under this Agreement or otherwise, in connection with Consultant's services.

LIMITATION OF LIABILITY. To the fullest extent permitted by law, the City agrees to limit Consultant's liability to the City and to all other contractors or subcontractors on the project for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in any way related to the project or this Agreement from any cause or causes including but not limited to Consultant's negligent acts, errors, omissions, strict liability, breach of contract, or breach of warranty, such that the total aggregate of liability of Consultant to all those named shall not exceed $\$ 50,000$ or the total fee for Consultant's services rendered in the project, whichever is greater. To the extent that this limitation of liability conflicts with any other provision(s) of this Agreement or any Task Orders associated therewith, said provision(s) shall be considered amended to whatever extent required to make such provision(s) consistent with this provision.

CONSTRUCTION MEANS. Consultant shall not be responsible for construction means, methods, techniques, sequences or procedures of construction contractors, or the safety precautions and programs incident thereto, and shall not be responsible for such contractors' failure to perform work in accordance with the contract documents.

ESTIMATES. Any estimates provided for cost of construction, financing, and acquisition of land and rights-of-way shall be made in accordance with good engineering practice and procedure. It is understood, however, that Consultant has no control over construction costs, competitive bidding and market conditions, nor over costs of financing, acquisition of land or rights-of-way, and Consultant does not guarantee the accuracy of such cost estimates as compared to actual cost or contractors' bids.
WAIVER OF CONSEQUENTIAL DAMAGES. In no event shall either Consultant or the City have any claim or right against the other, whether in contract, warranty, tort (including negligence), strict liability or otherwise, for any special, indirect, incidental, or consequential damages or any kind or nature whatsoever, such as but not limited to loss of revenue, loss of profits on revenue, loss of customers or contracts, loss of use of equipment or loss of data, work interruption, increased cost of work or cost of any financing, howsoever caused, even if same were reasonably foreseeable.

## EXHIBIT "D" TERMS OF PAYMENT

3. ...will the City pay for more services than have been catisforily completed in accordance with the Standard of Care the City Engineer's determination of the amount due for any progress payment shall be finat. The consultant will...

## EXHIBIT "E" INSURANCE REQUIREMENTS

## Umbrella Or Excess Insurance

Consultant shall be responsible for payment of any deductibles contained in any insurance policy(ies) required hereunder and Consultant shall also be responsible for payment of any self- insured retentions. Any deductibles or self-insured retentions must be declared to and approved by the City Manager or his/her designee. At the option the City Manager or his/her designee, either (i) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects The City of Moreno Valley, the City of Morene Valley Community Services District, the Moreno Valley Housing Authority, and each of their officers, officials, employees, agents and volunteers; or (ii) Consultant shall provide a financial guarantee, satisfactory to the City Manager or his/her designee, guaranteeing payment of losses and related investigations, claimadministration and defense expenses. At no time shall City be responsible for the payment of any deductibles or self-insured retentions.

## Key Team Member Resumes

## Chad Adachi, PE | Project Manager



Mr . Adachi is experienced in land development. His experience includes projects within the commercial, residential, and institutional sectors. His responsibilities regarding these projects include design and production of sewer, water, storm drain, grading, and street plans. His software skill and experience include an advanced understanding level of AutoCAD Civil 3D.

Years with Michael Baker
7
Years of Experience
7
Education
B.S.C.E., 2016, Civil Engineering, California Baptist University
Licenses/Certifications
Professional Engineer - Civil, California, 2019, 9083

## RELEVANT EXPERIENCE

Riverside County Transportation - Plan Checking Services. Responsibilities include coordinating plan checking reviews with Riverside County, consultant plan checking staff, and project applicant or engineer. Assists the project applicant or engineer by coordinating reviews of Precise Grading and Rough Grading Plans according to Riverside County Ordinance and California Building Code from initial submittal to approval.

City of Palm Desert - Plan Checking Services. Responsibilities included plan checking reviewal of Precise Grading, Rough Grading Plans, Storm Drain Plans, and Street Plans according to City of Palm Dessert Standards and California Building Code from initial submittal to approval.

Winchester Rd. and Jean Nicholas Rd - Riverside County. Lennar Corporation. Program Manager. Responsible for project managing the project by coordinating staff, consultants, client needs, budgeting, and scheduling. Michael Baker provided services for the final engineering of 154 Single Family Detached Condominium Units on a 24 -acre site. Final Engineering Plans includes, Rough Grading, Precise Grading, Onsite Street Improvement Plans, Offsite Street Improvement Plans, Signing and Striping Plans, Traffic Control Plans, and EMWD Utility Plans.

Lennar - Horizons, City of Wildomar, Multifamily Residential, Wildomar, Project Manager / Project Engineer. Program Manager and Project Engineer responsible for project managing the project by coordinating staff, consultants, client needs, budgeting, and scheduling. Michael Baker provided services for the final engineering of 136 Multifamily Family Attached Townhome Units on a 14 -acre site Final Engineering Plans includes, Rough Grading, Precise Grading, Onsite Street Improvement Plans, Offsite Street Improvement Plans, Storm Drain Plans, Signing and Striping Plans, Traffic Control Plans, and EVMWD Utility Plans.

## William Pope | Project Director



Mr. Pope works in Michael Baker's Palm Desert Office. He has resided in the Coachella Valley all of his life and has seen the many changes that have shaped the landscape of this beautiful valley. He is experienced with Autocad Land Development Desktop software including Civil and Survey modules, Autocad Civil 3D, along with various data-base packages for hydrology/hydraulics and map checking protocols. Mr. Pope has extensive knowledge in the writing of legal descriptions, area calculations and mapping which includes Parcel Maps, Tract Maps and Lot Line Adjustments. He works closely with the Michael Baker's Public Works personnel in providing necessary base mapping, right-of-way analysis and property research through various parcel information programs and close contact with various title companies locally. With 20 years of experience in the consulting engineering industry, Mr. Pope has developed unique skills in the preparation of parcel, tract and ALTA/ACSM plats along with civil design plans including sewer, water, storm sewer, hydrology calculations, as well as street plan and profile design.

Years with Michael Baker
11
Years of Experience
30
Education
Vocational/Technical, 2005, Surveying and Mapping Coursework, Mount San Jacinto Community College

College of the Desert, 1996-1998

## RELEVANT EXPERIENCE

Rancho Las Flores Park Master Plan - Phase 1, Coachella, California. City of Coachella. Mapping Specialist. Responsible for mapping services. Michael Baker provided professional landscape architecture and civil engineering services to the City of Coachella for the design and development of a community sports park. The 25-acre park included a major lighted soccer complex, football field, baseball and softball fields, playgrounds, picnic areas, splash fountain, restrooms, shade structures, a new public street, parking lot improvements, landscaping, irrigation, and associated improvements. Services included the preparation of conceptual design alternatives, a two phased master plan, and final plans, specifications and estimates.

Tennis Gardens at Indian Wells, Indian Wells, California. Pm Sports Management. Mapping Specialist. Responsible for the on-site grading design and on-site utility infrastructure for the Garden of Champions tennis complex expansion project. Michael Baker provided engineering services for the Garden of Champions expansion project, a tennis complex constructed on the remaining 30-acre vacant site adjacent to the existing tennis complex. The complex is home to the BNP Paribas Open Tennis Tournament. As part of the proposed design, it was necessary to relocate a domestic sewer and water main, quitclaim existing easements back to the landowner, and prepare new easements for the Coachella Valley Water District main lines that were relocated. Project work includes bid evaluation and construction management services. The project includes a new 16,000-seat main stadium, four other new tennis courts, two new parking lots, and turf parking areas, along with 700 hotel rooms, 140 casita suites, 68,000 square feet of quality restaurants, and a service station-carwash-mini-mart. Project construction is slated to start after the 2013 Tournament and be completed for the 2014 BNP Paribas Open.

The Thermal Club Project, Thermal, California. Thermal Operating Company, LLC. Project Manager. Responsible for mapping services. Michael Baker is providing construction surveying services for The Thermal Club, a premier private motorsports facility. In addition to 4.5 miles of members-only racetrack, the Club facilities will include over 200 Founders Lots, a Clubhouse and Village unrivaled in the motorsports world, and will rank among the best of private clubs of any type. The project encompasses 530 acres in Riverside County.

## Miguel Gonzalez, PE \| QA/QC



Mr. Gonzalez currently serves as a Project Manager in the Land Development Department of the Temecula regional office. He is responsible for overseeing the preparation of improvement plans for grading, street design, storm drain, sewer and water plans, and providing engineering support as required for due diligences, specific plans, and tentative tract maps. He has a diverse background with civil and electrical engineering with emphasis in land development, public works, construction management and retrofit of industrial sites.

## Years with Michael Baker

20
Years of Experience
37
Education
M.S., 1995, Civil Engineering, San Diego State University
C.A., 1991, Industrial Electricity, San Diego City College
B.S., 1985, Civil Engineering, University of Guanajuato, Mexico
Licenses/Certifications
Professional Engineer - Civil, California, 2001, 61561

## RELEVANT EXPERIENCE

Spencer's Crossing, Riverside County, California. Lennar Homes of California. Project Manager. Responsible for preparing rough grading plans, street improvement plans, and utility design for roughly 1,700 units in this 600-acre development. As part of this development, managed the civil engineering for a multi-use Sports Park, Recreation Center (The Club at Spencer's Crossing), multiple public park facilities, and off-site back bone infrastructure to provide access and services. Santana Park Expansion, Corona, California. Project Engineer. Responsible for precise grading plans and drainage for new walkways, enlargement of one ball field, and additional parking lot. Addition of approximately 1.5 acres to existing park site after vacation of one segment of Garretson Avenue per the construction of Magnolia Avenue.

Oak Glen Road Widening and Sunnyside Drive Realignment, Yucaipa California. Public Works Inspector and Construction Manager. A section of 3,500 feet of Oak Glen was widened to ultimate improvements in front of the Yucaipa Community Park. Sunnyside Drive is the primary access to a residential tract and Ridgeview Elementary School. Both roads remained open during construction with minimum traffic disruption.

## We Make A Difference



## EXHIBIT B: PROPOSED COST SHEET

I. Task Rates

| Line <br> Item | Task Rates | Hourly Rate | Total <br> Hours | Direct Costs / <br> Subconsultant | Total Cost |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{*} 1$ | Kick-off Meeting | \$242 | 24 | -- | \$5,800 |
| 2 | Topographic and Mapping Survey, Geotechnical Services, CEQA Services, and Stormwater |  |  |  |  |
| 2.1 | Topographic and Mapping Survey | \$204 | 97 | \$4,770 | \$24,600 |
| 2.2 | Geotechnical Services | \$243 | 8 | \$20,160 | \$22,100 |
| 2.3 | CEQA Services | \$197 | 260 | \$15,850 | \$67,000 |
| 2.4 | Stormwater | \$190 | 250 | -- | \$47,600 |
| 3 | Civil Engineering Plans, Landscape Architecture Plans, Electrical and Lighting Plan, Specifications, and Engineering Estimates |  |  |  |  |
| 3.1 | Concept Design Documents | \$188 | 142 | \$1,000 | \$27,700 |
| 3.2 | 35\% Design Documents | \$187 | 244 | \$1,000 | \$46,700 |
| 3.3 | 95\% Design Documents | \$193 | 304 | \$1,000 | \$59,700 |
| 4 | Final Submittals | \$185 | 116 | \$1,000 | \$22,500 |
| *5 | Project Coordination during Design Phase | \$224 | 65 | -- | \$14,600 |
| *6 | Design Support during Bidding Phase | \$228 | 25 | -- | \$5,700 |
| *7 | Design Support during Construction Phase | \$213 | 80 | -- | \$17,000 |
| Not-to-Exceed Total Task Costs |  |  |  | \$44,780 | \$361,000 |

*The budget amount shown is for authorization purposes only. Should the total of the monthly billings reach eighty percent ( $80 \%$ ) of the budget amount, the Client and Michael Baker will review the status of the work to determine the need for an increase in the budget amount, and whether additional budget authorization to complete the project is appropriate. Progress billings will be forwarded to the Owner on a monthly basis. These billings will include the fees earned for the billing period plus all direct costs advanced by Michael Baker. The general Scope of Services outlined herein is only provided as a guide in this Request for Proposal. Itemized tasks and corresponding costs must be identical to the detailed Scope of Services included as part of the Proposer's Technical Proposal.

## II. Hourly Rates

| Line Item | Standard Position | Title of Person Performing Service | Hourly Rate |
| :---: | :---: | :---: | :---: |
| 1 | Principal | Bill Pope | \$306 |
| 2 | Program Manager | Kyle Gallup | \$273 |
| 3 | Program Manager | John Duquette | \$273 |
| 4 | Program Manager | Miles Costanza | \$273 |
| 5 | Program Manager | Jeremy Franzini | \$273 |
| 6 | Project Manager | Chad Adachi | \$240 |
| 7 | Technical Manager | Connie Barrett | \$229 |
| 8 | Technical Manager | Kathalyn Tung | \$229 |
| 9 | Technical Manager | Jennifer Wu | \$229 |
| 10 | Senior Engineer | Ivana Awayjan | \$202 |
| 11 | Electrical Engineer | Joshua Parker | \$191 |
| 12 | Electrical Engineer | Jordan Johnston | \$191 |
| 13 | Field Supervisor | Xavier Hughes | \$191 |
| 14 | Landscape Architect | Josh VanDuyn | \$180 |
| 15 | Landscape Architect | Alaa Chaabani | \$180 |
| 16 | Senior Designer | Samuel Menache | \$174 |
| 17 | Senior Designer | Kyle Eubanks | \$174 |
| 18 | Senior Designer | Jerry Miller | \$174 |
| 19 | Senior Designer | Danielle Peltier | \$174 |
| 20 | Designer | Sheryl Bermudez | \$142 |
| 21 | Designer | Gregory Brown | \$142 |
| 21 | Design Technician | Elise Caille | \$125 |

$\left.\begin{array}{l}\text { III. Reimbursable Expenses } \\ \begin{array}{|c|l|c}\text { Line } \\ \text { Item }\end{array} \\ \hline 1\end{array} \begin{array}{c|c}\text { Survey - Mileage } & \text { Costs } \\ \hline 2 & \text { CEQA - ODCs for field surveys and cultural records search }\end{array}\right\}$

## EXHIBIT B

## CITY RESPONSIBILITIES

1. Furnish the Consultant all in-house data which is pertinent to services to be performed by the Consultant and which is within the custody or control of the City, including but not limited to, copies of record and off-record maps and other record and off-record property data, right-of-way maps and other right-of-way data, pending or proposed subject property land division and development application data, all newly developed and pertinent design and project specification data, and such other pertinent data which may become available to the City.
2. Provide timely review, processing, and reasonably expeditious approval of all submittals by the Consultant.
3. Provide timely City staff liaison with the consultant when requested and when reasonably needed.

## EXHIBIT C

## TERMS OF PAYMENT

1. The Vendor's compensation shall not exceed $\$ 405,780.00$.
2. The Vendor will obtain, and keep current during the term of this Agreement, the required City of Moreno Valley business license. Proof of a current City of Moreno Valley business license will be required prior to any payments by the City. Any invoice not paid because the proof of a current City of Moreno Valley business license has not been provided will not incur any fees, late charges, or other penalties. Complete instructions for obtaining a City of Moreno Valley business license are located at: http://www.moval.org/do biz/bizlicense.shtml
3. The Vendor will electronically submit an invoice to the City on a monthly basis for progress payments along with documentation evidencing services completed to date. The progress payment is based on actual time and materials expended in furnishing authorized professional services since the last invoice. At no time will the City pay for more services than have been satisfactorily completed and the City's determination of the amount due for any progress payment shall be final. The Vendor will submit all original invoices to Accounts Payable staff at AccountsPayable@moval.org
a. Accounts Payable questions can be directed to (951) 413-3073.
b. Copies of invoices may be submitted to the Parks and Community Services Department at
c. alleny@moval.org or calls directed to (951) 413-3704.
4. The Vendor agrees that City payments will be received via Automated Clearing House (ACH) Direct Deposit and that the required ACH Authorization form will be completed prior to any payments by the City. Any invoice not paid because the completed ACH Authorization Form has not been provided will not incur any fees, late charges, or other penalties. The ACH Authorization Form is located at: http://www.moval.org/city hall/forms.shtml\#bf
5. The minimum information required on all invoices is:
a. Vendor Name, Mailing Address, and Phone Number
b. Invoice Date
c. Vendor Invoice Number
d. City-provided Reference Number (e.g. Project, Activity)
e. Detailed work hours by class title (e.g. Manager, Technician, or Specialist), services performed and rates, explicit portion of a contract amount, or detailed billing information that is sufficient to justify the invoice amount; single, lump amounts without detail are not acceptable.
6. The City shall pay the Vendor for all invoiced, authorized professional services within thirty (30) days of receipt of the invoice for same.
7. Reimbursement for Expenses. Vendor shall not be reimbursed for any expenses unless authorized in writing by City.
8. Maintenance and Inspection. Vendor shall maintain complete and accurate records with respect to all costs and expenses incurred under this Agreement. All such records shall be clearly identifiable. Vendor shall allow a representative of City during normal business hours to examine, audit, and make transcripts or copies of such records and any other documents created pursuant to this Agreement. Vendor shall allow inspection of all work, data, documents, proceedings, and activities related to the Agreement for a period of three (3) years from the date of final payment under this Agreement.

## Report to City Council

TO: Mayor and City Council
FROM: Kenneth Reichle, Chief of Police
AGENDA DATE:
December 19, 2023
TITLE:
APPROVAL TO USE ASSET FORFEITURE FUNDS TO PURCHASE LAW ENFORCEMENT EQUIPMENT

## RECOMMENDED ACTION

## Recommendations:

1. Authorize the Police Department to purchase law enforcement equipment at a cost of $\$ 30,417.83$; and
2. Authorize a budget adjustment as set forth in the Fiscal Impact Section of this report.

## SUMMARY

This report recommends the City Council authorize the Moreno Valley Police Department (MVPD) to purchase law enforcement equipment to replace equipment purchased in 2019 and 2020, respectively. The Police Department proposes utilizing $\$ 30,417.83$ of Asset Forfeiture funds to acquire this equipment to continue the use as a force multiplier in support of City Council approved fireworks taskforce operations and on-scene law enforcement investigations.

## DISCUSSION

Since 2019, MVPD has used this equipment as a cost-effective force multiplier assisting law enforcement at crime scenes, during severe traffic collision investigations, and in the field in response to priority one (1) and priority two (2) crimes by supplementing data collection practices.

In 2019, the City Council approved the use of Asset Forfeiture funds for the purchase of equipment to generate supplemental data for traffic collision reconstruction due to significant numbers of injury and fatal traffic collisions. In 2020, the City Council
approved the use of Asset Forfeiture funds again as a recommendation by the Public Safety Subcommittee Fireworks Taskforce to purchase equipment to address significant numbers of complaints regarding the frequent use of illegal fireworks in Moreno Valley.

For the last several years, this equipment has become a reliable source for supplemental data while on scene during several types of investigations including, but not limited to, the traffic collisions and fireworks operations as discussed. The ability to use this equipment during investigations at crime scenes is an effective an efficient means to solving crimes.

While the current equipment is operational, the technology has improved since the original purchase and functionality and compatibility with other technology is now limited. The equipment model as proposed, is the model predominantly used by the Riverside County Sheriff's Department and will allow for continuity of use.

## ALTERNATIVES

1. Authorize the purchase of law enforcement equipment, totaling $\$ 30,417.83$ and approve budget adjustments as set forth in the Fiscal Impact section of this report. Staff recommends this alternative.
2. Do not authorize the purchase of law enforcement equipment, totaling $\$ 30,417.83$. Staff does not recommend this alternative.

## FISCAL IMPACT

The Moreno Valley Police Department is requesting the City Council to approve the use of Asset Forfeiture funding secured by the County of Riverside to purchase law enforcement equipment. Funding for this purchase will not have an impact on the City's General Fund in FY 2023/24.

| Description | Fund | GL Account No. | Type <br> (Rev/Exp) | FY 23/24 <br> Proposed <br> Amendment | FY 23/24 <br> Amended <br> Budget |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Asset <br> Revenue <br> County) | Forfeiture <br> (from | Gen. Fund | $1010-60-65-40010-480150$ | Rev | $\$ 30,418$ |
|  <br> Equip | Gen. Fund | $1010-60-65-40010-630330$ | Exp | $\$ 30,418$ | $\$ 157,343$ |

## PREPARATION OF STAFF REPORT

## Prepared By:

Shanna Palau
Senior Contracts Analyst
Concurred By:
Howard Hibbler Lieutenant

Department Head Approval: Ken Reichle Chief of Police

## CITY COUNCIL GOALS

Public Safety. Provide a safe and secure environment for people and property in the community, control the number and severity of fire and hazardous material incidents, and provide protection for citizens who live, work and visit the City of Moreno Valley.

Positive Environment. Create a positive environment for the development of Moreno Valley's future.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. DJI Matrice 30 T with TB30 \& DJI Care Basic (1)

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved |  | $12 / 10 / 23$ 10:01 PM |
| :--- | :--- | :--- | :--- |
| City Attorney Approval | $\checkmark$ Approved |  |  |
| City Manager Approval | $\checkmark$ Approved | $12 / 11 / 23$ 11:16 AM |  |



## DJI Matrice 30T

| Name | Price | $\begin{aligned} & \text { QT } \\ & \mathbf{Y} \end{aligned}$ | SKU | Tax | Subtotal |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ESSENTIAL KIT |  |  |  |  |  |
| DJI Matrice 30T + TB30*2 + DJI Care Basic <br> DJI Matrice 30T + TB30*2 + DJI Care Basic <br> - $1 \times$ DJI Matrice 30 T <br> - $2 x$ TB30 Intelligent Flight Battery <br> - $1 \times$ BS30 Intelligent Battery Station <br> - $1 x$ DJI RC Plus <br> - $1 \times$ DJI Pilot 2 <br> - $1 \times$ Aircraft storage case <br> - $1 \times$ DJI FlightHub 2 (3 month subscription) <br> - 1x DJI Care Enterprise Basic (1 Year) | \$9,637.00 | 2 | $\begin{array}{r} \text { B-DJI- } \\ \text { M30T-CB } \end{array}$ | \$1,493.74 | \$20,767.74 |


| 1 Day Free Hardware Training (Your Location) <br> To ensure that you are familiar with everything the M300, M30 Series and the Mavic 2 Enterprise Advanced Fleets can do, we are now including a FREE day of hands-on training with every M300, and Mavic 2 Enterprise Advanced / M30 Series Fleet. Our experienced and knowledgeable instructor will travel to you for an in-depth introductory course so that you can fly safely and confidently. (A \$3,200 Value) <br> T-NB-1DF | \$0.00 | 1 | T-NB-1DF | \$0.00 | \$0.00 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OPTIONAL ACCESSORIES <br> (Optional items will not reflect in total unless selected) |  |  |  |  |  |
| GPC DJI Matrice 30 Series Case <br> When you need your entire M30 mission kit, payloads and all, the GPC case for the Matrice 30 / M30T + packs it all in to one system. You have room for six TB30 batteries, compartments for the M30 upper payload, *GPC Micro SD Card Holder, *GPC LensPen MicroPro and other accessories. The case is wheeled and is carry-on size on most airlines. Proudly made in the USA. <br> *Accessories Not Included* S-GPC-M30-CASE | \$499.00 | 2 | $\begin{array}{r} \text { S-GPC- } \\ \text { M30-CASE } \end{array}$ | \$77.35 | \$1,075.35 |
| Matrice 30 Series Part 08 TB30 Intelligent Flight Battery S-DJI-TB30-BATT | \$329.00 | 12 | $\begin{gathered} \text { S-DJI- } \\ \text { TB30- } \\ \text { BATT } \end{gathered}$ | \$305.97 | \$4,253.97 |

DJI CrystalSky/Cendence - WB37 Intelligent Battery

- Power Supply Intelligent Battery (Type: WB37-4920mAh-7.6V)
- Intelligent Battery 4923 mAh LiPo
- Charging DJI charger
- Output Power 20 W (supplying power to DJI CS550 monitor), 12 W (without supplying power to monitor)
- Charging Time About 2 hours and 24 minutes (using a 180 W charger)
- Supply Power Time About 4 hours (only Master remote controller function enabled and without supplying power to monitor)

S-DJI-CS-CEN-INT-BATT


## Matrice 30 Series Part 091671

Propeller
S-DJI-PRP-M30


| \$59.00 | 2 | S-DJI-CS- | \$9.15 | \$127.15 |
| :---: | :---: | :---: | :---: | :---: |
|  |  | CEN-INT- BATT |  |  |
|  |  |  |  |  |


| Loudspeaker Spotlight 2-in-1 Payload for DJI Matrice 30 drone <br> The DJI M30 drone loudspeaker and spotlight all in one payload is powered by DJI Onboard SDK. It features a fluid design to reduce wind resistance. It packs in high performance in its small size (only 270 g ) with lighting distance up to 100 meters and effective sound distance up to 200 meters. <br> S-NB-LS-SL-M30 | \$1,750.00 | 2 | $\begin{array}{r} \text { S-NB-LS- } \\ \text { SL-M30 } \end{array}$ | \$271.25 | \$3,771.25 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OPTIONAL SERVICES <br> (Optional items will not reflect in total unless selected) |  |  |  |  |  |
| Firmware Upgrade Service <br> - Activation of the product(s), upgrading to the latest available firmware, and delivered ready to fly. <br> V-NB-FIRM-UPG <br> FIRMWARE UPGRADE | \$0.00 | 2 | $\begin{array}{r} \text { V-NB- } \\ \text { FIRM-UPG } \end{array}$ | \$0.00 | \$0.00 |
| FREE Lifetime Customer Care \& Technical Support Via Phone, Email \& Chat | \$0.00 | 1 | B-LC-TS | \$0.00 | \$0.00 |


| Enterprise Concierge Assist <br> Our customer care team is here to make sure that your aftersales experience is as seamless as the original transaction. We will assist our clients through the Enterprise Care deductible process ( if applicable) as well as any warranty or not warranty related issues. We're here to help facilitate your success! | \$0.00 | 1 |  | \$0.00 | \$0.00 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | EUAS |  |  |
| *** Normally a \$500 Service *** |  |  |  |  |  |
| S-ECA-EUAS |  |  |  |  |  |
| SHIPPING \& HANDLING |  |  |  |  |  |
| Ground Shipping | \$0.00 | 1 | V-NB-SHIP | \$0.00 | \$0.00 |
| *** Sales Tax applicable if shipping inside CA, TX, FL or WA *** |  |  |  |  |  |
|  |  |  | Subtotal |  | \$30,417.83 |
|  |  |  | Total |  | \$30,417.83 |

## Signatures

Again, we want to thank you for purchasing your equipment or services with DSLRPros.com. By signing below you agree to our terms and conditions and have read and understand the pricing provided. You also agree not to share the information \& pricing provided in this document to anyone outside of your organization. https://www.dslrpros.com/terms-of-use

|  |  |
| :--- | :--- |
|  |  |
|  |  |
| Signature | Date |
|  |  |
|  |  |
| Name | Title |

Report to City Council
TO: Mayor and City Council
FROM: Michael Lloyd, Assistant City Manager (Development) Jason Niccoli, Electric Utility Division Manager

## AGENDA DATE:

December 19, 2023
TITLE: APPROVE ADDITIONAL FUNDING FOR ENERGY ASSISTANCE AND ENERGY EFFICIENCY PROGRAMS, AND APPROVE INCENTIVES FOR ELECTRIC VEHICLES

## RECOMMENDED ACTION

## Recommendation:

1. Approve an additional budget allocation of $\$ 300,000$ for Utility Assistance Programs;
2. Approve an additional budget allocation of $\$ 350,000$ to expand the Energy Audit and Direct Installation program;
3. Approve an additional budget allocation of $\$ 115,000$ to expand the Transportation Electrification program;
4. Approve Resolution 2023-XX. A Resolution of the City Council of the City of Moreno Valley, California, to confirm the Electric Rules for Moreno Valley Utility to be effective March 2024.

## SUMMARY

To aid MVU residential and small business customers (businesses whose monthly maximum demand for electricity is less than 20 kW ) that are struggling with high energy use, this report recommends enhancing the Utility Assistance Programs with an additional budget allocation of $\$ 300,000$ and expanding the Energy Audit and Direct Installation Program with an additional annual budget allocation of $\$ 350,000$. Both the Utility Assistance Programs and the Energy Audit/Direct Installation Program are funded with Public Purpose Program funds. In addition to increasing the funding for these customer programs, this report recommends expanding our Transportation

Electrification Program with an additional budget allocation of $\$ 115,000$ to support the adoption of electric vehicles.

## DISCUSSION

## Utility Assistance Programs:

MVU currently has two Utility Assistance Programs - an Energy Bill Assistance Program (Tier 1 \& Tier 2 - which is income based) and Emergency Bill Assistance which is intended to help customers with emergencies impacting their ability to pay their electric bill. Both tiers of the Energy Bill Assistance program provide a discount on monthly energy charges to income qualified families. The Emergency Bill Assistance program currently offers $\$ 500$, and we are proposing to expand it to $\$ 1,000$ to help customers who are experiencing a financial emergency.

## Energy Audit and Direct Installation Program:

All residential customers are eligible to participate in MVU's Energy Audit and Direct Installation Program. Currently, customers can receive up to $\$ 4,000$ in measures that will reduce customers' energy consumption and increase comfort. Measures include an in-home Energy Audit, energy star ceiling fans, solar screens, high-efficiency heating, ventilation, and air conditioning (HVAC) motors, AC tune ups and filter changes, duct testing and sealing, smart thermostats, smart powerstrips, whole house fans and LED lighting. Staff recommends expanding the program to $\$ 5,000$ per customer.

## Transportation Electrification Program:

MVU currently offers a bill credit of $\$ 25 / \mathrm{mo}$ for customers who provide evidence that they are the owner of an electric vehicle and that the electric vehicle is registered at the service address. MVU is proposing to increase the bill credit from $\$ 25 / \mathrm{mo}$ to $\$ 50 / \mathrm{mo}$ per electric vehicle. MVU is also proposing to offer a $\$ 500$ rebate towards the purchase of a new or used electric vehicle, we are also offering $\$ 500$ towards the purchase and installation an electric vehicle charger.

## Electric Service Area and Rates:

Two separate utility providers, Moreno Valley Utility (MVU) and Southern California Edison (SCE), currently serve the City of Moreno Valley. Between the two electric utilities, there are over 60,000 accounts.

MVU non-residential customers account for $70 \%$ of MVU revenues while residential customers only account for $30 \%$ of MVU revenues.

The requirement for utilities to purchase greater amounts of renewable energy continuously increased, moving from an amount equal to $20 \%$ of retail sales by 2017 to $33 \%$ by 2020, to $60 \%$ by 2030, and $100 \%$ carbon-free energy by 2045. In addition, the focus on renewable, clean energy has impacted the capacity market by limiting the

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amount of generation capacity available to cover peak demand periods, thus reducing supply and driving up prices. In calendar year 2018, the cost per kW-month for capacity products was approximately \$1.30. The calendar years 2021 and 2022 cost per kWmonth is approximately \$6.20, and the calendar year 2024 cost per kW-month is currently over $\$ 23.00$. MVU has seen a significant increase in power costs and require investments in technology to upgrade the system to maintain reliability to customers since its last rate adjustment.

The approved SCE rate adjustments for calendar year 2023 average $14.1 \%$, which is now in effect for SCE customers, and is primarily related to capital investments for repair and replacement of equipment on its distribution system and investments in modernizing the system, as well as investments in electric vehicle infrastructure. Similarly, MVU has reviewed SCE's rates and has analyzed the current and upcoming operational and capital expenditures for MVU. Although MVU may require rates higher than SCE to establish reserves, pursuant to City Resolution 2006-112, staff recommends an adjustment to continue the policy of parity with SCE's electric rates.

To avoid the requirement for the General Fund to subsidize up to $\$ 6$ million annually to MVU, the proposed Resolution amends and confirms the electric rates and rules for MVU to correspond with all SCE rates in 2023. Staff recommends approval of the Resolution that will amend and confirm the electric rates and rules for Moreno Valley Utility (MVU), to be effective with the March 2023 billing. Since the inception of MVU, City Council policy has been to maintain parity with SCE electric rates. Resolution 2006112 approved implementing a schedule to adjust MVU's rates to reflect the same rate schedule as SCE. This policy is also incorporated within the Professional Services Agreement with ENCO Utility Services Moreno Valley LLC, which requires that MVU adjust its electric rates to maintain approximate parity with those charged by SCE.

The change in rates was presented to the Utilities Commission on 10/25/2023. The average change by customer class is included as Attachment 1 to the staff report should the rate adjustment be approved.

The expanded Utility Assistance Programs and Energy Audit and Direct Installation Program will continue to offset the potential impact to residential and general service customers.

## ALTERNATIVES

1. Approve the Recommended Actions presented in this report. Staff recommends this alternative as the proposed amended electric rates and rules will allow the City's utility to comply with established Council-adopted policies and practices and avoid adding a General Fund liability and provides assistance to those impacted by a financial emergency.
2. Do not approve the Recommended Actions presented in this report Staff does not recommend this alternative because the Resolution is needed to keep the Utility in compliance with established Council-adopted policies and practices and will result in an annual General Fund liability of \$6,040,710.

## FISCAL IMPACT

The requested additional funding for the Utility Assistance Programs is $\$ 300,000$, $\$ 350,000$ annually for the Energy Audit and Direct Installation Program through the term of the agreement with Synergy Companies and $\$ 115,000$ for Transportation Electrification. The proposed rate adjustment is estimated to increase revenue by an average of approximately $\$ 575,000$ per month. With approval of the rates, and no further energy cost increases, it is anticipated that net income will be positive.

MVU is a relatively young utility and has not yet fully established or maintained desired reserve fund levels. As such, the General Fund continues to be a backstop to the $\$ 37$ million of estimated reserves required for operations, emergencies, repair and replacement of infrastructure, and rate stabilization. These four categories are necessary to maintain a financially strong utility for the future.

The City has also issued over $\$ 62$ million of bonds for utility infrastructure improvements, which are secured by the Base Rental Payments and other payments paid by the City and received by the Authority pursuant to the Facilities Sublease (as defined in the Trust Indenture).

The following table reflects the budget adjustment to increase funding for the Utility Assistance Programs and Energy Audit/Direct Installation Program, all paid for with Public Purpose Funds. Public Purpose Program funds can only be utilized under a strict umbrella of programs, determined at the State level of government.

| Description | Fund | GL Account <br> No. | Type <br> (Rev/Exp) | FY <br> Budget 23/24 | Proposed <br> Adjustments | FY <br> Amended Budget |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| Utility Assistance <br> Programs | Public Purpose <br> Program Fund | $6012-70-80-$ <br> $45511-710152$ | Exp | $\$ 500,000$ | $\$ 300,000$ | $\$ 800,000$ |
| Energy <br> Audit/Direct <br> Installation <br> Program | Public Purpose <br> Program Fund | $6012-70-80-$ <br> $45511-710144$ | Exp | $\$ 1,000,000$ | $\$ 350,000$ | $\$ 1,350,000$ |
| Transportation <br> Electrification | Public Purpose <br> Program Fund | $6012-70-80-$ <br> $45511-710154$ | Exp | $\$ 15,000$ | $\$ 115,000$ | $\$ 130,000$ |

## NOTIFICATION

Publication of the Agenda.

## PREPARATION OF STAFF REPORT

## CITY COUNCIL GOALS

None

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" $\quad$ on the left hand side of this document for the necessary attachment.

1. Resolution Rate Adjustment 121923
2. MVU_Rates Updated 11-29-23
3. MVU_Rules Updated 11-29-23
4. MVU rate comparison

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved |  | $12 / 10 / 23$ 6:31 PM |
| :--- | :--- | :--- | :--- |
|  |  |  |  |
| City Attorney Approval | Approved |  |  |
| City Manager Approval | $\checkmark$ Approved | $12 / 11 / 23$ 11:18 AM |  |

## RESOLUTION NO. 2023-XX

> A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, TO CONFIRM THE ELECTRIC RATES AND RULES FOR MORENO VALLEY UTILITY

WHEREAS, the City of Moreno Valley (the "City"), a municipal corporation, is authorized pursuant to Article XI, Section 9(a) of the California Constitution to establish, purchase, and operate public works to furnish its inhabitants with light, water, power, heat, transportation, or means of communication; and

WHEREAS, on June 26, 2001, the City Council of the City of Moreno Valley approved Resolution No. 2001-33 and, as amended by Resolution 2002-46, authorized the formation of a municipally owned utility for the purpose of providing electrical power, storm water, telephone telecommunications, cable TV, water, natural gas, and sanitary sewer; and

WHEREAS, on July 8, 2003, the City Council approved Resolution No. 2003-58 adopting the Electric Service Rules, Fees and Charges document for Moreno Valley Utility which states, in part, that the rates to be charged by and paid to the City for electric service will be the rates legally in effect and on file with the City Council; and

WHEREAS, on January 13, 2004, the City Council approved Resolution No. 2004-05 establishing the electric rates for Moreno Valley Utility; and

WHEREAS, on September 26, 2006, the City Council approved Resolution No. 2006-112 implementing a schedule to adjust Moreno Valley Utility electric rates to reflect the same schedule as Southern California Edison; and

WHEREAS, there are sections of the Electric Service Rules, Fees and Charges document that contain rules which define the terms and conditions under which electric service will be provided to the customer; and

WHEREAS, there are rules, fees, charges, and rates associated with providing the services identified in these documents. These rules, fees, charges, and rates are deemed necessary and equitable for services rendered and are required to fund in whole or in part, all of the services required to facilitate the delivery of electric distribution pursuant to the rules; and

WHEREAS, Urgency Ordinance No. 651 was adopted by the City Council on December 9, 2003, allowing for the adoption of rates by resolution.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. The City Council hereby confirms the amended Moreno Valley Utility Rates and Rules, attached hereto as Exhibits A and B, incorporated herein, and on file in the Public Works Department.

APPROVED AND ADOPTED this 19th day of December 2023.

Mayor of the City of Moreno Valley

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney

## RESOLUTION JURAT

STATE OF CALIFORNIA )
COUNTY OF RIVERSIDE ) ss.
CITY OF MORENO VALLEY )

I, Jane Halstead, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2023-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the 19th day of December 2023 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:
(Council Members, Mayor Pro Tem and Mayor)

## CITY CLERK

(SEAL)

# Moreno Valley Utility <br> Electric Rates 

$\qquad$
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## SCHEDULE A - RESIDENTIAL SERVICE

## Applicability

Applicable to electric service for residential uses. This schedule has two rate options. Rate A is applicable to all residential customers except for residential customers with solar generation installations that filed an application on or after December 15, 2020. For these customers, Rate B Residential Time of Use (TOU) is applicable. Rate C is applicable to customers with electric vehicle chargers and those who have electric vehicle charges, battery storage or electric heat pumps. Annual renewal of qualification for Rate C is required. All other residential customers may select Rate B Residential Time of Use (TOU) if desired.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates

Basic Charge - \$/Day:
Single-Family Residence
Rate A - Non TOU

Multi-Family Residence \$ 0.031 \$ 0.024

## Energy Usage Charge - \$/kWh:

## Summer:

Tier 1 -Baseline Quantities, all kWh, per kWh
Tier $2-101 \%$ to $400 \%$ of Baseline
\$ 0.30615
Tier 3 - All excess kWh, per kwh
\$ 0.40059
Winter:
Tier 1 -Baseline Quantities, all kWh, per kWh
\$ 0.30615
Tier $2-101 \%$ to $400 \%$ of Baseline
\$ 0.40059
Tier 3 - All excess kWh, per kWh
\$ 0.40059
Public Purpose Programs:
All kWh per kWh \$ 0.02091
CA Energy Resources Surcharge - $\$ / \mathrm{kWh}$ : $\$ 0.0003$
Utility User's Tax:
5.75\%

Monthly Minimum Charge:
Monthly Minimum Charge
Rates
Basic Charge - \$/Day:
Rate B - TOU
Single-Family Residence ..... \$ 0.031
Multi-Family Residence ..... \$ 0.024
Energy Usage Charge - \$/kWh:
Baseline Credit - Applies to 100\% of baseline allocation ..... -\$ -0.09443regardless of time of use
Summer
On-Peak ..... \$ 0.56661
Mid-Peak ..... \$ 0.45943
Off-Peak ..... \$ 0.34866
Winter
Mid-Peak ..... \$ 0.50190
Off-Peak ..... \$ 0.37465
Super Off-Peak ..... \$ 0.33803
Public Purpose Programs:
All kWh per kWh ..... \$ 0.02091
CA Energy Resources Surcharge - \$/kWh: ..... \$ 0.0003
Utility User's Tax ..... 5.75\%
Monthly Minimum Charge:
Monthly Minimum Charge\$ 10.00

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investorowned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

## Special Conditions

1. Baseline Rates: Baseline rates are applicable only to separately metered residential use.
2. Baseline Quantities: The residential allocation shall be 18.9 kWhs per day in the Summer season and 12.5 kWhs per day in the Winter season.
3. Existing generating facilities currently under Schedule NEM or NEM 2.0 that are modified such that the generating capacity or output increases by $10 \%$ or more or if they have storage are required to be billed under Rate $B$.
4. Time periods are defined as follows:

| TOU Period | Weekdays |  <br> Holidays | Weekdays |  <br> Holidays |
| :---: | :---: | :---: | :---: | :---: |
|  | Summer | Summer | Winter | Winter |
| On-Peak | 4 p.m. -9 <br> p.m. | N/A | N/A | N/A |
| Mid-Peak | N/A | 4 p.m. -9 p.m. | 4 p.m. -9 p.m. | 4 p.m. -9 p.m. |
| Off-Peak | All other <br> hours | All other hours | 9 p.m. -8 a.m. | 9 p.m. -8 a.m. |
| Super-Off-Peak | N/A | N/A | 8 a.m. 4 p.m. | 8 a.m. 4 p.m. |

5. Holidays are defined as New Year's Day (January 1), Martin Luther King's Birthday (third Monday in January), Washington's Birthday (third Monday in February), Memorial Day (last Monday in May), Independence Day (July 4), Labor Day (first Monday in September), Veterans Day (November 11), Thanksgiving Day (fourth Thursday in November), and Christmas Day (December 25).

When any holiday listed above falls on Sunday, the following Monday will be recognized as an off-peak period. No change will be made for holidays falling on Saturday.
6. Summer and Winter Seasons are defined as follows: The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year.

The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.
7. Voltage: Service will be supplied at one standard voltage.
8. For the purposes of applying the Basic Charge, the following definitions shall be used:

Single-Family Residence - A building of single occupancy which does not share common walls, floors, or ceilings with other residential dwelling units.

Multi-Family Residence - Apartments, mobile homes, condominiums, townhouses, or a building of multiple occupancy which shares common walls and /or floors and ceilings with other residential dwelling units.
9. Medical Baseline Allocation: Upon application and acceptance of a certification from a medical doctor or osteopath licensed to practice medicine in California, eligible residential customers are provided a standard year-round medical baseline allocation of 16.5 kWh per day in addition to the applicable baseline allocation for the season.

|  | Regular <br> Baseline Daily <br> kWh Allocation | Additional Medical <br> Baseline Daily kWh <br> Allocation | Total Baseline <br> Daily kWh <br> Allocation |
| :--- | :---: | :---: | :---: |
| Summer | 18.9 | 16.5 | 35.4 |
| Winter | 12.5 | 16.5 | 29.0 |

## Medical Baseline Allocation Eligibility:

a) Regular use in the customer's home of one or more medical life-support devices essential to maintain the life of a full-time resident of the household; and/or
b) A full-time resident of the household is: a paraplegic, hemiplegic, quadriplegic, multiple sclerosis or scleroderma patient, being treated for life-threatening illness, and/or has a compromised immune system.

Life support devices are those devices or equipment that utilize mechanical or artificial means to sustain, restore or supplant a vital function, or mechanical equipment relied upon for mobility both within and outside of buildings.
Life-support devices include:

| Aerosol Tent | Ultrasonic Nebulizer |
| :--- | :--- |
| Pressure Pad | Electrostatic Nebulizer |
| Apnea Monitor | Inhalation Pulmonary Pressure |
| Pressure Pump | Breather Machine (IPPB) |
| Compressor | Iron Lung |
| Concentrator | Dialysis Machine |
| Respirator (all types) | Hemodialysis Machine |
| Electronic Nerve Stimulator | Motorized Wheelchair |
| Suction Machine | Oxygen Generator |

Applying for the Medical Baseline Allocation:

1. Request application from Moreno Valley Utility by telephone, mail or in person
2. Complete application.
3. The patient's physician will need to fill out the required information on the application and sign it certifying the medical need.
4. The customer can mail or bring the application to Moreno Valley Utility's offices.
5. Once the application is reviewed and approved, the Medical Baseline Allocation will be effective on the next regular electric billing.
6. Applications must be renewed every two years.
7. Low Income Program - A low-income assistance discount program is offered under this standard residential rate. To be considered for this discount, an application must be filed with Moreno Valley Utility. To be eligible for this discount, the income of the customer, including all members of the household, must meet the income levels of the program and can be no more than $200 \%$ of Federal Poverty Guidelines. Under this program a discount for qualified lowincome residents of $30 \%$ is provided on monthly energy charges. The discount applies to energy charges only. The customer charge, public purpose charge, service fees and all taxes are calculated at the standard rates.
8. Family Electric Rate Assistance (FERA) Program: The FERA discount program is offered under the standard residential rate. To be considered for this discount, an application must be filed with Moreno Valley Utility. To be eligible for this discount the household must consist of three or more persons where the total gross income from all sources is no more than $250 \%$ of Federal Poverty Guidelines. Under this program a discount for qualified FERA households of 18\%

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is provided on monthly energy charges. The discount applies to energy charges only. The customer charge, public purpose charge, service fees and all taxes are calculated at the standard rates.
9. Electric Vehicle Off-Peak Charging Discount: Qualified residential customers owning or leasing electric vehicles and receiving electric service under Schedule A - Residential Service, will receive a discount. For these qualified residential customers, the price of electricity consumed, either during the Off-Peak hours for those on a time of use option or from the total kWhs used for those on the Rate A, up to a maximum of 500 kWhs , shall be discounted by 5 cents per kWh per billing period. To qualify, residential customers must file an application with the City and evidence of vehicle ownership or lease and registration. Once approved, the discount will apply beginning with the next bill cycle after approval of the application. To remain on the program, qualified customers must submit annual application renewals.
10. Residential customer-generators on Rate B Time of Use shall abide by Special Condition 2 of Schedule NEM 2.0 when the customer is a net producer of energy.

SCHEDULE B - GENERAL SERVICE

## Applicability

Applicable to nonresidential electric service for all types of uses including lighting and power. Customers whose monthly maximum demand is expected to exceed 20 kW or has exceeded 20 kW in any three months during the preceding 12 months, are ineligible for service under this schedule.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates

| Customer Charge - \$/Day: |  |
| :---: | :---: |
| Single-Phase Service | \$ 0.468 |
| Polyphase Service | \$ 0.514 |
| Energy Usage Charge - \$/kWh: |  |
| Summer, all kWh, per kWh | \$ 0.31474 |
| Winter, all kWh, per kWh | \$ 0.24237 |
| Public Purpose Programs: |  |
| All kWh per kWh | \$ 0.01737 |
| CA Energy Resources Surcharge - \$/kWh: | \$ 0.0003 |
| Utility User's Tax: | 5.75\% |
| Monthly Minimum Charge: Monthly Minimum Charge | \$ 10.00 |

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor-owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

## Special Conditions

1. Summer and Winter Seasons are defined as follows: The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year. The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.
2. Voltage: Service will be supplied at one standard voltage.

## SCHEDULE C - LARGE GENERAL SERVICE

## Applicability

Applicable to nonresidential electric service for all types of uses including lighting and power where the customer's monthly maximum demand is expected to exceed 20 kW or has exceeded 20 kW in any of the 3 months during the preceding 12 months.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates

## Customer Charge - \$/Meter/Month:

Single Phase
\$ 182.41
Polyphase
\$ 188.96
Energy Usage Charge - \$/kWh:
Summer, all kWh, per kWh
\$ 0.16979
Winter, all kWh, per kWh
\$ 0.13894
Demand Charge - \$/kW:
Facilities Related Demand Charge, per kW
Time Related Demand Charge, per kW

## Public Purpose Programs:

All kWh per kWh

| Summer |  |
| :--- | :--- |
| $\$ 21.21$ |  |
| $\$ 25.30$ |  |
| $\$ 20.21$ |  |

\$ 0.01814
CA Energy Resources Surcharge - \$/kWh:
$\$ 0.0003$
Utility User's Tax:
5.75\%

Monthly Minimum Charge:
Monthly Minimum Charge
\$ 10.00

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor-owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

## Special Conditions

1. Summer and Winter Seasons are defined as follows:

The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year. The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.
2. Voltage: Service will be supplied at one standard voltage.
3. Billing Demand: The Billing Demand shall be the kilowatts of Maximum Demand, determined to the nearest kW . The Billing Demand shall be the greater of the kilowatts of Maximum Demand recorded (or established for) the monthly billing period or $50 \%$ of the highest Maximum Demand established in the preceding eleven months (Ratcheted Demand).
4. Maximum Demand: The maximum demand in any month shall be the measured maximum average kilowatt input, indicated or recorded by instruments to be supplied by the City, during any 15 -minute metered interval in the month.
5. Voltage Discount: The monthly Facilities Related Demand Charge will be reduced by $\$ 0.21$ per kW for service delivered and metered at voltages of 4 kV through 12 kV . The energy charge will be reduced by $\$ .00101$ per kWh for service delivered and metered at voltages of 2 kV through 12 kV .
6. Excess Transformer Capacity: Excess Transformer Capacity is the amount of transformer capacity requested by a customer in excess of that which the City would normally install to serve the customer's Maximum Demand. Excess Transformer Capacity shall be billed at the amount shown in the rates section above.
7. Power Factor Adjustment: When Maximum Demand has exceeded 200 kW for three consecutive months, kilovar metering will be installed as soon as practical, and thereafter, until the Maximum Demand has been less than 150 kW for twelve consecutive months, the billing will be adjusted each month for power factor.
a. Adjustment Rate:
i. For service delivered and metered at voltages 12 kV or less, the billing will be increased by $\$ 0.60$ per kilovar of maximum reactive demand.
b. Determining the Reactive Demand:
i. Service delivered and metered at voltages of 4 kV or greater:

1. The maximum reactive demand shall be the highest measured maximum average kilovar demand indicated or recorded by metering during any 15 -minute metered interval in the month. The kilovars shall be determined to the nearest unit. A device will be installed on each kilovar meter to prevent reverse operation of the meter.
ii. Services delivered and metered at voltages less than 4 kV :
2. For customers with metering used for billing that measures reactive demand, the maximum reactive demand shall be the highest measured maximum average kilovar demand indicated or recorded by metering during any 15 -minute metered interval in the month. The kilovars shall be determined to the nearest unit. A device will be installed on each kilovar meter to prevent reverse operation of the meter.
3. For customers with metering used for billing that measures kilovar-hours instead of reactive demand, the kilovars of reactive demand shall be calculated by multiplying the kilowatts of measured maximum demand by the ratio of the kilovar-hours to the kilowatt-hours. Demands in kilowatts and kilovars shall be determined to the nearest unit. A ratchet device will be installed on the kilovar-hour meter to prevent its reverse operation on leading power factors.

## SCHEDULE P1 - PUMPING AND AGRICULTURAL SERVICE (CONNECTED LOAD BASIS)

## Applicability

Applicable to electric service for agricultural power service or for general water pumping or sewerage pumping based on connected load in horsepower. This schedule is not applicable to service for which a residential, commercial or industrial schedule is applicable. Customers whose monthly maximum demand is expected to or have exceeded 500 kW or 671 hp in any three months during the preceding 12 months, are ineligible for service under this schedule.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates

| Customer Charge - $\$ /$ Day: | $\$ 72.69$ |
| :--- | :--- |
| Energy Usage Charge - $\$ / \mathrm{kWh}$ : <br> $\quad$ Summer, all kWh, per kWh <br> Winter, all kWh, per kWh | $\$ 0.19322$ |
| Service Charge \$/HP/Month | $\$ 0.19322$ |
| Public Purpose Programs: <br> All kWh per kWh | $\$ 6.12$ |
| CA Energy Resources Surcharge - $\$ / \mathrm{kWh}:$ | $\$ 0.01983$ |
| Utility User's Tax: <br> Monthly Minimum Charge: <br> Monthly Minimum Charge | $5.75 \%$ |

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor-owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

## Special Conditions

1. Summer and Winter Seasons are defined as follows: The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year. The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.
2. Voltage: Service will be supplied at one standard voltage.
3. Connected Load: Connected load is the sum of the rated capacities of all the customer's equipment that is possible to connect to the utility's lines at the same time, determine to the nearest $1 / 10^{\text {th }} \mathrm{hp}$.

## SCHEDULE SL - STREET LIGHTING SERVICE - MVU OWNED SYSTEM

## Applicability

Applicable to un-metered service for the lighting of streets and highways where MVU owns and maintains the street lighting equipment and associated facilities included under this schedule.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates

Energy Usage Charge - High Pressure Sodium Vapor Lamps

## Basic Charge:

| Initial |  | All Night Service |  | \$/Lamp/Month Public Purpose |
| :---: | :---: | :---: | :---: | :---: |
| Lumens | Wattage | kWhs/Month | \$/Lamp/Month | Programs |
| 9,500 | 100 | 40 | \$ 17.75 | \$ 0.50 |
| 16,000 | 150 | 67 | \$ 23.31 | \$ 0.83 |
| 22,000 | 200 | 85 | \$ 27.23 | \$ 1.05 |
| 27,500 | 250 | 108 | \$ 31.81 | \$ 1.34 |

Energy Usage Charge - Light Emitting Diode (LED) Lamps

## Basic Charge:

|  |  | All Nigh |  | Lamp/ |
| :---: | :---: | :---: | :---: | :---: |
| Initial |  | Service |  | Public Purpose |
| Lumens | Wattage | kWhs/Month | \$/Lamp/Month | Programs |
| 14,700 | 173 | 75 | \$ 25.70 | \$ 0.97 |
| 11,500 | 98 | 47 | \$ 19.22 | \$ 0.59 |
| 3,800 | 31 | 15 | \$ 12.40 | \$ 0.19 |

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

## Special Conditions

1. Maintenance shall include periodic inspection, renewal of lamps, cleaning of glassware, replacement of damaged glassware and lamps, and minor repairs to wiring and electrical appurtenances.
2. Hours of Service: Under MVU's standard all-night operating schedule, approximately 4,140 hours of service will be furnished.
3. The developer shall install streetlights that will be served from MVU's underground system. These streetlights must be installed in accordance with MVU's specifications, and the developer will deed such facilities to MVU.
4. Requirements and Restrictions:
a. The applicant for street light service shall specify the lamp size and location of streetlights.
b. Service shall not be furnished under this schedule where location, mounting height, or other considerations are unacceptable to the MVU.
c. The installation of street lighting equipment and facilities hereunder is contingent upon the MVU obtaining easements, rights of way, and highway permits satisfactory to the MVU for the required poles, equipment, and facilities.
d. In accordance with Rule No. 4, a written contract for a term of not less than one year is required in order to receive street light service under the provisions of this schedule.
e. Should the applicant not commence using the street lighting in a bona fide manner within ninety (90) days after date of completion and installation of a streetlight or street lighting system requested by the applicant, the MVU will bill, and the applicant shall pay, the applicable lamp charge(s).
5. Liability of Utility: MVU shall not, by taking action pursuant to its tariffs, be liable for any loss, damage, or injury, established or alleged, which may result, or be claimed to result, therefrom.

## SCHEDULE SL2 - STREET LIGHTING SERVICE CUSTOMER OWNED AND MAINTAINED SYSTEM SCHEDULE (UNMETERED)

## Applicability

Applicable to service for un-metered lighting of streets, highways, and directional highway signs served in conjunction with street and highway lighting, and other publicly operated automobile parking lots which are open to the general public, where the customer owns and maintains the street lighting equipment operated within the period from dusk to dawn.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates

Energy Usage Charge - High Pressure Sodium Vapor Lamps
Basic Charge:

| Initial |  | All Night Service |  | \$/Lamp/Month Public Purpose |
| :---: | :---: | :---: | :---: | :---: |
| Lumens | Wattage | kWhs/Month | \$/Lamp/Month | Programs |
| 9,500 | 100 | 40 | \$ 10.57 | \$ 0.50 |
| 16,000 | 150 | 67 | \$ 15.69 | \$ 0.83 |
| 22,000 | 200 | 85 | \$ 19.25 | \$ 1.05 |
| 27,500 | 250 | 108 | \$ 23.76 | \$ 1.34 |

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor-owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

## Special Conditions

1. Voltage: Service will be supplied at one standard voltage.
2. Requirements and Restrictions:
a. The applicant for street light service shall specify the lamp size and location of streetlights.
b. Service shall not be furnished under this schedule where location, mounting height, or other considerations are unacceptable to the MVU.
c. The installation of street lighting equipment and facilities hereunder is contingent upon the MVU obtaining easements, rights of way, and highway permits satisfactory to the MVU for the required poles, equipment, and facilities.
3. Liability of Utility: MVU shall not, by taking action pursuant to its tariffs, be liable for any loss, damage, or injury, established or alleged, which may result, or be claimed to result, therefrom.

## SCHEDULE SL3 - STREET LIGHTING SERVICE CUSTOMER OWNED SYSTEM SCHEDULE <br> (METERED)

## Applicability

Applicable to service for metered lighting service of streets, highways, and directional highway signs served in conjunction with street and highway lighting, and other publicly operated automobile parking lots which are open to the general public, where the customer owns the street lighting equipment operated within the period from dusk to dawn.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates

Customer Charge - Per Meter Per Month:\$ 11.46Energy Usage Charge - $\$ / \mathrm{kWh}$ :All Year - all kWh, per kWh\$ 0.13667CA Energy Resources Surcharge - \$/kWh: ..... \$ 0.0003
Utility User's Tax: ..... 5.75\%
Public Purpose Programs:
All kWh, per kWh \$ 0.01243

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor-owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

## Special Conditions

1. Voltage: Service will be supplied at one standard voltage.
2. The customer will furnish and maintain all equipment beyond the meter.

## SCHEDULE TC-1 - TRAFFIC CONTROL SERVICE

## Applicability

Applicable to service for traffic directional sign or signal lighting service owned by governmental agencies and located on streets, highways and other publicly dedicated outdoor ways and places.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates

## Customer Charge - Per Meter Per Day:

Single-Phase Service
\$ 0.788
Polyphase Service
\$ 0.819

## Energy Usage Charge - $\$ / \mathrm{kWh}$ :

All kWh per kWh
\$ 0.22295

CA Energy Resources Surcharge - $\$ / \mathrm{kWh}$ :
\$ 0.0003

Utility User's Tax
5.75\%

## Public Purpose Programs:

All kWh per kWh
\$ 0.02005

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor-owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

## Special Conditions

1. Voltage: Service will be supplied at one standard voltage.

## SCHEDULE TOU-LGS - TIME OF USE - LARGE GENERAL SERVICE

## Applicability

Applicable to nonresidential electric service for all types of uses including lighting and power where the customer's monthly maximum demand is expected to exceed 500 kW or has exceeded 500 kW in any of the 3 months during the preceding 12 months.

## Territory

Within the designated areas served by the Moreno Valley Utility.

## Rates - Primary Voltage

## Customer Charge:

$\$ /$ Meter/Month
\$ 367.81

## Energy Usage Charge - $\$ / \mathrm{kWh}$ :

Summer

| On-Peak | $\$ 0.14823$ |
| :--- | :--- |
| Mid-Peak | $\$ 0.14097$ |
| Off-Peak | $\$ 0.10090$ |
| inter | $\$ 0.11507$ |
| Mid-Peak | $\$ 0.11494$ |
| Off-Peak Super | $\$ 0.06819$ |
| Off-Peak |  |

Demand Charge - \$/kW:
Facilities Related Demand Charge, per kW
$\frac{\text { Summer }}{\$ 21.42} \quad \frac{\text { Winter }}{\$ 21.42}$
Time Related Demand Charge, per kW
On-Peak
\$ 39.12
$\$ 0.00$
Mid-Peak
Off-Peak
\$ 0.00
\$ 11.82
\$ 0.00
\$ 0.00
CA Energy Resources Surcharge - $\$ / \mathrm{kWh}$ :
\$ 0.0003
Utility User's Tax:
5.75\%

Public Purpose Programs:
All kWh per kWh
\$ 0.01559
Minimum Monthly Charge
See Conditions \#4

## Rates - Secondary Voltage

## Customer Charge:

## \$/Meter/Month

\$ 355.45
Energy Usage Charge - $\$ / \mathrm{kWh}$ :
Summer
On-Peak
\$ 0.15649
Mid-Peak
\$ 0.14827
Off-Peak
\$ 0.10666
Winter
Mid-Peak
\$ 0.12141
Off-Peak Super Off-
\$ 0.12091
Peak
\$ 0.07229

## Demand Charge - $\$ / \mathrm{kW}$ :

Facilities Related Demand Charge, per kW
Time Related Demand Charge, per kW:
On-Peak
Mid-Peak
Off-Peak
CA Energy Resources Surcharge - $\$ / \mathrm{kWh}$ :
$\frac{\text { Summer }}{\$ 21.97} \quad \frac{\text { Winter }}{\$ 21.97}$

Utility User's Tax:
5.75\%

Public Purpose Programs:
All kWh per kWh
\$ 0.01642
Minimum Monthly Charge:
Minimum Monthly Charge
See Condition \#4

## Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor-owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

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## Special Conditions

1. Time periods are defined as follows:

| TOU Period | Weekdays |  <br> Holidays | Weekdays |  <br> Holidays |
| :---: | :---: | :---: | :---: | :---: |
|  | Summer | Summer | Winter | Winter |
| On-Peak | 4 p.m. -9 p.m. | N/A | N/A | N/A |
| Mid-Peak | N/A | 4 p.m. -9 p.m. | 4 p.m. -9 p.m. | 4 p.m. -9 p.m. |
| Off-Peak | All other hours | All other hours | 9 p.m. -8 a.m. | 9 p.m. -8 a.m. |
| Super-Off-Peak | N/A | N/A | 8 a.m. -4 p.m. | 8 a.m. -4 p.m. |

Holidays are defined as New Year's Day (January 1), Martin Luther King's Birthday (third Monday in January), Washington's Birthday (third Monday in February), Memorial Day (last Monday in May), Independence Day (July 4), Labor Day (first Monday in September), Veterans Day (November 11), Thanksgiving Day (fourth Thursday in November), and Christmas Day (December 25).

When any holiday listed above falls on Sunday, the following Monday will be recognized as an off-peak period. No change will be made for holidays falling on Saturday.
2. Summer and Winter Seasons are defined as follows: The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year. The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.
3. Voltage: Service will be supplied at one standard voltage.
4. Billing Demand: The Billing Demand shall be the kilowatts of Maximum Demand, determined to the nearest kW . The Billing Demand shall be the greater of the kilowatts of Maximum Demand recorded (or established for) the monthly billing period or $50 \%$ of the highest Maximum Demand established in the preceding eleven months (Ratcheted Demand).
5. Maximum Demand: The maximum demand in any month shall be the measured maximum average kilowatt input, indicated or recorded by instruments to be supplied by the City, during any 15 -minute metered interval in the month.
6. Excess Transformer Capacity: Transformer Capacity is the amount of transformer capacity requested by a customer in excess of that which the City would normally install to serve the customer's Maximum Demand. Excess Transformer Capacity shall be billed at the amount shown in the rates section above.
7. Power Factor Adjustment: The billing will be adjusted each month for power factor.
a. Adjustment Rate: The customer's bill will be increased each month for the power factor $\$ 0.60$ per kilovar of maximum reactive demand.
b. The maximum reactive demand shall be the highest measured maximum average kilovar demand indicated or recorded by metering during any 15minute metered interval in the month. For customers with metering used for billing that measures kilovar-hours instead of reactive demand, the kilovars of reactive demand shall be calculated by multiplying the kilowatts of measured maximum demand by the ratio of the kilovar-hours to the kilowatthours. Demands in kilowatts and kilovars shall be determined to the nearest unit. A device will be installed on the kilovar-hour meter to prevent its reverse operation on leading power factors.

## SCHEDULE SE - SERVICE ESTABLISHMENT CHARGE

## Applicability

Applicable to general service and domestic service customers.

## Territory

Within the entire territory served by Moreno Valley Utility.

## Rate

For each establishment of electric service, a charge will apply.

## Special Conditions

1. The service establishment charge is in addition to the charges calculated on the applicable rate schedule and will be made each time an account is established.
2. Establishment means each time an account is opened, including a turn on of electric service or a change of name that requires a meter reading.
3. If the customer requests electric service be established on the same day as his request or outside regular business hours, an additional charge will apply.

## SCHEDULE NEM - NET ENERGY METERING

## Applicability

Applicable to general service and domestic service customers who have eligible renewable energy generation systems connected to MVU's system (interconnected) and meet program requirements. This schedule is closed to new applicants effective April 2018.

## Territory

Within the entire territory served by Moreno Valley Utility.

## Net Surplus Compensation Rate

The net surplus compensation rate shall be the value in the NCR Tariff - Schedule A applied to any net surplus energy remaining at the end of the customer's twelve (12) monthly billing period ("relevant period").

## Special Conditions

1. NEM customers will receive a credit for the surplus electricity supplied to MVU's system.
2. This credit will be applied to the customer's energy bill, to offset all or part of the costs associated with the energy that is consumed each month.
3. Residential accounts are billed once a year for "net" energy consumed or generated over the previous 12 months, if any.
4. Small business accounts served under the General Service Rate also qualify for annual billing.
5. Large business NEM accounts under the Large General Service Rate are billed monthly for their energy usage.
6. Net surplus energy is the amount of generated kilowatt-hours (kWh) energy that is exported to MVU's system that exceeds the amount that is received from MVU.
7. Any net surplus energy remaining at the end of the 12 -month billing period (also called the "relevant period") will be given a monetary value known as the Net Surplus Compensation Rate (NSCR).
8. The NSCR value is established by MVU to reflect the costs MVU avoids in procuring power during the time period net surplus generators are likely to produce excess power.

9．Customers may choose to either roll over the monetary value of any net surplus energy minus any non－energy related charges to the next billing cycle or receive payment for any net surplus energy minus and non－energy related charges at the end of your 12－month relevant period．

10．Customers will be billed monthly for nominal non－energy－related charges such as taxes．

11．Existing generating facilities currently under Schedule NEM that are modified such that：（1）the generating capacity or output increases by $10 \%$ or more；or （2）adding battery storage will be placed under the Solar Billing Plan（SBP） Schedule

12．Existing generating facilities currently under Schedule NEM that don＇t make payment within thirty（30）days of the due date will be placed under Schedule NEM 2．O．

13．Existing customers under Schedule NEM will remain under Schedule NEM for a period of fifteen（15）years from the original year in which their generating facility was interconnected to MVU＇s grid as determined from the date the customer received the permission to operate（PTO），and then will be switched to the Solar Billing Plan（SBP）or any otherwise applicable rate schedule． Existing customers under Schedule NEM can request to be placed under Schedule NEM 2.0 at any time；the customer＇s account will be trued up at the time of the request．This means that any outstanding balance due or credit due will be applied to the next regular billing．

## SCHEDULE NEM 2.0 - NET ENERGY METERING SUCCESSOR RATE

## Applicability

Applicable to Eligible Customer-Generators, as defined in Section 2827 of the California Public Utilities Code, operating a renewable electrical generation facility, as therein defined, located on the customer's owned, leased, or rented premises with a capacity of no more than one megawatt that is intended primarily to offset part or all of the customer's own electrical requirements and which is interconnected and operates in parallel with MVU's power system pursuant to Electric Rule 21 - Generating Facility Interconnections.

## Territory

Within the entire territory served by Moreno Valley Utility.

## Net Surplus Compensation Rate

The net surplus compensation rate shall be the value in the NCR Tariff - Schedule A applied to any net surplus energy remaining at the end of the customer's monthly billing period.

## Special Conditions

1. As determined in each billing period, when a customer is a net consumer of energy, the resulting net consumed energy will be used in the calculation of all applicable energy charges.
2. As determined in each billing period, when a customer is a net producer of energy within any TOU block, the resulting TOU net produced energy will be used to offset consumption in other TOU blocks in the following order:

Winter Super Off Peak -> Winter Off Peak -> Winter Mid-Peak ->
Summer Off-Peak -> Summer Mid-Peak -> Summer On-Peak
If there is remaining surplus energy after offsetting all usage in this order the surplus will be used to calculate a monetary value that shall only be applied to the customer's monthly bill, including any minimum charges and applicable taxes.
3. A customer is a net producer of energy when the amount of generated kilowatt-hours (kWh) of energy that is exported to MVU's system exceeds the amount that the customer receives from MVU.
4. The monetary value calculated is the product of the net kWh produced multiplied by the Net Surplus Compensation Rate (NSCR) found in the NCR Tariff - Schedule A.
5. The NSCR value is established by MVU to reflect the costs MVU avoids in procuring power during the time period net surplus generators are likely to produce excess power.
6. MVU shall retain any net surplus energy generated by the NEM customer, including any associated environmental attributes or renewable energy credits ("REC").
7. To be eligible for service under this Schedule, generating facilities must meet all applicable safety and performance standards established by the National Electrical Code, the Institute of Electrical and electronics Engineers, and accredited testing laboratories such as Underwriters Laboratories and, where applicable, rules regarding safety and reliability (i.e., MVU's Electric Rule 21). All generating facilities must have a warranty of at least 10 years for all equipment and the associated installation from the system provider (not from MVU). All major solar system components (including PV panels and other generation equipment, inverters and meters) must be on the verified equipment list maintained by the CEC. Any other equipment, as determined by MVU, must be verified as having safety certification from a Nationally Recognized Testing Laboratory.
8. To be eligible for service under this Schedule, the customer's generating facilities must be sized to offset part or all of the customer's own electrical requirements and cannot be oversized. This means that the estimated output of the generating facility, using the CEC-AC nameplate rating for inverterbased generating facilities must not exceed the customer's previous annual usage in kWh . In the event that there is less than 12 months of previous recorded usage data, the calculation shall be in conformance with the formulas listed in Rule 21.
9. Customers seeking to interconnect their generating facilities for the purpose of receiving service under this Schedule are subject to the interconnection requirements and interconnection cost responsibility provisions as established in MVU's Electric Rule 21.
10. A new customer of record who owns, rents, or leases a premise that includes a generating facility that was approved by MVU for parallel operation prior to the new customer moving in and/or taking electric service with MVU will take service under the Solar Billing Plan (SBP). . This provision also applies to
premises where the developer/contractor establishes the interconnection.
11. Existing generating facilities currently under Schedule NEM 2.0 that are modified such that: (1) the generating capacity or output increases by $10 \%$ or more; or (2) adding battery storage will be placed under the Solar Billing Plan (SBP) Schedule
12. Existing generating facilities currently under Schedule NEM 2.0 that don't make payment within thirty (60) days of the due date will be placed under the Solar Billing Plan (SBP) Schedule.
13. Existing customers under Schedule NEM 2.0 will remain under Schedule NEM 2.0 for a period of ten (10) years from the original year in which their generating facility was interconnected to MVU's grid as determined from the date the customer received the permission to operate (PTO), and then will be switched to the Solar Billing Plan (SBP) Schedule or any otherwise applicable rate schedule. Existing customers under Schedule NEM 2.0 can request to be placed under the Solar Billing Plan (SBP) at any time; the customer's account will be trued up at the time of the request. This means that any outstanding balance due or credit due will be applied to the next regular billing.

## SOLAR BILLING PLAN (SBP) - NEM 2.0 SUCCESSOR RATE

## Applicability

Applicable to Eligible Customer-Generators, as defined in Section 2827 of the California Public Utilities Code, operating a renewable electrical generation facility, as therein defined, located on the customer's owned, leased, or rented premises with a capacity of no more than one megawatt that is intended primarily to offset part or all of the customer's own electrical requirements and which is interconnected and operates in parallel with MVU's power system pursuant to Electric Rule 21 - Generating Facility Interconnections.

## Territory

Within the entire territory served by Moreno Valley Utility.

## Net Surplus Compensation Rate

The net surplus compensation rate shall be the value in the NCR Tariff - Schedule B applied to any net surplus energy remaining at the end of the customer's monthly billing period.

## Special Conditions

1. As determined in each billing period, when a customer has more generation in a TOU block the resulting TOU net produced energy will be credited to your account based on the value of the energy generated during that TOU block per the NCR Tariff - Schedule B.
2. The monetary value calculated is the product of the net kWh produced multiplied by the Net Surplus Compensation Rate (NSCR) found in the NCR Tariff - Schedule B
3. The NSCR value is established by MVU to reflect the costs MVU avoids in procuring power during the time period net surplus generators are likely to produce excess power.
4. MVU shall retain any net surplus energy generated by the NEM customer, including any associated environmental attributes or renewable energy credits ("REC").
5. To be eligible for service under this Schedule, generating facilities must meet all applicable safety and performance standards established by the National Electrical Code, the Institute of Electrical and electronics Engineers, and
accredited testing laboratories such as Underwriters Laboratories and, where applicable, rules regarding safety and reliability (i.e., MVU's Electric Rule 21). All generating facilities must have a warranty of at least 10 years for all equipment and the associated installation from the system provider (not from MVU). All major solar system components (including PV panels and other generation equipment, inverters and meters) must be on the verified equipment list maintained by the CEC. Any other equipment, as determined by MVU, must be verified as having safety certification from a Nationally Recognized Testing Laboratory.
6. To be eligible for service under this Schedule, the customer's generating facilities must be sized to offset part or all of the customer's own electrical requirements and cannot be oversized. This means that the estimated output of the generating facility, using the CEC-AC nameplate rating for inverterbased generating facilities must not exceed the customer's previous annual usage in kWh. In the event that there is less than 12 months of previous recorded usage data, the standard of 2 watts per square foot of the premises will apply. The calculation shall be in conformance with the formulas listed in Rule 21.
7. Customers seeking to interconnect their generating facilities for the purpose of receiving service under this Schedule are subject to the interconnection requirements and interconnection cost responsibility provisions as established in MVU's Electric Rule 21.
8. A new customer of record who owns, rents, or leases a premise that includes a generating facility that was approved by MVU for parallel operation prior to the new customer moving in and/or taking electric service with MVU will take service under this Schedule as long as the requirements of this Schedule are met. This provision also applies to the premises where the developer/contractor establishes the interconnection.

## SCHEDULE ED - ECONOMIC DEVELOPMENT ("ED") RATE

## Applicability

Commercial or industrial end-use customers that would otherwise receive service under Electric Rate Schedule TOU-LGS (Time of Use-Large General Service) and meet certain criteria as established and adopted by resolution of the City Council of the City of Moreno Valley may take advantage of the ED rate as a New Customer or Expanded Load Customer. This ED rate is applicable to all or part of the services provided to New Customers and Expanded Load Customers, as such terms are defined herein. Local Hiring Incentive applicable to certain other rate classes as described in Special Condition No. 6.

1. A New Customer shall be a customer seeking to locate a new business or relocate an existing business (not currently located within the territory served by Moreno Valley Utility) within Moreno Valley Utility's service territory.
2. An Expanded Load Customer shall be an existing Moreno Valley Utility TOULGS customer that is adding new load to Moreno Valley by a minimum of 200 kW based upon the customer's past electrical demand as determined by Moreno Valley Utility. The expanded load can be at the customer's current site, or at a new site within the Moreno Valley Utility service territory. The ED rate will only be applied to the expanded load as determined in Section 5 below.
3. A New Customer shall meet the following criteria:
a. Targeted industries
i. Logistics/Distribution
ii. Medical/Healthcare
iii. Auto Dealerships
b. Job Creation
i. Tier 1 Discount Rate $\quad 150-499$ jobs
ii. Tier 2 Discount Rate

500-999 jobs
iii. Tier 3 Discount Rate
greater than 1000 jobs
iv. Tier 4 Discount Rate

350 jobs minimum
v. Tier 5 Discount Rate

200 jobs minimum
c. City Revenue Producer - either sales tax or use tax generation
i. Tier 1a Discount Rate
ii. Tier 4 Discount Rate - minimum \$40,000 annual sales tax revenue to the City

## Territory

Within the entire territory served by Moreno Valley Utility.

## Character of Service

The service provided hereunder shall be alternating current with regulated frequency of 60 hertz, three-phase, or a combination single and three-phase served through one meter, at a standard voltage not to exceed 480 volts, or as may be specified by the Electric Division. To be eligible to participate all customers must have a demand meter.

## Rates

Except as provided herein, or in the Economic Development Rate Agreement, all charges and provisions of the customer's otherwise applicable rate schedule shall apply. The applicable Energy Charge and Demand Charge under the customer's otherwise applicable rate schedule will be reduced as follows:

|  | Tier 1/Tier 1a | Tier 2 | Tier 3 | Tier 4 |
| :---: | :---: | :---: | :---: | :---: |
| Year 1 | $19.00 \%$ | $21.50 \%$ | $24.00 \%$ | $26.50 \%$ |
| Year 2 | $16.00 \%$ | $18.50 \%$ | $21.00 \%$ | $23.50 \%$ |
| Year 3 | $13.00 \%$ | $15.50 \%$ | $18.00 \%$ | $20.50 \%$ |
| Year 4 | $10.00 \%$ | $12.50 \%$ | $15.00 \%$ | $17.50 \%$ |
| Year 5 | $7.00 \%$ | $9.50 \%$ | $12.00 \%$ | $14.50 \%$ |


|  | Tier 5 |
| :---: | :---: |
| Years 1-4 | $20.00 \%$ |
| Years 5-8 | $15.00 \%$ |
| Years 9-12 | $10.00 \%$ |
| Years 13-16 | $5.00 \%$ |

## Special Conditions

1. Term: Economic Development Rate Agreements entered into under this Schedule shall be for a single five-year term, except for Tier 5, which shall be for a single sixteen-year term.
2. Approval: Application of this Rate Schedule shall be subject to the approval of the City Manager or his designee, based on meeting the eligibility criteria outlined herein.
3. Agreement: The customer must sign a standard Moreno Valley Economic Development Rate Agreement in order for the rates under this Schedule to be applicable. In addition to the other terms of this Schedule, the Economic Development Rate Agreement shall require the customer to reimburse Moreno Valley for all rate reductions received under this Schedule, if the customer fails to maintain the required minimum load during the applicable term of the Agreement.
4. Minimum Load: Customers qualifying under this Schedule as a New Customer with a projected minimum monthly electric demand of at least 500 kW or as an Expanded Load Customer under Applicability Sections 1 and 2 above, respectively, must agree to maintain a minimum level of load for five years for Tiers 1 through 4 and sixteen years for Tier 5 from the date service is first rendered under this Schedule as set forth in the Economic Development Rate Agreement.
5. Jobs: Job as prescribed in Section 3c above is defined as Full Time Equivalent that is working at least 1750 hours per year. The Customer retains authority in making individual hiring decisions. This program does not require the Customer to hire any person who does not have the experience and ability to qualify such persons for a job.
6. Local Hiring Incentive: The Local Hiring Incentive is available for Tier 1 through Tier 5. Customers who qualify under Tiers $1-4$ and voluntarily hire at least $20 \%$ of Full Time Equivalent (FTE) employees that are City of Moreno Valley residents will receive an additional discount of 2\%; those Customers who hire at least $40 \%$ of Full Time Equivalent (FTE) employees that are City of Moreno Valley residents will receive an additional discount of 4\%. For Customers eligible for the Tier 5 discount, the Local Hiring Incentive is an additional $1 \%$ discount for Customers who voluntarily hire at least $20 \%$ of FTE employees that are City of Moreno Valley residents. The additional 1\% discount will be applied to the first five years of the sixteen-year term. Any additional discounts will apply to the Energy Charge and Demand Charge. Customers must certify the local hire percentage each year to remain eligible for the additional discount.
7. Base Period Usage: Base Period Usage shall be established and agreed to in the Economic Development Rate Agreement for Expanded Load

Customers. Base Period Usage shall be the average monthly energy use and demand for the customer during the last three years of service to the customer, from the date ending the last payment period before the date of the Agreement. Expanded Load qualifying for the rate under this Schedule shall be measured as the difference between the new monthly, meter documented energy use and demand, and the Base Period Usage.
8. State Mandated Public Purpose Program Charge: All bills rendered under this Schedule shall be subject to the Public Purpose Program Charge as established by the City Council.
9. Miscellaneous Fees and Charges: Rates charged pursuant to this Schedule shall be subject to any Energy Users Taxes, Utility Users Taxes, and any other governmental taxes, duties, or fees which are applicable to Electric Service provided to Customer by the City of Moreno Valley. Rates are also subject to adjustment, as established by the City of Moreno Valley City Council in response to federal or state climate change laws, renewable portfolio standard or other mandated legislation. These adjustments may include but are not limited to charges to mitigate the impacts of greenhouse gas emissions or "green power" premiums.
10. Expanded Load: Expanded Load customers applying for this rate must demonstrate to the satisfaction of the Utility that the expanded load is new to Moreno Valley.
11. Effective Date: The effective date of the Economic Development Rate Agreement shall commence within 12 months from the date of the City's approval, or the Agreement becomes null and void. The Agreement becomes effective upon execution by the parties, and the Economic Development Rate commences upon written notice by customer and coincides with the customer's normal billing cycle.
12. Reapplication: Customers who have received service under the Economic Development Rate are eligible to reapply for the rate as an Expanded Load Customer 12 months after their current Economic Development Rate Agreement has expired, if they meet the criteria therefore.
13. Restrictions: Residential customers and federal, state or local government agencies are not eligible to apply for service under this Schedule.
14. City Manager: The City Manager or his/her designee may offer to customers an Economic Development Rate and term based upon the actual cost to serve the customer. The customer must sign a Moreno Valley Economic Development Rate Agreement, and such Agreement shall be approved by the City Council. All other terms and conditions under this rate schedule shall apply.

## SCHEDULE ED-BR - ECONOMIC DEVELOPMENT- BUSINESS

## RETENTION RATE

## Applicability

This Schedule is applicable to the anchor stores at Stoneridge Towne Centre and Moreno Beach Plaza, whose building size is 25,000 square feet or larger and have 30 or more employees.

1. The Customer must demonstrate to the satisfaction of the City that relocation of its entire operation to a site outside of Moreno Valley Utility's service territory is a viable alternative or that the threat of closure of the Customer's existing facilities is otherwise imminent.
2. The Customer must provide:
a. An affidavit that "but for" the economic development retention rate incentives, in combination with other city-sponsored incentives, such customer would relocate outside of the City's electric service territory, and
b. Substantial evidence demonstrating the business has considered viable locations outside of Moreno Valley's service territory including but not limited to incentive offer letters from competing states, local jurisdictions and economic development organizations and/or real estate sale and lease agreements for competing sites, or
c. Substantial evidence documenting the imminent threat of facility closure, including but not limited to letters from business owners or appropriate corporate officers documenting the circumstances which have led to this imminent threat and why the Business Retention Rate is necessary to retain the business within Moreno Valley Utility's service territory.
3. The Customer must agree to maintain a minimum level of load for five years from the date service is first rendered as set forth in the Economic Development Rate Agreement for Business Retention.

## Territory

Within the entire territory served by Moreno Valley Utility.

## Rates

Except as provided herein, or in the Economic Development Business Retention Rate Agreement, all charges and provisions of the customer's otherwise applicable rate schedule shall apply. The applicable Energy Charge and Demand Charge under the customer's otherwise applicable rate schedule will be reduced as follows:

- Year $120 \%$
- Year $20 \%$
- Year 3 20\%
- Year $40 \%$
- Year $50 \%$


## Special Conditions

1. Term: Economic Development Rate Agreement for Business Retention entered into under this Schedule shall be for a single five-year term.
2. Approval: Application of this Rate Schedule shall be subject to the approval of the Public Works Director or his designee, based on meeting the eligibility criteria outlined herein.
3. Agreement: The customer must sign a standard Moreno Valley Economic Development Rate Agreement for Business Retention in order for the rates under this Schedule to be applicable. In addition to the terms of this Schedule, the Economic Development Rate Agreement for Business Retention shall require the customer to reimburse Moreno Valley for all rate reductions received under this Schedule, if the customer fails to maintain the required minimum load during the five-year term of the Agreement.
4. Minimum Load: All customers must agree to maintain a minimum level of load for five years from the date service is first rendered under this Schedule as set forth in the Economic Development Rate Agreement for Business Retention.
5. State Mandated Public Purpose Charge: All bills rendered under this Schedule shall be subject to the Public Purpose Charge as established by the City Council.
6. Miscellaneous Fees and Charges: Rates charged pursuant to this Schedule shall be subject to any Energy Users Taxes, Utility Users Taxes, and any other governmental taxes, duties, or fees which are applicable to Electric Service provided to Customer by the City of Moreno Valley. Rates are also subject to adjustment, as established by the City of Moreno Valley City Council in response to federal or state climate change laws, renewable portfolio standard or other mandated legislation. These adjustments may
include but are not limited to charges to mitigate the impacts of greenhouse gas emissions or "green power" premiums.
7. Effective Date: The Agreement becomes effective upon execution by the parties, and the Economic Development Business Retention Rate commences with the customer's normal billing cycle following execution of the Agreement by both parties.
8. Restrictions: Residential customers, small commercial customers, and federal, state or local government agencies are not eligible to apply for service under this Schedule.

## SCHEDULE EV PUBLIC - ELECTRIC VEHICLE PUBLIC CHARGING

## Applicability

This Schedule is applicable to electric vehicle charging stations owned and maintained by Moreno Valley Utility.

| Charging <br> type | Voltage |
| :---: | :---: |
| Level 2 | 240 V |
| Level 3 | 480 V |

## Territory

Within the entire territory served by Moreno Valley Utility.

## Rates

| Level 2 | $\$ 0.21$ per kWh |
| :---: | :---: |
| City Owned Charging Station | $\$ 0.35$ per kWh |
| Level 3 |  |

Per Ordinance 942, there is a four-hour maximum for parking and charging of electric vehicles in a single charging session. Sessions will be given a 30-minute grace period and thereafter will be charged $\$ 1.00$ per hour up to a maximum of $\$ 30.00$.

## SCHEDULE WTR - WIRELESS TECHNOLOGY RATE

## Applicability

This Schedule is applicable to single-phase service for wireless technology industries and utility customers deploying advanced metering infrastructure (AMI) that require electric service to operate wireless communication devices that are mounted on existing utility facilities, or other facilities approved by the utility and are unmetered.

The monthly kilowatt-hour (kWh) usage of each device shall not exceed $2,700 \mathrm{kWh}$. Effective with the date the customer becomes ineligible for service under this Schedule, the customer's account shall be transferred to Schedule B - General Service or another applicable rate schedule.

## Territory

Within the entire territory served by Moreno Valley Utility.

## Rates

## Customer Charge - \$/Month:

Single Phase
11.70
Polyphase $\$ 11.73$

Inspection Charge - \$/Device/Inspection
$\$ 15.23$
Initialization of Service Charge - One-Time Fee

Fixed Energy Charge - \$/Device/Month:
$\$ 7.31$

| Tier | Energy Use | Max Watts/ <br> Connected <br> Load | \$/Device/ Month |
| :---: | :--- | :---: | :---: |
| 1 | $0-25 \mathrm{kWhs} /$ Month | 75 | $\$ 5.57$ |
| 1.5 | $26-50 \mathrm{kWhs} /$ Month | 75 | $\$ 11.15$ |
| 2 | $51-100 \mathrm{kWhs} /$ Month | 149 | $\$ 21.78$ |
| 3 | $101-150 \mathrm{kWhs} /$ Month | 224 | $\$ 33.45$ |
| 4 | $151-200 \mathrm{kWhs} /$ Month | 298 | $\$ 44.59$ |
| 5 | $201-250 \mathrm{kWhs} /$ Month | 373 | $\$ 55.74$ |
| 6 | $251-300 \mathrm{kWhs} /$ Month | 448 | $\$ 66.89$ |
| 7 | $301-350 \mathrm{kWhs} /$ Month | 522 | $\$ 78.04$ |
| 8 | $351-400 \mathrm{kWhs} /$ Month | 597 | $\$ 89.18$ |


| 9 | $401-450 \mathrm{kWhs} /$ Month | 672 | $\$ 100.33$ |
| :---: | :--- | :---: | :---: |
| Tier | Energy Use | Max Watts/ <br> Connected <br> Load | \$/Device/ Month |
| 10 | $451-500 \mathrm{kWhs} /$ Month | 746 | $\$ 111.50$ |
| 11 | $501-900 \mathrm{kWhs} /$ Month | 1,343 | $\$ 200.66$ |
| 12 | $901-1,350 \mathrm{kWhs} /$ Month | 2,014 | $\$ 300.99$ |
| 13 | $1,351-1,800 \mathrm{kWhs} /$ Month | 2,686 | $\$ 401.31$ |
| 14 | $1,801-2,250 \mathrm{kWhs} /$ Month | 3,357 | $\$ 501.64$ |
| 15 | $2,251-2,700 \mathrm{kWhs} /$ Month | 4,028 | $\$ 601.97$ |

## Public Purpose Charge - Per Device per Month

| Tiers | Energy Use | \$/Device/ <br> Month |
| :---: | :--- | :---: |
| 1 | $0-25 \mathrm{kWhs} /$ Month | $\$ 0.51$ |
| 1.5 | $26-50 \mathrm{kWhs} /$ Month | $\$ 1.00$ |
| 2 | $51-100 \mathrm{kWhs} /$ Month | $\$ 2.00$ |
| 3 | $101-150 \mathrm{kWhs} /$ Month | $\$ 3.01$ |
| 4 | $151-200 \mathrm{kWhs} /$ Month | $\$ 4.01$ |
| 5 | $201-250 \mathrm{kWhs} /$ Month | $\$ 5.01$ |
| 6 | $251-300 \mathrm{kWhs} /$ Month | $\$ 7.01$ |
| 7 | $301-350 \mathrm{kWhs} /$ Month | $\$ 7.01$ |
| 8 | $351-400 \mathrm{kWhs} /$ Month | $\$ 8.02$ |
| 9 | $401-450 \mathrm{kWhs} /$ Month | $\$ 9.02$ |
| 10 | $451-500 \mathrm{kWhs} /$ Month | $\$ 10.03$ |
| 11 | $501-900 \mathrm{kWhs} /$ Month | $\$ 18.05$ |
| 12 | $901-1,350 \mathrm{kWhs} /$ Month | $\$ 27.06$ |
| 13 | $1,351-1,800 \mathrm{kWhs} /$ Month | $\$ 36.09$ |
| 14 | $1,801-2,250 \mathrm{kWhs} /$ Month | $\$ 4.06$ |
| 15 | $2,251-2,700 \mathrm{kWhs} /$ Month | $\$ 54.14$ |

## Special Conditions

1. Voltage: Service will be supplied at 120 volts (one fuse per 120 -volt leg).
2. Three-Phase Service: Where the utility determines, it is impractical to provide single-phase service under this Schedule three-phase service will be provided.
3. Limited Availability: This Schedule is available only where MVU determines that an applicable agency having jurisdiction has an existing code, ordinance, formal policy statement or requirement that prohibits above ground electrical meter facilities in the public right-of-way.
4. Determination of Monthly usage: The customer must provide the utility information from which the utility can determine the level of kWh usage to be consumed and/or level of service to be provided, such as the manufacturers' equipment specifications, data sheets, etc., and the number of devices to be installed. The utility will place the customer in the appropriate usage tier and charge according to the maximum value of that tier. The utility retains the right to perform on- site inspections to verify the energy consumption of the device(s).
5. Maximum Wattage: The rate tiers must coincide with the maximum wattage ratings listed below. The wattage information shall be provided by the customer in order to assist SCE in determining the appropriate tier.

| Tiers | Energy Use | Usage <br> Fuse Size | Maximum Watts / <br> Connected Load <br> Name Plat |
| :---: | :---: | :---: | :---: |
| 1 | $0-25 \mathrm{kWhs} /$ Month | KTK-3/4 | 75 watts |
| 1.5 | $26-50 \mathrm{kWhs} /$ Month | KTK-3/4 | 75 watts |
| 2 | $51-100 \mathrm{kWhs} /$ Month | KTK-1 | 149 watts |
| 3 | $101-150 \mathrm{kWhs} /$ Month | KTK-1-1/2 | 224 watts |
| 4 | $151-200 \mathrm{kWhs} /$ Month | KTK-2 | 298 watts |
| 5 | $201-250 \mathrm{kWhs} /$ Month | KTK-2-1/2 | 373 watts |
| 6 | $251-300 \mathrm{kWhs} /$ Month | KTK-3 | 448 watts |
| 7 | $301-350 \mathrm{kWhs} /$ Month | KTK-3-1/2 | 522 watts |
| 8 | $351-400 \mathrm{kWhs} /$ Month | KTK-4 | 597 watts |
| 9 | $401-450 \mathrm{kWhs} /$ Month | KTK-5 | 672 watts |
| 10 | $451-500 \mathrm{kWhs} /$ Month | KTK-6 | 746 watts |
| 11 | $501-900 \mathrm{kWhs} /$ Month | KTK-10 | 1,343 watts |
| 12 | $901-1,350 \mathrm{kWhs} /$ Month | KTK-15 | 2,014 watts |
| 13 | $1,351-1,800 \mathrm{kWhs} /$ Month | KTK-20 | 2,686 watts |
| 14 | $1,801-2,250 \mathrm{kWhs} /$ Month | KTK-25 | 3,357 watts |
| 15 | $2,251-2,700 \mathrm{kWhs} /$ Month | KTK-30 | 4,028 watts |

6. Installation: The device(s) shall be installed on utility facilities, or other facilities approved by the utility. Utility customers taking service for AMI-related devices attached to utility-owned facilities may attach only to underground-fed streetlight poles. When the devices are installed on utility facilities, the installation and removal of such device(s) will be performed at the customer's expense. Device installation shall not be performed under this Schedule where location, mounting height, and/or other considerations are not acceptable to the utility. Unless approved by the utility, all wireless communication devices must be visible to the utility.
7. Modification of Facilities: No modifications can be made to the customer-owned wireless communications devices or the AMI-related devices unless approved by MVU. Where the customer requests a modification of MVU-owned facilities, and such modifications are acceptable to MVU, MVU will perform the requested modifications at the customer's expense.
8. Maintenance: Upon installation of the device(s), where the utility experiences, or expects to experience, maintenance costs exceeding its normal maintenance expense resulting from, but not limited to, vandalism, the utility may require the customer to pay the excess maintenance expense.
9. Discontinuance and Restoration of Service: Discontinuance and restoration of service to the customer shall be completed in accordance with Rule 11.
10. Liability of the Utility: The utility shall not, by taking action pursuant to its tariffs, be liable for any loss, damage, or injury, established or alleged, which may result, or be claimed to result, there from.
11.Distribution Line Extension: Distribution line extensions shall be installed in accordance with Rule 15.
11. Service Extension: Services shall be installed and maintained as provided in Rule 16.
12. Initialization of Service Charge: A one-time charge, as shown in the RATES section of this schedule, is applied to each service account provided service under this Schedule to recover the costs of a lock and spare fuse which are required with the initialization of service.

## SCHEDULENCR-NET COMPENSATIONRATE

## Applicability

This Schedule is applicable to any electrical service customer receiving service under a TOU rate, where the customer either owns and operates a generation device in parallel with MVU's electrical grid or is a Benefiting Account associated with a generation device installed as part of a virtual net metering site.

## Territory

Within the designated areas served by Moreno Valley Utility.

## Rates

## Schedule A (grandfathered for customers with active Rule 21 Agreements

 before 1/1/2023)
## Net Compensation Rate -

## Schedule B (All new Rule 21 Agreements beginning on or after 1/1/2023, or by

 customer request)
## Energy Compensation for Overproduction - \$/kWh:

## Summer

| On-Peak | $\$ .107637$ |
| :--- | :--- |
| Mid-Peak | $\$ .088199$ |
| Off-Peak | $\$ .04752$ |

## Winter

Mid-Peak
\$ . 08665
Off-Peak
\$ . 084279
Super Off-Peak
\$ .0.048948
Time Periods -

| TOU Period | Summer |  | Winter |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Weekdays |  <br> Holidays | Weekdays | Weekend and <br> Holidays |
| On-Peak | $4 \mathrm{pm}-9 \mathrm{pm}$ | N/A | N/A | N/A |
| Mid-Peak | N/A | $4 \mathrm{pm}-9 \mathrm{pm}$ | $4 \mathrm{pm}-9 \mathrm{pm}$ | $4 \mathrm{pm}-9 \mathrm{pm}$ |
| Off-Peak | All other hours | All other hours | $9 \mathrm{pm}-8 \mathrm{am}$ | $9 \mathrm{pm}-8 \mathrm{am}$ |
| Super Off-Peak | N/A | N/A | $8 \mathrm{pm}-4 \mathrm{pm}$ | $8 \mathrm{am}-4 \mathrm{pm}$ |

## SCHEDULEVNEM-VIRTUAL NETENERGYMETERING

## Applicability

This Schedule is applicable to Qualified Customers served on time-of-use (TOU) rates whose Service Account(s) are located within a multi-tenant and multi-meter Property upon which an Eligible Facility has been installed pursuant to the additional terms and conditions contained herein and any other applicable law; and for which the Owner or Operator of the Property contracts with MVU to have all eligible energy produced by the Eligible Generator or Energy Storage Device exported to MVU's system for the sole purpose of offsetting the costs to designated Benefitting Accounts within the same Property as the Eligible Generator or Energy Storage Device.

## Territory

Within the designated areas served by Moreno Valley Utility.

## Rates

All terms and conditions of the Qualified Customer's TOU Tariff apply. Allocated TOU Credits, as further defined in Special Conditions, Section 4 below, are determined by multiplying the kilowatt-hours (kWh) that the Eligible Generator(s) or Energy Storage Device(s) deliver within each TOU block by the percentages calculated by the portion of NEC load required by each meter vs the unadjusted NEC load of the entire site.

1. Mandatory TOU Rates.
a. Qualified Customers must receive service on a TOU rate schedule, with no exceptions.
b. The default TOU rate for Residential Qualified Customers is Schedule A - Rate B.
2. Non-by-passable Charges (NBCs)

For the purpose of this Schedule, NBCs apply to the Public Purpose Programs charges. As determined in each billing period, a Qualified Customer is responsible for NBCs, assessed on a \$-per-kWh basis using the NBC factors contained in the Qualified Customer's applicable Tariff, for each kWh of electricity that is consumed / imported from the grid in each metered interval. Allocated Credits cannot be used to offset or net the kWh on which a Qualified Customer's NBCs are based.
3. Monthly Energy (kWh) Charges and Credits.

As determined in each billing period and within each TOU block, when a Qualified Customer is a net consumer of energy for the TOU block, Es is greater than Ec, where Es is energy supplied from the grid and Ec is the Allocated Credit, the resulting net consumed energy within the TOU block will be used in the calculation of all applicable energy charges, with the exception of the NBCs as outlined above, calculated by (1) multiplying the Qualified Customer's net consumed kWh by the applicable energy rate components of applicable Tariff, in each TOU period.

As determined in each billing period and within each TOU block, when a Qualified Customer is a net producer of energy for the TOU block, Ec is greater than Es, the resulting net produced energy will be used in the calculation of TOU based energy credits in accordance with the Net Compensation Rate Tariff.

See below for a table representing a Qualifying customers Energy Charges or Credits

If $E s$ is greater than $E c$ in a TOU block:

| On Peak* | Off Peak* | Super Off-Peak* |
| :---: | :---: | :---: |
| (Es - Ec) = Ensop | (Es - Ec) = Ensof | (Es - Ec) = Enssof |
| Ensop * [Customer's applicable On-Peak Rate] = Ensop Cost | Ensof * [Customer's applicable On-Peak Rate] = Ensof Cost | Enssof * [Customer's applicable On-Peak Rate] = Enssof Cost |
| Encop Value = 0 | Encof Value = 0 | Encsof Value = 0 |

If $E c$ is greater than $E s$ in a TOU block:

| On Peak $^{*}$ | Off Peak $^{*}$ | Super Off-Peak $^{*}$ |
| :---: | :---: | :---: |
| $(\mathrm{Ec}-\mathrm{Es})=$ Encop | $(\mathrm{Ec}-\mathrm{Es})=$ Encof | $($ Ec - Es $)=$ Encsof |
| Encop ${ }^{*}[$ Net Compensation | Encof ${ }^{*}[$ Net Compensation <br> Tariff Off-Peak Rate $]=$ Encof | Encsof ${ }^{*}[$ Net Compensation <br> Tariff Super-Off-Peak Rate $]=$ <br> Tarif On-Peak Rate $]=$ Encop <br> Value |
| Value | Encsof Value |  |

* See Qualified Customer's Applicable Rate Schedule for Time Periods associated with

Total Energy Charges = Ensop Cost + Encop Value + Ensof Cost + Encof Value + Essof Cost + Encsof Value

NBCs are calculated solely on the basis of Es.
4. Account Set-Up and Administrative Charges. Qualified Customers are subject to the following additional charges:
a. A one-time set-up charge of $500 \$$ per newly established Source Account and $25 \$$ per newly established Benefiting Account.
b. Disconnect / Reconnect - If a Qualified Customer requests to disconnect
from an applicable NEM system, the service address shall retain the Allocation Percentage established during system construction. This allocation percentage shall be available to a new Qualified Customer that establishes service with MVU at this service address

## Special Conditions

1. Definitions: Except as otherwise defined in MVU's Electric Rule 1, capitalized terms utilized in the context of this Schedule are defined below and applicable to Qualified Customers receiving service under this Schedule.
a. Qualified Customer -
i. The Owner or Operator of the multi-tenant, multi-meter Property with one or more separately metered Benefitting Accounts
ii. An entity authorized by the Owner to install and/or operate the Eligible Generator or Eligible Energy Storage Device and who will be MVU's customer of record on the Generating Account
iii. A tenant / occupant of the Property with a separately metered TOU account that is located on the same Property as the Eligible Generator or Eligible Energy Storage Device and is designated as a Benefiting Account on the site construction plans submitted to the City.
b. Owner - An Owner is the Qualified Customer who has legal right to claim ownership of the Property on which one or more Eligible Generator(s) or Eligible Energy Storage Device(s) have been installed.
c. Operator - An Operator is a Qualified Customer who operates a business by leasing or renting the Property from an Owner and who has an Eligible Generator or Eligible Energy Storage Device on the Property.
d. Generating Account - The TOU account to which an Eligible Generator is interconnected with MVU through a single meter for which the Owner or Operator is an MVU customer.
i. No loads shall be attached to the Generating Account.
e. Benefitting Account - Each Qualified Customer TOU Service Account that is established when site construction plans are submitted to the City. Each Qualified Customer Account will be assigned an Allocation Credit such that the sum of all Benefitting Account Allocation Credits are equal to the Allocation Credits available from the Generating Account.
i. A Benefitting Account receives Allocation Credits based on the percentage of NEC load to the Benefiting Account which is
associated to the Generating Account compared to the sum of all NEC loads associated to the Generating Account based on electrical construction plans submitted to the city.
ii. A Benefiting Account may incur costs from the generating account for any TOU block where the system is not generating energy.
iii. A Benefitting Account will split the fixed costs of a Generating Account based on the same ratio established in (i)
f. Property - All of the real property and apparatus employed in a single multi-tenant or multi-meter facility on contiguous parcels of land. These parcels may be divided by a dedicated street, highway or public thoroughfare or railway, so long as they are otherwise contiguous, and all under the same ownership.
g. Eligible Generator(s)
i. A Renewable Electrical Generating Facility that is: (A) located on the Owner or Operator's Property; (B) interconnected and operates in parallel with the electrical grid and (C) intended primarily to offset part or all of the combined electrical requirements of all designated Benefitting Accounts.
ii. To be eligible for service under this Schedule, Eligible Generator(s) must meet all applicable safety and performance standards established by the National Electric Code, the Institute of Electrical and Electronics Engineers, and accredited testing laboratories such as Underwriters Laboratories, MVU's Electric Rule 21, any applicable rules regarding safety and reliability, and applicable building codes. All Eligible Generators must have a warranty period of at least 10 years for all equipment and the associated installation from the system provider. Additionally, for Qualified Customers installing solar Generating Facilities, all major solar system components (including PV panels and other generating equipment, inverters and meters) must be on the verified equipment list maintained by the CEC. For Eligible Generators, any other equipment, as determined by MVU, must be verified as having safety certification from a Nationally Recognized Testing Laboratory (NRTL).
iii. Sizing - Qualified Customers' Eligible Generator(s) must meet the sizing requirements outlined below in order to be eligible for service under this Schedule.
2. Sized to Load Requirement - the total energy (in kWh) estimated to be recorded by the generation output meter(s) on the Eligible Generator(s) and allocated to the Benefitting Accounts must be sized no more than $20 \%$ larger than California Building Energy Efficiency Standards (Title 24) minimum prescriptive requirements. The Generating

Account shall submit evidence of this compliance with their application.
2. Capacity - The peak capacity of an Eligible Generator on a Generating Account is limited to the cumulative peak loads of all designated Benefitting Accounts. No Generator other than the Eligible Generator can be connected behind the single generation output meter.
h. Relevant Period - A one month period commencing on the start of the next regular billing period following the Date of Parallel Operation of the Owner or Operator's Eligible Generator(s) to MVU's electric system, for purposes of participating in the VNEM tariff and monthly thereafter.
i. If an Owner or Operator terminates service under this Schedule for the Property prior to the end of any Relevant Period, the Relevant Period for all associated Benefitting Accounts will end on the effective date of the service termination.
ii. If a change of Owner or Operator occurs for the Property prior to the end of any Relevant Period, the Relevant Period for the Owner's or Operator's associated Benefitting Accounts will end. The new Owner's or Operator's associated Benefitting Accounts will automatically be placed on this Schedule and a Relevant Period will begin for that new Owner or Operator on the start of the next regular billing period following the date the new Owner or Operator takes service under this Schedule, and every month thereafter.
i. Eligible Energy Storage Device(s)
i. A Energy Storage Device that is: (A) located on the Owner or Operator's Property; (B) interconnected and operates in parallel with the electrical grid and (C) intended primarily to be charged during times where energy is readily available and discharged during times when energy is scare and pass the savings through Allocation Credits to Benefitting Accounts.
ii. To be eligible for service under this Schedule, Eligible Energy Storage Devices(s) must meet all applicable safety and performance standards established by the National Electric Code, the Institute of Electrical and Electronics Engineers, and accredited testing laboratories such as Underwriters Laboratories, MVU's Electric Rule 21, any applicable rules regarding safety and reliability, and applicable building codes. All Eligible Energy Storage Device(s) must have a warranty period of at least 10 years for all equipment and the associated installation from the system provider. For Eligible Energy Storage Device(s), any other equipment, as determined by MVU, must be verified as having
safety certification from a Nationally Recognized Testing Laboratory (NRTL).
iii. Sizing - Qualified Customers' Eligible Energy Storage Device(s) must meet the sizing requirements outlined below in order to be eligible for service under this Schedule.

1. Sized to Load Requirement - the cumulative total energy (in kWh ) estimated to be discharged by the storage device at the output meter(s) on the Eligible Energy Storage Device(s) and allocated to the Benefitting Accounts must be sized no more than 1.5 Watts / Conditioned Residential Floor Area. The Generating Account shall submit evidence of this compliance with their application.
iv. Capacity - The peak capacity of an Eligible Energy Storage Device(s) on a Generating Account is limited to the cumulative peak loads of all designated Benefitting Accounts.
j. Date of Parallel Operation - The date that MVU provides the Owner or Operator with MVU's written approval (e.g. the Permission to Operate (PTO) notice) to commence parallel operation of the Eligible Generator(s).
2. Required Application and Contracts for Interconnection
a. To commence any Eligible Facility interconnection process, Owners or Operators that are a Qualified Customer must submit completed interconnection application materials and agree to any applicable terms, conditions, and other contract materials prior to interconnecting the Eligible Facility.
b. Owners or Operators seeking to interconnect their Eligible Facility for the purpose of receiving service under this Schedule are subject to the interconnection requirements and interconnection cost responsibility provisions as established in MVU's Electric Rule 21. These costs may include interconnection application fees, study costs and / or costs for upgrading the Distribution and/or Transmission Systems, depending on the size of the Eligible Generator(s). Owners or Operators are also responsible for the costs of any applicable Interconnection Facilities, as defined in MVU's Electric Rule 21, and applicable re-wiring, trenching, conduit and other facility costs as needed.
c. Qualified Customer shall deliver energy from the Eligible Facility to MVU at MVU's meter.
d. Qualified Customer, and not MVU, shall be solely responsible for all legal and financial obligations arising from the construction, installation, design, operation, and maintenance of the Eligible Facility in accordance with all applicable laws and regulations.
e. Qualified Customer, at Qualified Customer's sole expense, shall obtain and possess all permits and authorizations in accordance with all applicable laws and regulations for the construction, installation, design operation and maintenance of the Eligible Facility.
f. MVU shall furnish and install one or more standard watt-hour meters to read energy generated by Qualified Customer's Eligible Facility. Qualified Customer shall provide and install a meter socket and connections in accordance with MVU's metering standards. If the Qualified Customer desires more detailed metering equipment, all associated costs will be incurred by the Owners or Operators.
g. MVU shall have the right to have its representatives present at the final inspection made by the governmental authority having jurisdiction to inspect and approve the installation of the Eligible Facility. For interconnections involving battery storage, Qualified Customer shall be responsible for all inspection and commissioning fees. Qualified Customer shall notify MVU at least five (5) days prior to such inspection.
h. Qualified Customer shall not connect the Eligible Facility, or any portion of it, to MVU's distribution system, until written approval of Eligible Facility has been given to Qualified Customer by MVU. Such approval shall not be unreasonably withheld.
i. Qualified Customer may reconnect its Eligible Facility to the MVU system following normal operational outages and interruptions without notifying MVU unless MVU has disconnected service, or MVU notifies Qualified Customer that a reasonable possibility exists that reconnection would pose a safety hazard.
j. If MVU has disconnected service to the Eligible Facility, or MVU has notified Qualified Customer that a reasonable possibility exists that reconnection would pose a safety hazard, Qualified Customer may call MVU's Customer Service Center to request authorization to reconnect the Eligible Facility.
k. Qualified Customer shall: (a) maintain the Eligible Facility and interconnection facilities in a safe and prudent manner and in conformance with all applicable laws and regulations, and (b) to the extent that future requirements may require, obtain any governmental authorizations or permits required for the operation of the Eligible Facility. Qualified Customer shall reimburse MVU for any and all losses, damages, claims, penalties, or liability MVU incurs as a result of failure to obtain or maintain any governmental authorizations and permits required for construction and operation of the Owners or Operator's Eligible Facility.
I. MVU may enter Qualified Customer's premises without prior notice (a) to inspect, at all reasonable hours, Qualified Customer's protective devices and read or test any meter for the Eligible Facility and (b) to disconnect, at any time, without notice, the Eligible Facility if, in MVU's sole opinion, a hazardous condition exists and that immediate action is necessary to protect persons, or MVU's facilities, or property of others from damage or interference caused by (1) Qualified Customer's Eligible Facility, or (2) Qualified Customer's failure to comply with the requirements of this Rule.
3. Metering Requirements - Metering requirements for Qualified Customers served under this Schedule are as follows:
a. The Owner or Operator will be responsible for and will pay for all costs associated with installing, on each Eligible Facility, a net generation output meter (NGOM) capable of recording generator output in 15-minute intervals and the flow of energy in two directions at the point of common coupling where each Eligible Generator transfers energy to MVU's grid. The cost of the $\mathrm{NGOM}(\mathrm{s})$ is a one-time, upfront charge that includes material, labor, maintenance and replacement, and may vary from project to project depending on the type of NGOM required to interconnect a particular project. No additional load other than incremental load related to the inverters and support of the Eligible Generator(s) may be registered at the meter. MVU must approve the location of the NGOM equipment, which should be normally grouped with the service and metering for one or more Benefitting Accounts.
b. Each Benefitting Account must have a standard MVU TOU billing meter that is capable of Interval Metering
4. Billing Process
a. Gross Credit - The total metered kWh output of all Eligible Facilities, delivered to MVU's grid, as metered at the point of common coupling, described in Condition 3.a above, during the billing period and TOU block of the Generating Account.
b. Gross Debit - The total metered kWh consumption of all Eligible Generators, delivered to MVU's grid, as metered at the point of common coupling, described in Condition 3.a above, during the billing period and TOU block of the Generating Account and the fixed costs associated with the Generating Account.
c. Allocated Credit -
i. The percentage of Gross Credit that will be allocated to the individual Benefitting Account(s) is determined by calculating the
percentage of NEC load for each Benefitting Account vs the sum of all NEC loads of all Benefitting Accounts included in the electrical plans submitted for building and safety review prior to site construction. This percentage can be updated by specific request by the Owner or Operator when the site undergoes construction permitted by the City which impacts the NEC loads.
ii. The individual allocation of the kWh to each Benefitting Account is calculated by multiplying the Gross Credit by the designated percentage allocation for each individual Benefitting Account during each applicable TOU block.
d. Allocated Debit -
i. The percentage of Gross Debit that will be allocated to the individual Benefitting Account(s) is determined by calculating the percentage of NEC load for each Benefitting Account vs the sum of all NEC loads of all Benefitting Accounts included in the electrical plans submitted for building and safety review prior to site construction. This percentage is updated when the percentage affecting Allocation Credit is updated.
ii. The individual allocation of the kWh and fixed costs to each Benefitting Account is calculated by multiplying the Gross Debit by the designated percentage allocation for each individual Benefitting Account during each applicable TOU block.
e. Qualified Customer's Bill - MVU will provide each Qualified Customer with its net energy information with each regular bill. That information will include the monetary balance of energy charges and credits for the current Relevant Period. Qualified Customers are responsible for all charges of their TOU tariff. Each month, Allocated Credits, in kWh are subtracted from the Benefitting Account's metered usage in kWh during each TOU block. Allocated Debits, in kWh are added to the Benefitting Account's metered usage in kWh during each TOU block. Allocated Debits for fixed charges of the associated Generating Account are added to the fixed charges of the Benefiting Accounts. The bill may therefore reflect either a charge or a credit for energy (kWh).
f. Bill Payment - Qualified Customers are required to pay their bill on a monthly basis. Bill payments made by the Qualified Customer within the Relevant Period will continue to be applied to the Qualified Customer's account. Excess energy credits are converted to dollars in accordance with the Net Compensation Tariff and carried forward to the following billing period. For Benefitting Accounts with a net negative bill, MVU will issue checks annually in November for the net negative balance.
5. Interruption or Reduction of Deliveries
a. MVU shall not be obligated to accept, and MVU may require Qualified Customer to interrupt or reduce, deliveries of energy to MVU: (a) when necessary in order to construct, install, maintain, repair, replace, remove, investigate, or inspect any of MVU's equipment or part of the MVU system; or (b) if MVU determines that curtailment, interruption, or reduction of receipt of energy from the Eligible Facility is necessary because of emergencies, forced outages, force majeure, or compliance with prudent electrical practices.
b. Notwithstanding any other provision, if at any time MVU, in its sole discretion, determines that either (a) the Eligible Facility may endanger MVU personnel or members of the general public, or (b) the continued operation of the Eligible Facility may impair the integrity of MVU's electric distribution system, MVU shall have the right to disconnect the Eligible Facility from MVU's electric distribution system. Qualified Customer's Eligible Facility shall remain disconnected until such time as MVU is satisfied that the condition(s) referenced in (a) or (b) of this paragraph have been corrected, and MVU shall not be obligated to compensate Qualified Customer for any loss of use of generation or energy during any and all periods of such disconnection.
6. Indemnity and Liability by Qualified Customer
a. Qualified Customer shall indemnify and hold MVU, its directors, officers, agents and employees harmless against all loss, damages expense and liability to third persons for injury to or death of persons or injury to property caused by the Qualified Customer's engineering design, construction, installation, ownership, maintenance or operations of the Eligible Facility by reason of omission or negligence, whether active or passive. Qualified Customer shall, on MVU's request, defend any suit asserting a claim covered by this indemnity. Qualified Customer shall pay all costs that may be incurred by MVU in enforcing this indemnity.
b. Neither MVU, its officers, agents nor employees shall be liable for any claims, demands, costs, losses, causes of action, or any other construction, ownership, maintenance or operation of, or making of replacements, additions or betterment to, Qualified Customer's Eligible Facility except to the extent actually caused by the sole and gross negligence of the MVU.
c. Neither MVU, its officers, agents nor employees shall be liable for damages of any kind to the Eligible Facility caused by any electrical disturbance of the MVU system or on the system of another, whether or not the electrical disturbance results from the negligence of MVU.
d. MVU shall have the right to require that Customer acquire and maintain
insurance sufficient to cover any potential loss, damages, expense, and liability arising from use or interconnection of the Facility.
7. Release of Information - The Owner or Operator agrees that MVU may from time to time release to the CEC and/or any other applicable regulatory bodies information regarding the Owner / Operator's name, each Eligible Generator's location, their capacity and operating characteristics.
8. Period of Eligibility - Unless otherwise specified, the provisions of this tariff shall remain in effect for 20 years from the date Qualified Customers receive service under this tariff. The transfer of an existing Eligible Facility to a new location is considered a new installation and subject to a new interconnection process under this tariff. Modifications or repairs to the Eligible Facility that increase the Eligible Facility's generating capacity or electric output by $10 \%$ or more will result in a loss of eligibility. This tariff or Qualified Customer eligibility may be discontinued or modified if required by applicable law, regulation utility practices, or MVU's electric system standards. Unless otherwise specified, Qualified Customers will be required to comply with the terms of the most recent applicable tariff while receiving service under this tariff.

City of Moreno Valley<br>Electric Service Rules, Fees and Charges

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## ELECTRIC RULE 1-ADOPTION OF ELECTRIC RULES AND DEFINITIONS

These Electric Rules established by the City of Moreno Valley ("City") and approved by the City Council are effective throughout the service area of the City of Moreno Valley's Electric Utility.

All rules are subject to change. Copies of the rules currently in effect will be kept in the offices of the Electric Utility Division, Department of Public Works. Customers or others contemplating any expenditures or activities governed by these rules should assure themselves that they have the current version by contacting the Electric Utility Division. A copy of the current rates is also available on the City's website - www.moval.org.

For the purpose of these rules, the following terms shall have the following meanings:
Applicant: A person, persons, firm, association, governmental agency, corporation or other entity that submits a request for electric service from the Utility and who will be responsible for all related charges.

Billing Demand: The load or demand used for computing charges under rate schedules based on the size of the Customer's load or demand. It may be connected load, the measured maximum demand, or a modification of either as provided for by the applicable rate schedule.

Billing Period: The time interval between two consecutive meter readings that are taken for billing purposes.

California Independent System Operator (CAISO): The California Independent System Operator Corporation, a nonprofit corporation that controls the transmission facilities of all participating transmission owners and dispatches certain generating units and loads. The CAISO is responsible for operation and control of the statewide transmission grid.

City Council: The City Council of the City of Moreno Valley, designated as the governing body of the Utility.

Commission: The Public Utilities Commission of the State of California, sometimes referred to as the Public Utilities Commission or the CPUC.

Connected Load: The sum of the nameplate-rated capacities of all of the Customer's equipment that can be connected to the Utility's lines at any one time as more completely described in the rate schedules.

Customer: The person, persons, firm, association, governmental agency, corporation or other concern that use, are entitled to use, or benefit from the use of electricity from the Utility.

Customer's Mailing Address(es): The physical and/or electronic mailing (e-mail) address specified in a customer's application or contract, or any other address subsequently given to the Utility by the Customer, to which any bill, notice or other communication is to be sent.

Customer Services: The Utility's staff assigned to handle Customer requests and establish new service.

Date of Presentation: The date upon which a bill or notice is sent or delivered by the Utility to the Customer via U.S. Mail or electronic mail (e-mail).

Distribution Line Extension: New distribution facilities of the Utility that are a continuation of, or branch from, the nearest available existing permanent Distribution Line (including any facility rearrangements and relocations necessary to accommodate the Distribution Line Extension) to the point of connection of the last service. SCE's Distribution Line Extension includes transmission underbuilds and converting an existing single-phase line to three-phase in order to furnish threephase service to an Applicant, but excludes service transformers, meters and services.

Distribution Lines: Overhead pole lines and underground facilities consisting of conduit, wire and cable that are operated at distribution voltages, and which are designed to supply two (2) or more services.

Distribution System: Those distribution facilities owned, controlled, and operated by the Utility that are used to provide distribution service under the rules.

Electric Rules: Sheets which set forth the application of all rates, charges, and service when such applicability is not set forth in and as part of the rate schedules

Electric Vehicle: An electric vehicle is any vehicle that utilizes electricity from external sources of electrical power, including the grid, for all or part of vehicles, vessels, trains, boats, or other equipment (e.g. aircraft, forklifts, port equipment) that are mobile sources of air pollution and greenhouse gasses. Types of electric vehicles include, but are not limited to, plug-in hybrid electric vehicles (PHEV), battery electric vehicles (BEV), electric golf carts, or neighborhood electric vehicles (NEV), transit buses, short-haul fleets and ground equipment supporting goods movement.

Electronic Record: A record created, generated, sent, communicated received, or stored by electronic means.

Electronic Signature: An electronic sound, symbol, or process attached to or logically associated with an electronic record and executed or adopted by a person with the intent to sign the electronic record.

Electronic Transfer: Paperless exchange of data and/or funds, usually involving computer and telecommunication technology.

Energy Diversion: Electricity being received by a Customer without registering through the meter due to either tampering with the meter or bypassing the meter.

HP: Horsepower.
kVAR: Kilovar
kVARh: Kilovar-hour
$\mathbf{k W}$ : Kilowatt.
kWh: Kilowatt-hour.
Mailed: Any notice or other communication will be considered "mailed" when sent by electronic means (e-mail) or when it is enclosed in a sealed envelope, properly addressed, and deposited in any U.S. Post Office box, postage prepaid.

Maximum Demand: The average kilowatts during the specified interval when the Customer's use is greatest in the billing period as indicated or recorded by the meter.

Meter: The instrument used for measuring the electricity delivered to the Customer.
Metering Facilities: The necessary meter, instrument transformers, test facilities, data communication equipment, and other associated metering equipment.

Nominal Voltage: The nominal voltage of a circuit is the approximate voltage between conductors in a circuit or system of a given class, assigned for the purpose of convenient designation. For any specific nominal voltage, the operating voltage actually existing at different points and times on the system will vary.

On-Site Facilities: On-site facilities include the facilities located on the Premises as well as those in adjacent rights-of-way, easements and a proportionate share of any facilities on adjacent property used to provide service to the Premises.

Paid or Payment: Funds received by the Utility through postal service, the Utility payment office, or deposited in a Utility account by Electronic Transfer.

Person: Any individual, partnership, corporation, public agency or other organization operating as a single entity.

Point of Delivery: The point where conductors of the Utility are connected to the conductors of the Customer, regardless of the location of the Utility's meters or transformers. The Utility conductors may be owned, leased, or under license by the Utility, and conductors of the Customer may be owned, leased or under license by the Customer.

Premises: All real property, buildings, and appurtenances upon an integral parcel of land undivided by a street, highway or other public thoroughfare.

Rate Schedule: May be one or more rate sheets setting forth the charges and conditions for a particular class or type of service in a given area or location. A rate schedule, as referred to herein, shall include all the wording on the applicable rate sheet or sheets, such as, but not limited to the

## Exhibit B

following: Class of Service, Character or Applicability, Territory, Rates, Conditions, and reference to Rules.

Service Wires or Connection: The group of conductors connecting the service entrance conductors of the Customer to the Utility's supply line, regardless of the location of the Utility's meters or transformers.

Service Extension: The overhead and underground primary or secondary facilities (including, but not limited to the Utility-owned service facilities and Applicant-owned service facilities) extending from the point of connection at the Distribution Line to the Point of Delivery.

Utility: The City of Moreno Valley Electric Utility.

## ELECTRIC RULE 2-DESCRIPTION OF SERVICE

## A. GENERAL

1. The type of service available at any particular location should be determined by inquiry at the Utility's local office.
2. Alternating-current service will be regularly supplied at a frequency of approximately 60 Hertz (cycles per second).
3. In areas where a certain standard secondary voltage is presently being served to one or more Customers, an Applicant applying for new service in such areas may be required by the Utility to receive the same standard voltage supplied to existing Customers.
4. All electric service described in this rule is subject to the conditions in the applicable Rate Schedule and other pertinent rules.
5. It is the responsibility of the Applicant to ascertain and comply with the requirements of all governmental authorities having jurisdiction.
6. Service to a premise is normally established at one delivery point, through one meter, and at one voltage class. Other arrangements for service at multiple service delivery points, or for services at more than one voltage class, are permitted only where feasible and with the approval of the Utility. For purposes of this rule, distribution service voltage classes, delta or wye connected, are described as:
a. 12,000 volt nominal, three phase ( $3 \varnothing$ ) and lower
b. 6,930 volt nominal, single-phase, (1Ø) and lower

## B. SERVICE DELIVERY VOLTAGES

1. Following are the standard service voltages normally available, although not all of them are or can be made available at each Point of Delivery:

| Distribution Voltages |  |  |
| :---: | :---: | :---: |
| Single-phase <br> Secondary | Three-phase <br> Secondary | Three-phase Primary |
| $120 / 240,3$-wire | $240 / 120,4$-wire | $12,000,3$-wire |
| $120 / 208,3$-wire* | $480 / 277,4$-wire | 2400,3 wire* |
|  | $208 \mathrm{Y} / 120,4$-wire | $4,160,3$-wire* |
|  |  | $4,160 \mathrm{Y} / 2,400,4$-wire* |
|  |  | $12,000 \mathrm{Y} / 6,930,4$-wire* |

## *Limited Availability.

2. All voltages referred to in this rule and appearing in some rate schedules are nominal service voltages at the Point of Delivery. The Utility's facilities are designed and operated to provide sustained service voltage at the Point of Delivery, but the voltage at a particular Point of Delivery, at a particular time, will vary within fully satisfactory operating range limits established in Section C.
3. The Point of Delivery and point of metering will normally be at the same voltage and within close proximity to each other. When the Utility determines it is not feasible for the Point of Delivery and point of metering to be at the same voltage and within close proximity to each other, the demand and energy meter readings used in determining the charges will be adjusted to correct for transformation and line losses.

## C. VOLTAGE AND FREQUENCY CONTROL

## 1. CUSTOMER SERVICE VOLTAGES

a. Under all normal load conditions, the Utility's distribution circuits will be operated so as to maintain secondary service voltage levels to Customers within the service voltage ranges specified below:

| Nominal Two-Wire <br> and Multi-Wire <br> Service Voltage | Minimum Voltage to <br> All Services | Maximum Service <br> Voltage on All <br> Services |
| :---: | :---: | :---: |
| 120 | 114 | 126 |
| 208 | 197 | 218 |
| 240 | 228 | 252 |
| 277 | 263 | 291 |
| 480 | 456 | 504 |

The Utility's distribution voltage will be regulated to the extent practicable to maintain service voltage on distribution circuits within the minimum and maximum voltages specified above.
b. Exceptions to Voltage Limits. Voltage may be outside the limits specified when the variations:

1) Arise from the temporary action of the elements.
2) Are infrequent momentary fluctuations of a short duration
3) Arise from service interruptions.
4) Arise from temporary separation of parts of the system from the main system.
5) Are from causes beyond the control of the Utility, and which may be sustained duration.
c. Where the operation of the Applicant's equipment requires unusually stable voltage regulation or other stringent voltage control beyond that supplied by the Utility in the normal operation of its system, the Applicant, at his own expense, is responsible for installing, owning, operating, and maintaining any special or auxiliary equipment on the load side of the service delivery point as deemed necessary by the Applicant.
d. The Applicant shall be responsible for designing and operating his service facilities between the Point of Delivery and the utilization equipment to maintain proper utilization voltage at the line terminals of the utilization equipment.

## Exhibit B

## 2. CUSTOMER UTILIZATION VOLTAGES

a. All Customer-owned utilization equipment must be designed and rated in accordance with the following utilization voltages specified by the American National Standard Institute C84.1 if Customer equipment is to give fully satisfactory performance:

| Nominal Utilization <br> Voltage | Minimum Utilization <br> Voltage | Maximum <br> Utilization Voltage |
| :---: | :---: | :---: |
| 120 | 110 | 125 |
| 208 | 191 | 216 |
| 240 | 220 | 250 |
| 277 | 254 | 289 |
| 480 | 440 | 500 |

Minimum utilization voltages from ANSI C84.1 are shown for Customer information only as the Utility has no control over voltage drop in Customer's wiring.

## D. GENERAL LOAD LIMITATIONS

1. SINGLE-PHASE SERVICE

Single-phase service normally will be three-wire, 120/240 volts where the size of any single motor does not exceed 7.5 horsepower ( 10 horsepower at the option of the Utility). For any single-phase service, the maximum demand as determined by the Utility is limited to the capability of a $100-\mathrm{kVA}$ transformer and 400 amp main disconnect unless otherwise approved by the Utility. If the load requires a transformer installation in excess of 100 kVA , the standard service will be three-phase.
2. THREE-PHASE SERVICE (LESS THAN 600 VOLTS)
a. Secondary service from underground primary distribution systems (where the Utility maintains existing 3-phase primary circuits):

| Nominal Voltage | Minimum Load | Maximum <br> Demand |
| :---: | :---: | :---: |
| 208Y/120, 4-wire | Demand load justifies a 75 <br> kVA transformer | $1,500 \mathrm{kVA}$ |
| 480Y/277, 4-wire | Demand load justifies a 75 <br> kVA transformer | $3,000 \mathrm{kVA}$ |

b. Where three-phase service is supplied, the Utility reserves the right to use singlephase transformers connected open-delta or closed-delta, or three-phase transformers.
c. Three-phase service will be supplied on request for installations aggregating less than the minimums listed above where existing transformer capacity is available and approved by the Utility.
d. Three-phase metering for one service voltage supplied to installations on one premise at one delivery location normally is limited to a maximum of a 4,000 ampere service rating. Metering for larger installations, or installations having two (2) or more service switches with a combined rating in excess of 4,000 amperes, or service for loads in excess of the maximum demand load permitted, may be installed provided approval of the Utility has been first obtained as to the number, size, and location of switches, circuits, transformers and related facilities. Service supplied to such approved installations in excess of one 4,000 ampere switch or breaker at one service delivery point may be totalized for billing purposes.

## 3. THREE-PHASE SERVICE (OVER 600 VOLTS)

a. The following are three-phase voltages that may be transformed from higher existing primary distribution voltages and provided only as isolated services for a single Applicant where the Applicant's demand load justifies, as determined by the Utility, the installation of the minimum size transformer bank used by the Utility:

| Nominal Voltage | Minimum Size <br> Bank Installed | Maximum Demand <br> Load Permitted |
| :---: | :---: | :---: |
| $4,160^{*}$ | 500 kVA | $5,000 \mathrm{kVA}$ |
| 12,000 | 500 kVA | $12,000 \mathrm{kVA}$ |

*Limited Availability.
b. For its operating convenience and necessity, the Utility may elect to supply an Applicant whose demand load is in excess of $2,000 \mathrm{kVA}$ from a substation on the Applicant's Premises supplied from a transmission source.
c. City reserves the right to change its distribution or transmission voltage to another standard service voltage when, in its judgment, it is necessary or advisable for economic reasons or for proper service to its Customers. Where a Customer is receiving service at the voltage being changed, the Customer then has the option to:
(1) accept service at the new voltage,
(2) accept service at the secondary side of an additional stage of transformation to be supplied by the Utility at a location on the Customer's Premises in accordance with the Utility's requirements, or
(3) contract with the Utility for an additional stage of transformation to be installed as Special Facilities (including any fees as determined by the Utility) under the provisions of Section I, below, whereby the Customer will be considered as accepting service at the primary side of the additional stage of transformation. Metering not relocated to the primary side of the additional stage of transformation will be subject to a transformer loss adjustment as determined by the Utility.

The option to contract with the Utility for an additional stage of transformation (option 3, above) is available only once in conjunction with a change in standard voltage by the Utility.

## 4. LOAD BALANCE

The Applicant must balance his demand load as nearly as practicable between the two sides of a three-wire single-phase service and between all phases of a three-phase service. Loads on three-phase service must be balanced between phases in accordance with good engineering practice.

## E. PROTECTIVE DEVICES

1. It shall be the Applicant's responsibility to furnish, install, inspect and keep in good and safe condition at his own risk and expense, all appropriate protective devices of any kind or character, which may be required to properly protect the Applicant's facilities. The Utility shall not be responsible for any loss or damage occasioned or caused by the negligence, or wrongful act of the Applicant or of any of its agents, employees or licensees in omitting, installing, maintaining, using, operating or interfering with any such protective devices.
2. It shall be the Applicant's responsibility to select and install such protective devices as may be necessary to coordinate properly with the Utility's protective devices to avoid exposing other Customers to unnecessary service interruptions.
3. It shall be the Applicant's responsibility to equip their three-phase motor installations with appropriate protective devices, or use motors with inherent features, to completely disconnect each such motor from its power supply, in accordance with the National Electrical Code, giving particular consideration to the following:
a. Protection in each set of phase conductors to prevent damage due to overheating in the event of overload.
b. Protection to prevent automatic restarting of motors or motor driven machinery, which has been, subjected to a service interruption and, because of the nature of the machinery itself or the product it handles, cannot safely resume operation automatically.
c. Open-phase protection to prevent damage due to overheating in the event of loss of voltage on one phase.
d. Reverse-phase protection where appropriate to prevent uncontrolled reversal of motor rotation in the event of accidental phase reversal. (Appropriate installations would include, but are not limited to, motors driving elevators, hoists, tramways, cranes, pumps, conveyors, etc.)
4. The available short-circuit currents vary from one location to another, and also depends on available generation, condition of the system loads, and the ultimate design characteristics of the Utility's supply and service facilities. Consult the Utility for the ultimate maximum short-circuit current at each service termination point.
5. Where an Applicant proposes to use a ground-fault sensing protective system which would require special Utility-owned equipment, such a system may be installed only where feasible and with written approval of the Utility.
6. Any non-Utility-owned emergency standby or other generation equipment that can be operated to supply power to facilities that are also designed to be supplied from the Utility's system shall be controlled with suitable protective devices by the Applicant to prevent parallel operation with the Utility's system in a fail-safe manner, such as the use of a double-throw transfer switch to disconnect all conductors, except where there is a written agreement or service contract with the Utility permitting such parallel operation.

## F. INTERFERENCE WITH SERVICE

## 1. GENERAL

The Utility reserves the right to refuse to serve new loads or to discontinue supply to existing loads of a size or character that may be detrimental to the Utility's operations or to the service of its Customers. Any Customer who operates or plans to operate any equipment such as, but not limited to, pumps, welders, saw mill apparatus, furnaces, compressors or other equipment where the use of electricity is intermittent, causes intolerable voltage fluctuations, or otherwise causes intolerable service interference, must reasonably limit such interference or restrict the use of such equipment upon request by the Utility. The Customer is required either to provide and pay for whatever corrective measures are necessary to limit the interference to a level established by the Utility as reasonable, or avoid the use of such equipment, whether or not the equipment has previously caused interference.

## 2. HARMFUL WAVE FORM

Customer shall not operate equipment that superimposes a current of any frequency or waveform upon the Utility's system, or draws current from the Utility's system at a harmful waveform, which causes interference with the Utility's operations, or the service to other Customers, or inductive interference to communication facilities.

## 3. CUSTOMER'S RESPONSIBILITY

Any Customer causing service interference to others must diligently pursue and take corrective action after being given notice and a reasonable time to do so by the Utility. If the Customer does not take corrective action in the time set, or continues to operate the equipment causing the interference without restriction or limit, the Utility may, without liability, after giving five (5) days written notice to Customer, either install and activate control devices on its facilities that will temporarily prevent the detrimental operation, or discontinue electric service until a suitable permanent solution is provided by the Customer and it is operational.

## 4. MOTOR STARTING CURRENT LIMITATIONS

a. The starting of motors shall be controlled by the Customer as necessary to avoid causing voltage fluctuations that will be detrimental to the operation of the Utility's distribution or transmission system, or to the service of any of the Utility's Customers.

| Nominal Voltage and <br> Phase | Maximum Rated Motor Size |
| :---: | :---: |
| $120 \mathrm{~V} 1 \varnothing$ | 1 HP |
| $208 \mathrm{~V} 1 \varnothing$ | 7.5 HP |
| $240 \mathrm{~V} 1 \varnothing$ | 7.5 HP |
| $208 \mathrm{~V} 3 \varnothing$ | 40 HP |
| $240 \mathrm{~V} 3 \varnothing$ | 40 HP |
| $480 \mathrm{~V} 3 \varnothing$ | 75 HP |

For motors rated over 75 HP the Customer needs to consult with the Utility.
b. If the starting current for a single motor installation exceeds the value listed for Class C or better (per National Electrical Code Section 430) and the resulting voltage disturbance causes or is expected to cause detrimental service to others, reduced voltage starters or other suitable means must be employed, at the Customer's expense, to limit the voltage fluctuations to a level equivalent to a Class C motor.
c. Where service conditions permit, subject to the Utility's approval, motor starters may be deferred in the original installation. The Utility may later order the installation of a suitable starter or other devices when it has been determined that the operation of the Customer's motors interfere with service to others. Also, the Utility may require starting current values lower than those set forth herein where conditions at any point on its system require such reduction to avoid interference with service to other Customers.
d. Starters may be omitted on the smaller motors of a group installation when their omission will not result in a starting current in excess of the allowable starting current of the largest motor of the group. Where motors start simultaneously, they will be treated as a single unit equal to the sum of their individual starting currents.
e. The Utility may limit the maximum size and type of any motor that may be operated at any specific location on its system to that which will not be detrimental to the Utility's system operations or to the service of its Customers, as determined by the Utility.
f. For installations of motors where the equipment is started automatically by means of float, pressure, or thermostat devices, such as with pumps or wind machines for frost protection, irrigation pumps or other similar installations, the Utility may require the Customer to install, at his own expense and in accordance with the Utility's operating requirements, suitable preset time-delay devices to stagger the
automatic connection of load to the supply system and to prevent simultaneous start-up for any reason.

## G. POWER FACTOR

The Utility may require the Customer to provide, at their own expense, equipment to increase the operating power factor of their equipment, as seen at the Point of Delivery, to not less than $90 \%$, lagging or leading.

## I. SPECIAL FACILITIES

1. The Utility normally installs only those standard facilities, which it deems are necessary to provide regular service in accordance with the Electric Rules. Where the Applicant requests the Utility to install Special Facilities and the Utility agrees to make such an installation, the additional costs thereof shall be borne by the Applicant, including such continuing ownership costs as may be applicable.
2. Special Facilities are: (a) facilities requested by an Applicant which are in addition to or in substitution for standard facilities which the Utility would normally provide for delivery of service at one point, through one meter, at one voltage class under its Electric Rules, or (b) a pro rata portion of the facilities requested by an Applicant, allocated for the sole use of such Applicant, which would not normally be allocated for such sole use. Unless otherwise provided by the Utility's rate schedules, Special Facilities will be installed, owned and maintained by the Utility as an accommodation to the Applicant only if acceptable for operation by the Utility, and the reliability of service to the Utility's other Customers is not impaired and Applicant funds construction and pays incremental costs.
3. Special Facilities will be installed under the terms and conditions of a contract in the form on file with the Utility. Such contract will include, but is not limited to, the following terms and conditions:
a. Where new facilities are to be installed for Applicant's use as Special Facilities, the Applicant shall advance to the Utility the estimated additional installed cost of the Special Facilities over the estimated cost of standard facilities. At the Utility's option, the Utility may finance the new facilities.

## J. WELDER SERVICE

## 1. RATING OF WELDERS

Electric welders will be rated for billing purposes as follows:
a. MOTOR-GENERATOR ARC WELDERS - The horsepower rating of the motor driving a motor-generating type arc welder will be taken as the horsepower rating of the welder.
b. TRANSFORMER ARC WELDERS - Nameplate maximum kVA input (at rated output amperes) will be taken as the rating of transformer type arc welders.
c. RESISTANCE WELDERS - Resistance welder ratings will be determined by multiplying the welder transformer nameplate rating (at 50 percent duty cycle) by the appropriate factor listed below:

| TYPE OF WELDER | TRANSFORMER <br> NAMEPLATE <br> RATING @ 50\% Duty <br> Cycle** | FACTOR Utility <br> Owned <br> Distribution <br> Transformer |
| :--- | :--- | :---: |
| 1. Rocker Arm, Press <br> or Projection Spot | 20 kVA or less | 0.60 |
| 2. Rocker Arm, Press <br> Spot Project Spot <br> Flash or Butt Seam <br> or Portable Gun | Over 20 kVA <br> 21 to $75 \mathrm{kVA} inclusive$, <br> 100 kVA or over <br> All sizes | 0.80 |
| 3. Flash or Butt | 67 to 100 kVA, inclusive | *** |
| 4. Projection Spot <br> Flash or Butt | Over 75 kVA <br> 66 kVA or less | 1.20 |
| ** The kVA rating of all resistance welders to which these rating procedures are applied <br> must be at or equivalent to 50 percent duty cycle operation. Duty cycle is the percent of <br> the time welding current flows during a given operating cycle. If the operating kVA <br> nameplate rating is for some other operating duty cycle, then the thermally equivalent $k V A$ <br> rating at 50 percent duty cycle must be calculated. <br> $* * *$ Each flash or butt welder in this group will be rated at 80 kVA. |  |  |

d. Ratings prescribed by $a$, $b$, and $c$ above normally will be determined from nameplate data or from data supplied by the manufacturer. If such data are not available or are believed by either the Utility or Customer to be unreliable, the rating will be determined by test at the expense of the Customer.
e. If established by seals approved by the Utility, the welder rating may be limited by the sealing of taps, which provide capacity greater than the selected tap, and/or by the interlocking lockout of one or more welders with other welders.
f. When conversion of units is required for rate application, one welder kVA will be taken as one horsepower for rules stated on a horsepower basis and one welder kVA will be taken as one kilowatt for rates stated on a kilowatt basis.

## 2. BILLING OF WELDERS

Welders will be billed at the regular rates and conditions of the rules on which they are served, subject to the following provisions:
a. CONNECTED LOAD TYPE OF SCHEDULE. Welder load will be included as part of the connected load with ratings as determined under Section 1, above,

## Exhibit B

based on the maximum load that can be connected at any one time, and no allowance will be made for diversity between welders.
b. DEMAND METERED TYPE OF SCHEDULE. Where resistance welders are served on these schedules, the computation of diversified resistance welder load shall be made as follows:

Multiply the individual resistance welder ratings, as prescribed in Sections 1.c. to 1.f. inclusive (above) by the following factors, and add to the results thus obtained:
1.0 times the rating of the largest welder
0.8 times the rating of the next largest welder
0.6 times the rating of the next largest welder
0.4 times the rating of the next largest welder
0.2 times the ratings of all additional welders

If this computed, diversified, resistance welder load is greater than the metered demand, the diversified resistance welder load will be used in lieu of the metered demand for rate computation purposes.

## ELECTRIC RULE 3-APPLICATION FOR SERVICE

## A. APPLICATIONS

The Utility may require each Customer to sign an application for the service desired, and also to establish credit. Generally, applications for service will be taken over the telephone, but may be taken in person or received by U.S. mail or e-mail.

Application form shall set forth:

1. Legal name of Applicant.
2. Date of application
3. Location of Premises to be served.
4. Date Applicant will be ready for service.
a. Service restoration: When the Customer's service has been terminated either because of a determination by the Utility that an unsafe apparatus or condition exists on the Premises, or because the Customer has threatened to create a hazardous condition, service will not be restored until the Utility determines the Customer's electrical wiring or equipment or the use of either, has been made safe. When service is denied or terminated solely under these sections, the Customer may seek remedies before the City Council.
b. When the Customer's service has been terminated because of an order of termination issued to the Utility by a governmental agency, service will not be restored until the Utility has received authorization to restore the service from the appropriate governmental agency.
5. Whether electric service was previously supplied to the Premises.
6. Purpose for which service is to be used, with description of appliances.
7. Customer's Mailing Address to which bills are to be sent, e-mailed or delivered.
8. Whether Applicant is owner, agent, or tenant of Premises.
9. Rate schedule desired where an optional rate is available.
10. Information to establish credit-worthiness of the applicant. (see Rule 6)
11. Information necessary to the design, installation, maintenance, and operation of the Utility's facilities.
12. Such other information as the Utility may reasonably require for service.

The application is merely a request for service, and does not in itself bind the Utility to serve except under reasonable conditions, nor does it bind the Customer to take service for a longer period than the minimum requirements of the rate. The Utility may disconnect or refuse to provide service to the Applicant if the acts of the Applicant or the conditions upon the Premises indicate that false, incomplete, or inaccurate information was provided to the Utility. The Utility shall provide the Applicant the reason for such refusal.

## C. INDIVIDUAL LIABILITY FOR JOINT SERVICE

Where two or more persons join in one application or contract for service, they shall be jointly and severally liable thereunder and shall be billed by means of a single periodic bill sent to the person designated on the application to receive the bill. Whether or not the Utility obtained a joint application, where two (2) or more adults occupy the same premises, they shall be jointly and severally liable for bills for energy supplied.

## D. CHANGE OF CUSTOMER'S APPARATUS OR EQUIPMENT

In the event that the Customer shall make any material change either in the amount or character of the loads, protective equipment, or characteristic apparatus changes (reactive vs. inductive loads) installed upon the Premises to be supplied with electric energy by the Utility, the Customer shall immediately give the Utility written notice of this fact.

## E. E-MAIL AS MEANS OF CUSTOMER CONTACT

When a Customer provides an e-mail address to the Utility as a means of contact, the Utility may use such e-mail address to communicate with the Customer, absent instructions to the contrary.

## F. PHONE AS MEANS OF CUSTOMER CONTACT

When a Customer provides a phone number to the Utility, the Utility may use such phone number to communicate with the Customer, absent instructions to the contrary. The Customer of record is presumed to be an authorized user of such phone number. By providing a mobile number, absent instructions to the contrary, the Customer expressly consents to receiving calls or text messages (texts) from the Utility to such mobile number, including an automatic dialing system and/or an artificial voice or prerecorded message, for:

## a. Emergency Purposes

This includes without limitation calls or tests providing notice of and status updates on planned and unplanned outages, calls or texts providing 24 or 48 hour notice of credit or non-credit related service disconnections, and other types of calls or texts made necessary in any situation affecting the health and safety of consumers; and
b. Informational Purposes

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This includes without limitation calls or texts regarding credit or non-credit related service disconnections outside the 24 or 48 hour emergency window, non-emergency outage related calls or texts, calls or texts providing information on new rates, rate changes or available rate options, service related account matters, or income-qualified programs and services, and surveys for Customer opinion research purposes.
c. Opt-out

The Utility will honor requests to opt-out of receiving calls or texts from the Utility at such mobile number, except under certain emergency circumstances (at the Utility's discretion) or as otherwise authorized under the Utility's Electric Rules.

## Exhibit B

## ELECTRIC RULE4-CONTRACTS

Contracts will not be required as a condition precedent for service except:

1. As may be required by conditions set forth in the regular schedule of rates approved or accepted by the Utility.
2. In the case of electric extensions, temporary service, or service to speculative projects, in which case a contract may be required.
3. Where a person, whether or not a Customer, desires to have the Utility modify, rearrange, relocate, or remove any of its facilities, the Utility, if it agrees to make such changes, may require the person at whose request the changes are made, to agree to pay in advance or otherwise, the cost to the Utility of making the changes.

## ELECTRIC RULE 5-SPECIAL INFORMATION REQUIRED ON FORMS

## A. CONTRACTS

Each contract for electric service will contain the following provisions: "This contract shall at all times be subject to such changes or modification by the City Council as may, from time to time, direct in the exercise of its jurisdiction."

## B. CUSTOMERS' BILLS

Each bill for electric service will include the following statements: "This bill is now due and payable. Customers who believe their utility bill is in error must first contact Customer Services by telephone, in writing, or in person within 30 days from the bill date and initiate a complaint or request an investigation concerning the bill. Utility services will not be discontinued for nonpayment of a disputed bill pending the outcome of a timely filed investigation. The City may require that an amount equal to an average bill for a comparable period of time be deposited with Moreno Valley Utility pending outcome of the investigation. Failure to make the deposit if requested when due shall constitute abandonment of the complaint or request for investigation. Subsequent utility bills, which are not disputed, must be paid within the time allowed to avoid discontinuance of service in accordance with Rule 9 and Rule 11. If, after contact with the Customer Services, the Customer believes the bill is still incorrect, the Customer may, within 10 days from the date of determination, contact the Manager of Customer Service by phone or submit a written statement regarding the billing dispute to the Manager of Customer Service, Moreno Valley Utility, 14331 Frederick Street., Suite 2, Moreno Valley, CA 92553. The Manager of Customer Service will conduct an investigation of the dispute and send his or her determination in writing to the Customer." See Rule 10.

## C. DISCONTINUANCE OF SERVICE NOTICE

Each Discontinuance of Service Notice for nonpayment of bills will include the following information:

1. The name and address of the Customer whose account is delinquent.
2. The amount of the delinquency.
3. The date by which payment (or arrangements for payment) is required, or the date by which the dispute must be documented in order to avoid termination.
4. The procedure by which the Customer may initiate a complaint or request an investigation concerning service or charges as defined herein.
5. The telephone number of a representative of the Utility who can provide additional information or institute arrangements for payment.
6. The telephone number to which inquiries by the Customer may be directed.

## ELECTRIC RULE 6-ESTABLISHMENT AND RE-ESTABLISHMENT OF CREDIT

An Applicant for Utility service may be required to establish credit. A Customer whose Utility service has been terminated for nonpayment of an energy bill or whose payments have been past due, as set forth below, may be required to re-establish credit.

## A. ESTABLISHMENT OF CREDIT

When, for Applicant's convenience, the Utility provides service to the Applicant before credit is established and the Applicant fails to establish credit in accordance with this rule, service may be terminated after notice is given in accordance with these regulations.

Credit can be established if the Applicant:
a. is the owner with a substantial equity, of value satisfactory to the Utility, in the Premises to be served; or
b. makes a deposit to secure payment of bills as prescribed in Electric Rule 7; or
c. furnishes a qualified guarantor to secure payment of Applicant's Utility bills; or
d. has been a Customer of the Utility for a similar type of service within the past two years, and during the last twelve consecutive months of that prior service, Customer has had not more than two past due bills as defined in Rules 8 and 11. The periodic bill for such previous service must equal at least 50 percent of the estimated bill amount(s) for the new service, and provided further, that the credit of Applicant is unimpaired in the opinion of the Utility; or
e. otherwise establishes credit to the satisfaction of the Utility; and
f. has paid all bills for nonresidential electric service previously supplied to Applicant by the Utility.

## B. RE-ESTABLISHMENT OF CREDIT

1. An Applicant who previously has been a Customer of the Utility, and whose electric service has been discontinued by the Utility during the last twelve (12) months of that prior service because of nonpayment of bills, may be required to re-establish credit.
a. A Customer who fails to pay bills before they become past due and who further fails to pay such bills within five days after presentation of a discontinuance of service notice for nonpayment of bills, may be required to pay said bills and reestablish credit by depositing the amount established by the Utility in accordance with Electric Rule 7. A deposit may be required regardless of whether or not service has been discontinued for such nonpayment.

## A. AMOUNT OF DEPOSIT

## 1. ESTABLISHMENT OF CREDIT

a. Residential accounts: The amount of deposit required to establish credit shall be twice the average monthly bill as estimated by the Utility.
b. Nonresidential accounts: The amount of deposit required to establish credit shall be twice the maximum monthly bill as estimated by the Utility.
c. Residential and nonresidential accounts: The amount of deposit taken to establish credit shall be subject to adjustment upon request by the Customer or upon review by the Utility.
d. Residential solar accounts are eligible for a special metering and billing option called Net Energy Metering (NEM). Under this billing option, each NEM Customer is billed monthly for their total bill but is not required to pay for the consumed energy until the end of each 12-month period. Therefore, if a deposit is required, the amount of the deposit taken to establish credit shall be the annual total billed amount plus twice the average monthly bill as estimated by the Utility.

## 2. RE-ESTABLISHMENT OF CREDIT

Should the Customer's payment history with the Utility warrant it, the Utility may require the Customer to re-establish credit by paying a re-establishment deposit. The amount of deposit required to re-establish credit for residential and nonresidential accounts will be twice the maximum monthly bill as determined by City. For residential solar accounts, the amount will be the annual total billed amount plus twice the maximum monthly bill as determined by the Utility.

## B. RETURN OF DEPOSIT

1. The Utility may refund a Customer's deposit by draft or by applying the deposit to the Customer's account. If the Customer establishes service at a new location, the Utility may retain the deposit for such new account, subject to the conditions of Sections B. 3 and B. 4 below.
2. Upon discontinuance of service, the Utility will refund the Customer's deposit or the balance thereof that is in excess of unpaid bills for service furnished by the Utility.
3. When the Customer's credit is otherwise established, the Utility will refund the deposit either upon the Customer's request for return of the deposit or upon review by the Utility.
4. For residential and nonresidential accounts, the Utility will review the Customer's account at the end of the first twelve- (12) months that the deposit is held and each month thereafter. After the Customer has not had more than two past due bills during the twelve (12) months prior to any such review and has not had service temporarily or permanently discontinued for nonpayment of bills during such period, the deposit will be refunded in accordance with this section. For residential solar accounts billed on Net Energy Metering (NEM), if a deposit is required to establish or re-establish credit on the account, the deposit shall be held on the account for the life of the account or until the Utility determines that a deposit is no longer required.
5. Deposits cannot be used to offset past due bills or to avoid or delay discontinuance of service.

## C. INTEREST ON DEPOSIT

1. The Utility will pay interest on deposits, except as provided below. Interest shall be $1 / 12^{\text {th }}$ of the interest on commercial paper - AA nonfinancial (prime, 90-day, monthly average of January) as reported in July by the Federal Reserve or its successor publication and will be accrued for the period that the deposit is held by the Utility. This value will be adjusted once annually in July. (cite https://www.federalreserve.gov/releases/cp/rates.htm)
2. No interest will be paid if service is temporarily or permanently discontinued for nonpayment of bills.
3. No interest will be paid for those months where the bill is paid after the due date (late pay or over date).

## ELECTRIC RULE 8-NOTICES

Any notice pursuant to the Utility's rules may be given to the Customer in writing. Written notice is effective when it is either: (1) presented to the Customer, or (2) sent to the Customer via U.S. Mail at the address where the Customer is receiving service, or (3) sent to the Customer via U.S. Mail at the Customer's Mailing Address provided by the Customer, (4) sent via electronic mail (email) to the Customer at the e-mail address on file, or (5) delivered by door hanger at the address where the Customer is receiving service. The Utility may also provide the Customer with verbal notice in person or by telephone. Any notice pursuant to the Utility's rules from the Customer or the Customer's authorized agent may be given to the Utility by telephone, in person, or in writing. Verbal notice is acceptable unless written notice is requested by the Utility or required by the rules.

## A. NOTICES OF TERMINATION OF SERVICE FOR NONPAYMENT

Monthly bills for residential service are due and payable upon presentation and will be considered past due if payment is not received by the Utility within fifteen (15) days after the bill is sent to the Customer. Deposit requests are due and payable when request for service is made. When a deposit is billed, it will be considered past due if payment is not received by the Utility within fifteen (15) days after the deposit request is sent. If the past due amount is not paid, service may be terminated for nonpayment in accordance with Electric Rule 11. A field notification charge may appear on your next bill if the Utility posts a collection notice at your Premises. If a termination order is processed for your account due to nonpayment, payment of the balance in full, plus a Collection Processing Fee and deposit may be required prior to restoration of service. The Collection Processing Fee may be charged whether or not electric service is actually terminated if the arrears balance is paid after the payment deadline has passed. Unpaid closing bills may be reported or forwarded to a credit reporting agency.

## 1. 10-DAY NOTICE

When a bill for service or deposit request has become past due, the Utility will send the Customer a notice that service may be terminated for nonpayment in 10 calendar days.

## 2. 48-HOUR NOTICE

When the past due balance on a 10-day notice is unpaid, the Utility will make a reasonable attempt to contact an adult residing at the service address either by telephone including calls or text messages to mobile phones or by e-mail, or in person at least 48 hours prior to terminating service.
3. NOTICE OF TERMINATION OF SERVICE FOR NONPAYMENT OF PAYMENT ARRANGEMENT AGREEMENT

When the Utility and the Customer enter into a payment arrangement agreement and the Customer does not abide by the terms of the agreement, in whole or in part, the Utility will give the Customer at least 48 hours notice by telephone including calls or
text messages to mobile phones or by e-mail, or in person prior to terminating service for nonpayment.

## B. NOTICES FOR UNPAID CLOSING BILLS

Closing bills are due and payable upon presentation and will be considered past due if payment is not received by the Utility within fifteen (15) days after the closing bill is sent to the Customer. When the Utility determines that the Customer has an open account for Utility service at one location and an unpaid closing bill in the Customer's name for Utility service at another location, the Utility may transfer the unpaid closing bill to the open account, except that the unpaid closing bills for nonresidential service may not be transferred to a residential account. Before the Customer's open account may be terminated for nonpayment of the closing bill, the Customer will be given notices in accordance with Section A of this Rule.

## ELECTRIC RULE 9-RENDERING AND PAYMENT OF BILLS

## A. BILLS PREPARED AT REGULAR INTERVALS

Bills for electric service will be rendered at regular intervals. All bills will be based on meter registration, except as provided in Section C below, or as may otherwise be provided in the Utility's rules. Meters will be read as nearly as possible at regular intervals. Except as otherwise stated, the regular billing period will be once each month. Due to Sundays and holidays and other factors, it is not always possible to read meters on the same day of each month.

## B. PRO RATA CORRECTION

Opening and closing bills rendered will be computed in accordance with the rate schedule applicable to that service, unless otherwise provided in this rule, or in the applicable rate schedule. The basic charge, Customer charge, the amount of energy blocks, demand blocks, etc., and the service charge, demand charge, or minimum charge will be prorated on the basis of the number of days in the period in question to the total number of days in the subject month. However, where daily equivalents are used, there will be no pro rata correction. Instead, the calculation shall use the number of days in the billing period multiplied by the daily equivalent charge.

When one or more regularly scheduled meter readings have been missed, the proration factor for the next regularly scheduled meter reading shall be 1.000 times the number of monthly billing cycles in the period. When an interim bill based on a special reading for a period other than 27 to 33 days has been issued during the interval since the last regularly scheduled meter reading, the proration factor for the regularly scheduled bill shall be the factor derived above, less the proration factor applied to the interim bill. However, where daily equivalents are used, there will be no pro rata correction. Instead, the calculation shall use the number of days in the billing period by the daily equivalent charge.

## C. ESTIMATED BILLS

If, because of unusual conditions or for reasons beyond its control, the Utility is unable to read the Customer's meter on the scheduled reading date, the Utility may bill the Customer for estimated consumption during the billing period and make any necessary corrections when a reading is obtained. Estimated consumption for this purpose will be calculated considering the Customer's prior usage, the Utility's experience with other Customers of the same class in that area, and the general characteristics of the Customer's operations. Adjustments for any underestimate or overestimate of a Customer's consumption will be reflected on the first regularly scheduled bill rendered and based on an actual reading following the period of inaccessibility.

## D. READINGS OF SEPARATE METERS NOT COMBINED

For the purpose of making charges, each meter upon the Customer's Premises will be considered separately, and the readings of two or more meters will not be combined, except as follows:

1. Where combinations of meter readings are specifically provided for in rate schedules; or
2. Where the Utility's operating convenience or necessity shall require the installation of two or more meters upon the Customer's Premises instead of one meter.

## E. BILLS DUE ON PRESENTATION

Bills for electric service are due and payable upon presentation. Payments shall be received at the office of the Utility, or by an authorized agent of the Utility.

## F. CLOSING BILL PAYABLE ON PRESENTATION

Removal bills, special bills, bills rendered on vacation of Premises, or bills rendered to persons discontinuing the service, shall be due and payable upon presentation. Bills for connection or reconnection of service and payments for deposits or to re-establish credit as required under the rules of the Utility shall be paid before service will be connected or reconnected.

## G. RETURNED CHECK CHARGE

If a check, tendered in payment of amounts owing the Utility, is not honored by a bank and is returned to the Utility unpaid, the Utility will add to the Customer's bill a charge for processing each such returned check consistent with these rules. Where service is subject to discontinuance under Electric Rule 11, the returned check charge shall be included in the total amount due and payable.

## H. FIELD NOTIFICATION AND COLLECTION PROCESSING FEES

The Utility will require payment of a Collection Processing Fee when an authorized Utility representative makes a field call to a Customer's Premises to discontinue electric service in accordance with Electric Rule 11 for nonpayment of a past due billing. The Utility will also assess the Collection Processing Fee when an authorized Utility representative makes a field call to discontinue electric service for nonpayment of a deposit that was requested in accordance with Electric Rule 6.

Where service is discontinued under the provisions of Electric Rule 11, the Utility will require payment of the balance in full, the balance of any unpaid closed accounts, plus any assessed field notification charges, Collection Processing Fees and Deposits prior to restoration of service.

If the Customer makes payment in full or makes acceptable payment arrangements in order to avoid discontinuance of service, the Utility may still assess the Collection Processing Fee.

The Utility may assess a Field Notification Charge when notification must be made due to nonpayment. Generally, these notifications are in the form of a door hanger left at the Customer's Premises. The Field Notification Charge is in addition to any Collection Processing Fees that may apply.

## I. LATE PAYMENT CHARGE

A late payment charge of $0.9 \%$ per month will be applied to the total unpaid balance of a Customer Account if the Customer's payment is not received by the date indicated on the Customer Account billing.

## J. ACCUMULATIVE AMOUNT DUE

The Utility reserves the right to accumulate bills until the total amount due exceeds $\$ 2.00$.

## ELECTRIC RULE 10-DISPUTED BILLS

## A. CORRECTNESS OF BILL

If the correctness of a bill is questioned or disputed by a Customer, an explanation should be promptly requested from Customer Services. If the bill is determined to be incorrect, a corrected bill will be issued.

## B. BILL REVIEW PROCEDURE

1. REVIEW BY CUSTOMER SERVICE

Customers who believe their utility bill is in error must first contact Customer Services by telephone, in writing, or in person within 30 days from the bill date and initiate a complaint or request an investigation concerning the bill. Utility services will not be discontinued for nonpayment of a disputed bill pending the outcome of a timely filed investigation. The Utility may require that an amount equal to an average bill for a comparable period of time be deposited with Moreno Valley Utility pending outcome of the investigation. Failure to make the deposit if as requested when due shall constitute abandonment of the complaint or request for investigation. Subsequent utility bills, which are not disputed, must be paid within the time allowed to avoid discontinuance of service in accordance with Electric Rule 9 and Electric Rule 11.

## 2. REVIEW BY CUSTOMER SERVICE MANAGER.

If, after contact with the Customer Services, the Customer believes the bill is still incorrect, the customer may, within 10 days from the date of determination, contact the Manager of Customer Services by phone or submit a written statement regarding the billing dispute to the Manager of Customer Services, Moreno Valley Utility, 14331 Frederick Street., Suite 2, Moreno Valley, CA 92553. The Manager of Customer Services will conduct an investigation of the dispute and send his or her determination in writing to the Customer.
3. APPEAL TO ELECTRIC UTILITY DIVISION MANAGER.

If a Customer disagrees with the decision of the of Customer Service Manager, or designee, the Customer may appeal that decision to the Electric Utility Division Manager. Any such appeal must be filed in writing with the Electric Utility Division Manager within (10) days after written notice of the decision of the Manager of Customer Services, or designee, is given to the Customer. The Electric Utility Division Manager, or a designated representative, may review the accuracy of the amount billed, but will not review appeals under this procedure concerning the general level of rates, pending rate changes, source of energy and similar matters. All decisions of the Electric Utility Division Manager will be final.
4. DISCONTINUANCE OF SERVICE FOR FAILURE TO PAY.

Electric service will be discontinued if a bill has not been paid in full and a timely and proper appeal has not been filed or an appeal has been denied and the appeal is final. All other bills not in dispute are due and payable in accordance with Electric Rule 9 and Electric Rule 11.
5. NOTICE

Under this review and appeal procedure, notice by the Utility is deemed to be given when (1) personally given to the Customer, (2) left at the premises where the service was given, (3) enclosed in an envelope addressed to the Customer with postage prepaid and deposited in the U.S. mail or (4) sent via electronic means to the electronic mailing (e-mail) address provided by the Customer as their Customer's address.

## ELECTRIC RULE 11-DISCONTINUANCE AND RESTORATION OF SERVICE

If the Utility terminates or refuses to restore service to a Customer or any other person for any of the reasons or upon any of the grounds stated herein, the Utility shall incur no liability whatsoever to said Customer or person or to any other Customers or persons.

## A. CUSTOMER REQUEST TO TERMINATE LIABILITY FOR PAYMENT FOR SERVICE

When a Customer wants to terminate liability for payment for service, the Customer shall give the Utility not less than two days notice and state the date on which the termination is to become effective. The Customer may be held responsible for service furnished at the Premises until two days after receipt of such notice by the Utility, or until the date of termination specified in the notice, whichever date is later.

## B. TERMINATION OF SERVICE FOR NONPAYMENT—WEEKENDS AND HOLIDAYS

Service will not be terminated for nonpayment of bills or deposit requests on Saturdays, Sundays, legal holidays or on days when the offices of the Utility are closed to the public.

## C. TERMINATION OF SERVICE FOR NONPAYMENT OF BILLS OR DEPOSIT REQUESTS

Monthly bills are due and payable upon presentation and will be considered past due if payment is not received by the Utility within 15 days after the bill is sent to the Customer. Deposit requests are due and payable when request for service is made. When a deposit is billed, it will be considered past due if payment is not received by the Utility within 15 days after the deposit request is sent to the Customer. Customers who fail to pay their bills within this time period are subject to service disconnection.

## D. FAILURE TO ESTABLISH OR RE-ESTABLISH CREDIT

When the Utility provides service to an Applicant before credit is established or continues service to a Customer pending re-establishment of credit, and the Applicant/Customer fails to establish or re-establish credit, any and all services the Customer is receiving may be terminated after notice has been given. The Utility will not restore the Customer's service until the Customer has complied with the requirements to establish or re-establish credit.

## E. TERMINATION OF SERVICE FOR NONPAYMENT OF BILLS AT OTHER LOCATIONS

Any and all services the Customer is receiving may be terminated for nonpayment of a bill for service previously supplied by the Utility to the same Customer at another location after the Customer has been given notices of termination, except that residential service shall not be terminated for nonpayment of a bill for any other class of service. Nonresidential service may be terminated for nonpayment of a bill for any class of service. Service shall not be terminated for nonpayment within 15 days after establishment of service at the new
location. If the Customer is receiving service at more than one location, any or all services may be terminated with proper notice for nonpayment of any bill at any location for Utility service.

## F. TERMINATION OF SERVICE—RETURNED CHECKS

When the Customer has received notice of termination and a check tendered in payment of the past due bill or deposit request for service is returned unpaid, the Utility may terminate service. When the Customer has received a 10-day notice of termination, the notice will remain in effect, and collection action will continue. When the Customer has received a 24 -hour notice of termination, the notice will remain in effect, and service may be terminated without further notice.

## G. UNSAFE APPARATUS OR CONDITION

The Utility may deny or terminate service to the Customer immediately and without notice when:
a. The Utility determines that the Premises wiring, or other electrical equipment, or the use of either, is unsafe, or endangers the Utility's service facilities; or
b. The Customer threatens to create a hazardous condition; or
c. Any governmental agency, authorized to enforce laws, ordinances or regulations involving electric facilities and/or the use of electricity, notifies the Utility in writing that the Customer's facilities and/or use of electricity is unsafe or not in compliance with applicable laws, ordinances, or regulations. The Utility does not assume the responsibility of inspecting or repairing the Customer's facilities, appliances or other equipment for receiving or using service, or any part thereof. In the event the Customer has knowledge that the service is in any way defective, it is the Customer's responsibility to notify the Utility at once. The Utility shall not be liable or responsible for any plumbing, appliances, facilities, or apparatus beyond the Point of Delivery, which it does not own or maintain in accordance with these rules.

## H. SERVICE DETRIMENTAL TO OTHER CUSTOMERS

The Utility will not supply service to a Customer operating equipment, which is considered by the Utility to be detrimental to either the service of other Utility Customers or to the Utility. The Utility will terminate service and refuse to restore service to any Customer who continues to operate such equipment after receiving notification from the Utility to cease.

## I. UNAUTHORIZED USE

1. The Utility may terminate service without notice for unauthorized use of service as defined in Electric Rule 17.2. When the Customer's service has been terminated under this section, the Utility may refuse to restore service until:
a. the unauthorized use has ceased, and
b. The Utility has received full compensation for all charges authorized in Electric Rule 17.2.
2. The Utility may terminate and refuse to restore service if the acts of the Customer or conditions on the Premises indicate intent to deny the Utility full compensation for services rendered, including, but not limited to, any act which may result in a denial of service. The Utility shall provide the Customer with the reasons for such termination and/or refusal to restore service. When the Customer's service has been terminated under this section, the Utility may refuse to restore service until:
a. the acts and/or the conditions described above have ceased or have been corrected to the Utility's satisfaction, and
b. The Utility has received full compensation for all charges resulting from the Customer's acts or the conditions on the Premises.

## J. NONCOMPLIANCE WITH UTILITY'S RULES

Unless otherwise specifically provided, the Utility may terminate service to a Customer for noncompliance with any of the Utility's rules if the Customer fails to comply within five days after the Utility's presentation of written notification of noncompliance to the Customer. The Customer shall comply with the Utility's rules before service will be restored.

## K. REVOCATION OF PERMISSION TO USE PROPERTY

If the Utility's service facilities and/or a Customer's wiring to the meter are installed on property other than the Customer's property and the owner of such property revokes permission to use it, the Utility will have the right to terminate service upon the date of such revocation. If service is terminated under these conditions, the Customer may have service restored under the provisions of the Utility's line and service extension rules.

## L. CHARGES FOR TERMINATION AND/OR RESTORATION OF SERVICE

1. The Utility may require payment of the entire amount due, including the past due amount and current charges, payment of a deposit or additional deposit in accordance with Electric Rule 7, and payment of other charges indicated herein, prior to restoring service to accounts which have been terminated for nonpayment.
2. The Utility will require a returned check charge for processing a check, which is returned to the Utility unpaid.
3. The Utility will require payment of a Collection Processing Fee when a Utility representative makes a field call to a Customer's Premises to terminate service for nonpayment of bills or deposit.
4. The Utility will require payment of a Collection Processing Fee per connection before restoring service that has been terminated for nonpayment of bills, to prevent fraud, or for failure to comply with the Utility's rules. If the Customer requests that service be restored outside of regular business hours, an additional charge per connection may apply. Refer to the Chart of Charges and Fees for amounts of applicable charges.
5. In addition, the Utility may charge and collect any unusual costs incidental to the termination or restoration of service, which have resulted from the Customer's action or negligence.
6. Service wrongfully terminated will be restored without charge.

## ELECTRIC RULE 12-RATES AND OPTIONAL RATES

## A. EFFECTIVE RATES

The rates to be charged by and paid to the Utility for electric service will be the rates legally in effect, approved by the City Council, and on file with the Electric Utility Division, Department of Public Works. Complete schedules of all rates in effect will be kept at all times in the Utility's local office, where they will be available for public inspection. Unless stated otherwise on the rate schedules themselves, the Utility's rate schedules are only applicable for service supplied entirely by the Utility.

## B. ESTABLISHING RATE SCHEDULES FOR NEW CUSTOMERS

At the time of application for service, the Utility will, based on information provided by the Applicant, ensure that the Applicant is placed on an applicable rate schedule approved by the City Council. Thereafter, the Utility will take such measures as may be practical to provide the Customer with information regarding rate schedules or options applicable to the Customer's class of service.

## C. CHANGING RATE SCHEDULES

The Utility may not be required to make more than one change in rate schedules within a twelve-month period unless a new rate schedule is approved or the Customer's operating conditions have changed sufficiently to warrant a change in rate schedule.

Changes in rate schedules will take effect starting with the next regular meter reading date or meter change date following receipt of the Customer's request to change the rate schedule, unless (1) the rate schedule states otherwise, (2) a written agreement between the Utility and the Customer specifies another date, or (3) the required metering equipment is unavailable. In those cases, the change of schedule will take effect on the date stated in the schedule or agreement, or the date the metering equipment is available. It is the Customer's responsibility to request another schedule or option if the Customer's connected load, hours of operation, type of business or type of service have changed. Where the Customer changes equipment or operation without notifying the Utility, the Utility assumes no responsibility for advising the Customer of other rate options available to the Customer as a result of the Customer's equipment/operation changes.

## D. NOTIFYING CUSTOMERS OF NEW RATE SCHEDULES

Where the Utility establishes new rate schedules, the Utility shall take such measures as may be practical to advise affected Customers of the availability of the new rate schedules.

## ELECTRIC RULE 13-TEMPORARY SERVICE

## A. ESTABLISHMENT OF TEMPORARY SERVICE

The Utility shall, if no undue hardship to its existing Customers will result therefrom, furnish temporary service under the following conditions:

1. The Applicant shall pay, in advance or otherwise as required by the Utility, the estimated cost installed plus the estimated cost of removal, less the estimated salvage of the facilities necessary for furnishing service.
2. The Applicant shall establish credit as required by Electric Rule 6, except that the amount of deposit prescribed in Electric Rule 7 shall not exceed the estimated bill for the duration of service.

## B. CHANGE TO PERMANENT STATUS \& REFUNDS

1. If service to the electrical machinery or apparatus as originally installed, or its equivalent, is supplied to a temporary Customer on a continuous, intermittent or seasonal basis for a period of 36 consecutive months from the date electric service first was delivered under this rule, the Customer shall be classified as permanent. The payment made in excess of that required for permanent service or under the line extension rule for permanent Customers shall be refunded, provided the Customer then complies with all of the rules applicable to electric service.
2. If at any time the character of a temporary Customer's operations changes so that, in the opinion of City, the Customer may be classified as permanent, the amount of payment made in excess of that required for permanent service immediately shall be refunded to the Customer under the provisions of this section.

## Exhibit B

## ELECTRIC RULE 14-SHORTAGE OF SUPPLY AND INTERRUPTION OF DELIVERY

The Utility will exercise reasonable diligence and care to furnish and deliver a continuous and sufficient supply of electric energy to the Customer, but does not guarantee continuity or sufficiency of supply. The Utility will not be liable for interruption or shortage or insufficiency of supply, or any loss or damage of any kind of character occasioned thereby the Utility will not be liable for interruption or shortage or insufficiency of supply. If same is caused by inevitable accident, act of God, fire, strikes, riots, war, or any other cause except that arising from its failure to exercise reasonable diligence. The Utility, whenever it shall find it necessary for the purpose of making repairs or improvements to its system, will have the right to suspend temporarily the delivery of electric energy. In case of shortage of supply and during the period of such shortage, The Utility will make such apportionment of its available supply of energy among its Customers as shall be ordered or directed from time to time by the State of California, acting either directly or by a power administrator or other official appointed by it for that purpose. In the absence of such order or direction, the Utility will, in times of shortage, apportion its available supply of energy among all Customers in the most reasonable manner possible.

## ELECTRIC RULE 15-DISTRIBUTION LNE EXTENSIONS

APPLICABILITY: This rule is applicable to extension of electric distribution lines of the Utility's standard voltages (less than 50 kV ) necessary to furnish Permanent electric service to Applicants and will be made in accordance with the following provisions:

## A. GENERAL

## 1. EXTENSION BASIS

a. Design: The Utility will be responsible for planning, designing, and engineering extensions using the Utility's standards for material, design, and construction. The Applicant will furnish all necessary plot plans, utility plans, street improvement plans, tract maps and electric loads for the design of the system.

The Applicant may design the electrical Distribution Lines using qualified design firms approved by the Utility. The system will be designed in accordance with the Utility's standards and the final design will be approved by the Utility. Ownership of Applicant's final design and as-built documents shall be transferred to the Utility upon completion of work.
b. Ownership: The facilities installed under the provisions of this rule, shall be owned, operated, and maintained by the Utility, except for substructures and enclosures that are on, under, within, or part of a building or structure.
c. Private Lines: The Utility shall not be required to serve any Applicant from extension facilities that are not owned, operated, and maintained by the Utility.

## 2. EXTENSION LOCATIONS

a. Rights of Way: The Utility will own, operate and maintain extension facilities only;

1) along public streets, alleys, roads, highways and other publicly dedicated ways and places which the Utility has the legal right to occupy, and
2) along public lands and private property across which rights of way and permits satisfactory to the Utility may be obtained without cost to or condemnation by the Utility.
b. Normal Route of Line: The length and normal route of an extension will be determined by the Utility and shall be considered as the distance along the shortest, most practical, available, and acceptable route which is clear of obstructions from the Utility's nearest permanent and available distribution facility to the point from which the service facilities will be connected.

## 3. UNDERGROUND EXTENSIONS

Underground extensions shall be installed where required to comply with applicable laws and ordinances or similar requirements of governmental authorities having jurisdiction and where the Utility maintains or desires to maintain underground distribution facilities.
4. OVERHEAD EXTENSIONS

Overhead extensions may be installed only where underground extensions are not required by other jurisdictions and as approved by the Utility.
5. SPECIAL OR ADDED FACILITIES

Any special or added facilities the Utility agrees to install at the request of Applicant will be installed at Applicant's expense in accordance with Electric Rule 2Description of Service.
6. TEMPORARY SERVICE

Facilities installed for temporary service or for operations of speculative character or questionable permanency shall be made in accordance with the fundamental installation and ownership provisions of this rule, except that all charges shall be made under the provisions of Electric Rule 13-Temporary Service.

## 7. SERVICES

Service facilities connected to the Distribution Lines to serve an Applicant's Premises will be installed, owned and maintained as provided in Electric Rule 16-Service Extensions.

## 8. STREET LIGHTS AND AREA LIGHTS

Streetlights, area lights, and other associated facilities shall be installed in accordance with the service provisions of the applicable street light schedule.

No written contracts will be required under this Rule. All provisions of the Rule shall apply and obligate all parties.

## B. INSTALLATION RESPONSIBILITIES

## 1. UNDERGROUND EXTENSIONS

a. Applicant Responsibility: In accordance with the Utility's design, specifications, and requirements, Applicant is responsible for;

1) Excavation: All necessary trenching, backfilling, compaction and other digging as required as well as any pavement cutting or repair.
2) Substructures and Conduits: Furnishing, installing, and upon acceptance by the Utility, conveying to the Utility the ownership of all necessary installed Substructures and Conduits, including Feeder and Service Conduits and related Substructures required to extend to and within subdivisions and developments.
3) Protective Structures: Furnishing, installing, and upon acceptance by the Utility, conveying to the Utility the ownership of all necessary Protective Structures.
4) Safety Barriers and Measures: Applicant is responsible for providing safety barriers, signs, and other suitable means to protect public from potential injuries arising from construction of underground extension.
b. The Utility Responsibility: The Utility is responsible for installing cables, switches, transformers, and other distribution facilities as required to complete the extension.

The Applicant may install the system in accordance with the Utility's design and construction standards using qualified electrical contractors approved by the Utility.

## 2. OVERHEAD EXTENSIONS

The Utility is responsible for installing all facilities required for a pole line extension at the Applicants expense and only where underground extensions are not required.

## 3. PERFORMED WORK

Where requested by Applicant and mutually agreed upon, the Utility may perform that portion of the new extension work normally installed by Applicant, provided Applicant pays the Utility its total estimated installed cost. Upon completion of the work, the difference between the estimated and actual cost of the work will be refunded or billed to the Applicant as appropriate.

## C. CONTRIBUTIONS OR ADVANCES BY APPLICANT

## 1. CASH ADVANCE

A cash advance will be required from every Applicant. If the scope of the work lends itself to progress payments in the sole judgment of the Utility, such progress payments will be considered by the Utility. The cash advance will be equal to the Utility's total estimated installed cost to complete an extension including transformers and meters. Upon completion of the work, the difference between the estimated and actual cost of the work will be refunded or billed to the Applicant as appropriate.

Applicant shall contribute or advance, before the start of Utility's construction, the following;
a. Underground Non-Refundable Amount: Applicant's contribution is the portion of the Utility's total estimated installed cost, to complete the underground extension including transformers and meters for;

1) Cabling: The estimated installed cost of any necessary cabling installed by the Utility to complete the underground extension. This includes the cost of conversion of existing single-phase lines to three-phase lines, if required; plus
2) Substructures: The Utility's estimated value of substructures installed by Applicant and deeded to the Utility as required.
3) The cost of cabling and substructures installed and/or paid for by a previous Customer or developer in anticipation of providing service to the current Customer or development.
b. Underground Refundable Amount:
4) The cost of cabling and substructures in anticipation of providing service to a future Customer or developer. Such costs will be refunded at the time they are collected from the future Customer or developer in accordance with this Rule.
c. Overhead Non-Refundable Amount: Applicant's contribution is the portion of the Utility's total estimated installed cost to complete the overhead extension including transformers and meters;
5) Pole Line; All necessary facilities required for an overhead extension and, if required, the conversion of existing single-phase lines to three-phase lines; plus
6) Transmission Underbuilds; Utility's total estimated installed cost of the underbuild, where all or a portion of an overhead extension is to be constructed on existing poles.
d. Other Non-Refundable Amounts: Applicant's non-refundable amount includes the Utility's estimated value of excavation, conduits, and protective structures required by the Utility for the extension. The applicant will pay the Utility for the cost of inspection of any facilities installed by the applicant.

## 4. JOINT APPLICANTS

The total contribution or advance from a group of Applicants will be apportioned among the members of the group in such manner as they may mutually agree. A signed agreement describing this apportionment will be required by the Utility as part of the application for service.

## 5. PAYMENT ADJUSTMENTS

Excess Facilities: If the loads provided by Applicant(s) result in the Utility having installed facilities which are in excess of those needed to serve the actual loads, and the Utility elects to reduce such excess facilities, Applicant shall pay the Utility its estimated total costs to remove, abandon, or replace the excess facilities, less the estimated salvage of any removed facilities.

## D. SPECIAL CONDITIONS

## 1. FACILITY RELOCATION OR REARRANGEMENT

Any relocation or rearrangement of the Utility's existing facilities, at the request of, or to meet the convenience of an Applicant or Customer, and agreed upon by the Utility, normally shall be performed by the Utility. In all instances, the Utility shall abandon or remove its existing facilities, at the option of the Utility. Applicant or Customer shall be responsible for the costs of all related relocation, rearrangement and removal work.

## ELECTRIC RULE 16-SERVICE EXTENSIONS

APPLICABILITY: This rule is applicable to both (1) Utility service facilities that extend from the Utility's distribution line facilities to the service delivery point, and (2) service related equipment required of Applicant on Applicant's Premises to receive electric service.

## A. GENERAL

## 1. DESIGN

The Utility will be responsible for planning, designing, and engineering its Service Extension using the Utility's standards for design, materials and construction. The Utility will allow Applicant's design with the Utility's approval.

## 2. SERVICE FACILITIES

The Utility's service facilities shall consist of (a) primary or secondary underground or overhead service conductors, (b) poles conduits, sleeves, pedestals, pads, or structures to support service conductors, and service transformers, (c) Utility-owned metering equipment, and (d) other Utility-owned service related equipment.

## 3. OWNERSHIP OF FACILITIES

Service facilities installed under the provisions of this rule shall be owned, operated, and maintained by the Utility if they are (a) located in the street, road or franchise area of the Utility, (b) installed by the Utility under and or on the Applicant's Premises for the purpose of the delivery of electric energy to Applicant, or installed by Applicant under the provisions of this rule, and conveyed to the Utility.

## 4. PRIVATE LINES

The Utility shall not be required to connect service facilities to or serve any Applicant from electric facilities that are not owned, operated, and maintained by the Utility.

## 5. SPECIAL OR ADDED FACILITIES

Any special or added facilities the Utility installs at the request of Applicant, will be installed at Applicant's expense in accordance with Rule 2-Description of Service.
6. TEMPORARY SERVICE FACILITIES

Service facilities installed for temporary service or for operations of speculative character or questionable permanency shall be made in accordance with the fundamental installation and ownership provisions of this rule, except that all charges shall be made under the provisions of Rule 13-Temporary Service.

## 7. STREET LIGHTS AND AREA LIGHTS

Streetlight and area light services and other associated facilities shall be installed in accordance with the service provisions of the applicable street light schedule.

## 8. DISTRIBUTION LINE EXTENSIONS

Whenever the Utility's distribution system is not complete to the point designated by the Utility where the service extension is to be connected to the Utility's distribution system, the extension of distribution line facilities will be installed in accordance with Rule 15 -distribution line extensions.
9. RIGHTS-OF-WAY

Rights-of-way or easements may be required by the Utility to install service facilities on Applicant's property to serve only Applicant.
a. Service Facilities: If the service facilities must cross property owned by a third party to serve Applicant, the Utility may, at its option, install such service facilities after appropriate rights-of-way or easements, satisfactory to the Utility, are obtained without cost to the Utility; or
b. Distribution Line Extensions: If the Utility's facilities installed on Applicants property or third-party property, will be or are designed to serve adjacent property, then the Utility may, at its option, install its facilities under Rule 15, after appropriate rights-of-way or easements, satisfactory to the Utility, are obtained without cost to the Utility.
c. Clearances: Any necessary rights-of-way or easements for the Utility's facilities shall have provisions to maintain legal and operational clearances from adjacent structures.

## B. METERING FACILITIES

For revenue billing, electric service shall be individually metered to each tenant in a building or group of buildings or other development on a single Premises with multiple tenants or enterprises (such as, but not limited to a commercial business, a school campus, or shopping center complex). Alternative metering arrangements as determined by the Utility may be allowed only as specified in these rules and applicable rate schedules.

## C. SERVICE EXTENSIONS

## 1. GENERAL LOCATION

The location of the service extension facilities shall be approved by the Utility as follows:
a. Franchise Area: From the point of connection at the distribution line to Applicant's nearest property line abutting upon any street, highway, road, or right-of-way, along which it already has, or will install distribution facilities; and,
b. Private Property: On private property, along the shortest, most practical and available route (clear of obstructions) as necessary to reach a service delivery point designated by the Utility.

## 2. NUMBER OF SERVICE EXTENSIONS

City will not normally provide more than one service extension, including associated facilities, either overhead or underground, for any one building or group of buildings, for a single enterprise on a single Premises, except;
a. Electric Rules: Where otherwise allowed or required under City's Electric Rules; or,
b. City Convenience: At the option of and as determined by the Utility, for its operating convenience, consistent with engineering design for different voltage and phase classification, or when replacing an existing service; or,
c. Ordinance: Where required by ordinance or other applicable law, for such things as fire pumps, fire alarm systems, etc.; and,
d. Other: The Utility may charge for additional services provided under this paragraph, as special or added facilities.

## 3. UNDERGROUND INSTALLATIONS

Underground Service Extensions will be installed;
a. Underground Required: Underground service extensions (1) shall be installed where required to comply with applicable Electric Rules, laws, ordinances, or similar requirements of governmental authorities having jurisdiction, and (2) may be necessary as determined by the Utility where Applicant's load requires a separate transformer installation of 75 kVA or greater.
b. Underground Optional: An underground service extension may be installed in an area where it is not otherwise required and when requested by Applicant and agreed upon by the Utility.

## 4. UNUSUAL SITE CONDITIONS

In cases where Applicant's building is located a considerable distance from the available distribution line or where there is an obstruction or other deterrent obstacle or hazard such as plowed land, ditches, or inaccessible security areas between the Utility's distribution line and Applicant's building or facility to be served that would prevent the Utility from prudently installing, owning, and maintaining its service
facilities, the Utility may, at its discretion, waive the normal service delivery point location. In such cases, the service delivery point will be at such other location on Applicant's property as may be mutually agreed upon; or, alternatively, the service delivery point may be located at or near Applicant's property line as close as practical to the available distribution line.

## D. RESPONSIBILITIES FOR NEW SERVICE EXTENSIONS

## 1. APPLICANT RESPONSIBILITY

In accordance with the Utility's design, specifications, and requirements for the installation of service extensions, and subject to the Utility's inspection and approval, Applicant is responsible for;
a. Clear Route: Providing (or paying for) a route on any private property that is clear of obstructions which would inhibit the construction of either underground or overhead service extensions.
b. Excavation: All necessary trenching, backfilling, and other digging as required including permit fees.
c. Conduit and Substructures:

1) Furnishing and installing all conduits (including pull wires) and substructures on Applicant's Premises.
2) Installing (or paying for) any Conduits and Substructures in the Utility's franchise area (or rights-of-way, if applicable) as necessary to install the service extension.
3) Conveying ownership to the Utility upon acceptance of those conduits and substructures not on Applicant's Premises.
d. Protective Structures: Furnishing, installing, owning, and maintaining all necessary protective structures as specified by the Utility for the Utility's facilities on Applicant's Premises
e. Applicant's Facility Design and Operation: Applicant shall be solely responsible to plan, design, install, own, maintain, and operate facilities and equipment beyond the service delivery point (except for the Utility's metering facilities) in order to properly receive and utilize the type of electric service available from the Utility. Refer to Rule 2 for a description, among other things, of;
4) Available service delivery voltages and the technical requirements and conditions to qualify for them,
5) Customer utilization voltages,
6) Load balancing requirements,
7) Requirements for installing electrical protective devices,
8) Loads that may cause service interference to others, and
9) Motor starting limitations.
f. Required Service Equipment: Applicant shall, at its sole liability, risk, and expense, be responsible to furnish, install, own, maintain, inspect, and keep in good and safe condition, all facilities of any kind or character on Applicant's Premises that are not the responsibility of the Utility but are required by the Utility for Applicant to receive service. Such facilities shall include but are not limited to the overhead or underground termination equipment, conduits, service entrance conductors from the service delivery point to the location of the Utility's metering facilities, connectors, meter sockets, meter and instrument transformer housing, service switches, circuit breakers, fuses, relays, wireways, metered conductors, machinery and apparatus of any kind or character. Detailed information on the Utility's service equipment requirements will be furnished by the Utility. The Applicant shall provide all service conduit (s) from the Utility's franchise area to the Utility's metering facilities.
g. Coordination of Electrical Protective Devices: When, as determined by the Utility, Applicant's load is of sufficient size as to require coordination of response time characteristics between Applicant's electrical protective devices (circuit breakers, fuses, relays, etc.) and those of the Utility's, it shall be Applicant's responsibility to provide such coordination in accordance with Rule 2.
h. Liability: the Utility shall incur no liability whatsoever, for any damage, loss or injury occasioned by;
10) Applicant-owned equipment or Applicant's transmission and delivery of energy; or,
11) The negligence, omission of proper protective devices, want of proper care, or wrongful act of Applicant, or any agents, employees, or licensees of Applicant, on the part of Applicant in installing, maintaining, using, operating, or interfering with any such conductors, lines, machinery, or apparatus.
i. Facility Tampering: Applicant shall provide a suitable means acceptable to the Utility for placing its seals on meter rings and covers of service enclosures and instrument transformer enclosures which protect unmetered energized conductors installed by Applicant. All Utility-owned meters and enclosure covers will be sealed only by the Utility's authorized employees or agents and such seals shall be broken only by the Utility's authorized employees or agents. However, in an emergency, the Utility may allow a public authority or other appropriate party to break the seal. Any unauthorized tampering with Utility-owned seals or
connection of Applicant-owned facilities to unmetered conductors at any time is prohibited and is subject to the provisions of Rule 11 - Discontinuance and Restoration of Service for unauthorized use.
j. Transformer Installations on Applicant's Premises: Transformer installations on Applicant's Premises shall be as specified by the Utility and in accordance with the following applicable provisions;
12) Space For Transformers: Applicant shall provide space on Applicant's Premises at a location approved by the Utility for a standard transformer installation (including any necessary equipment access for operation, and ancillary equipment such as switches, capacitors, and electric protective equipment, where required) if (a) in an overhead area, the Utility determines that the load to be served is such that a separate transformer installation is required, or (b) if the Utility determines that the installation of a padmounted or subsurface transformer of any size is required on Applicant's Premises to serve only Applicant.
13) Padmounted Equipment: In the Utility's standard installation, Applicant shall furnish, install and convey ownership to the Utility for substructures and any required protective structures specified by the Utility for the proper installation of the transformer, switches, capacitors, and other equipment as determined by the Utility.
14) Single Utility-Owned Customer Substation: When the Utility elects, for its operating convenience, to supply Applicant from a transmission line and install a Utility-owned substation on Applicant's Premises, Applicant shall furnish, install and convey ownership to the Utility the necessary site improvements as specified by the Utility for the proper installation of the transformer. Such improvements shall include but are not limited to a concrete pad or foundation and grounding system. Applicant shall own and maintain all facilities not specifically conveyed to the Utility yet associated with the service, such as fences and gates, access road, grading, and paving as required. Detailed information on the Utility's requirements for a single Customer substation will be furnished by the Utility.
k. Transformer Room or Vault: Where Applicant requests and the Utility approves the installation of the transformer(s) in a vault or room on Applicant's Premises, rather than the Utility's standard padmounted installation;
15) The room or vault on Applicant's Premises shall be furnished, installed, owned, and maintained by Applicant and shall meet the Utility's specifications for such things as access, operational and safety clearances ventilation, drainage, grounding system, etc.
16) If space cannot be provided on Applicant's Premises for the installation of a transformer on either a pad or in a room or vault, a vault will be installed at

Applicant's expense in the street near the property line. It shall be Applicant's responsibility to install (or pay for) such vault if not restricted by governmental authority having jurisdiction and Applicant shall convey ownership of the vault to the Utility upon its acceptance. The additional facilities shall be treated as special or added facilities under the provisions of Rule 2.
3) All the additional costs as well as ongoing maintenance shall be paid by Applicant for special or added facilities.

1. Transformer Lifting Requirements: Where the Utility has installed or agrees to install, transformers at locations where the Utility cannot use its standard transformer lifting equipment and special lifting facilities are required to install or remove the transformers on Applicant's Premises, Applicant shall, at its expense, (a) furnish, install, own, and maintain permanent lifting facilities and be responsible for lifting the transformer to and from its permanent position, or (b) provide (or pay for) portable lifting facilities acceptable to the Utility for installing or removing the transformers. Rights-of-way and space provisions shall be provided by Applicant such that access and required clearances from adjacent structures can be maintained. The Utility may require a separate contract for transformer lifting requirements.
m . Overhead Transformers: In remote areas or in areas not zoned for residential or commercial use or for underground services, pad-mounted transformers are preferred for installation on Applicant's Premises. However, where the Utility determines that it is not practical to install a transformer on a pad, in a room or vault, the Utility may furnish a pole-type structure for an installation not exceeding 500 kVA .

## 2. BUILDING CODE REQUIREMENTS

Any service equipment and other related equipment owned by Applicant, as well as any vault, room, enclosure, or lifting facilities for the installation of transformers shall conform with applicable laws, codes, and ordinances of all governmental authorities having jurisdiction.

## 3. REASONABLE CARE

Applicant shall exercise reasonable care to prevent the Utility's Service Extensions, other Utility facilities, and meters owned by the Utility or others, on the Applicant's Premises from being damaged or destroyed, and shall refrain from interfering with the Utility's operation of the facilities and shall notify the Utility of any obvious defect. Applicant may be required to provide and install suitable mechanical protection (barrier posts, etc.) as required by the Utility.

## 4. UTILITY RESPONSIBLITY

a. Meter and Service: The Utility will install, own, and maintain the following service facilities as applicable after Applicant meets all requirements to receive service:

1) Underground Service: A set of service conductors to supply permanent service from the distribution line source to the service delivery point approved by the Utility.
2) Riser Material: Any necessary pole riser material for connecting underground services to an overhead distribution line.
3) Overhead Service: A set of overhead service conductors to supply permanent service from a distribution line source to a suitable support at the service delivery point approved by the Utility. Support shall be of a type and located such that service wires may be installed in accordance with good engineering practice and in compliance with all applicable laws, ordinances, rules, and regulations including those governing clearances and points of attachment.
4) Metering: When the meter is owned by the Utility, the Utility will be responsible for the necessary instrument transformers where required, test facilities, meters and associated metering equipment. Additionally the Utility will be responsible for the metering enclosures when the Utility elects to locate metering equipment at a point that is not accessible to Applicant.
b. Special Conduit Installations: The Utility shall own and maintain service conduits only if: (1) they are located in the same trench with distribution facilities, and (2) when it is necessary to locate Conduits on property other than that owned by Applicant, as determined by the Utility, or as may be required by local authorities.
c. Government Inspection: The Utility will establish electric service to Applicant following notice from the governmental authority having jurisdiction that the Applicant-owned facilities have been installed and inspected in accordance with any applicable laws, codes, ordinances, rules, or regulations, and are safe to energize.

## 5. UTILITY-PERFORMED WORK

a. Where requested by Applicant and mutually agreed upon, the Utility may perform that portion of the new service extension work normally the responsibility of Applicant provided Applicant pays the Utility its estimated installed cost.

## E. PAYMENTS BY APPLICANT

1. PAYMENTS

Applicant is responsible to pay the Utility the following non-refundable costs as applicable under this rule and in advance of the Utility commencing its work:
a. Pole Riser: The Utility's estimated installed costs of any riser materials on its poles.
b. The Utility's total estimated installation cost (including appurtenant facilities, such as connectors, service conductors, service transformers and metering equipment.).
c. Other: The Utility's total estimated cost of any work it performs that is Applicant's responsibility or performs for the convenience of the Applicant.

## F. EXISTING SERVICE FACILITIES

1. SERVICE REINFORCEMENT
a. Utility-Owned: When the Utility determines that its existing service facilities require replacement, the existing service facilities shall be replaced as new service facilities under the provisions of this rule.
b. Applicant-Owned: When the Utility determines that existing Applicant-owned service facilities require replacement; such replacement or reinforcement shall be accomplished under the provisions for a new service installation.

## 2. SERVICE RELOCATION OR REARRANGEMENT

a. Utility Convenience: When, in the judgment of the Utility, the relocation or rearrangement of a service, including Utility-owned transformers, is necessary for the maintenance of adequate service or for the operating convenience of the Utility, the Utility normally will perform such work at its own expense, except for Applicant convenience or damage.
b. Applicant Convenience: Any relocation or rearrangement of the Utility's existing service facilities at the request of Applicant (aesthetics, building additions, remodeling, etc.) and agreed upon by the Utility shall be performed in accordance with this rule except that Applicant shall pay the Utility its total estimated costs. In all instances, the Utility shall abandon or remove its existing facilities at the option of the Utility rendered idle by the relocation or rearrangement.

## 3. IMPAIRED ACCESS AND CLEARANCES

Whenever the Utility determines that access or clearance to service facilities is impaired, correction action consistent with this section shall be enforced.
a. Access: Its existing service facilities have become inaccessible for inspecting, operating, maintenance, meter reading, or testing.
b. Clearances: A hazardous condition exists or any of the required clearances between the existing service facilities and any object becomes impaired under
any applicable laws, ordinances, rules, or regulations of the Utility or public authorities, then the following applies;

Corrective Action: Applicant or owner shall, at Applicant's or owner's expense, either correct the access or clearance infractions or pay the total estimated cost to relocate its facilities to a new location which is acceptable to the Utility. Applicant or owner shall also be responsible for the expense to relocate any equipment, which Applicant owns and maintains. Failure to comply with corrective measures within a reasonable time may result in discontinuance of service.

## 4. OVERHEAD TO UNDERGROUND SERVICE CONVERSIONS

Applicant's Convenience: Where overhead services are replaced by underground services for Applicant's convenience, Applicant shall perform all excavation, furnish and install all substructures, and pay the Utility its total estimated installed cost to complete the new service and remove the overhead facilities.

## 5. DAMAGED FACILITIES

When the Utility's facilities are damaged by others, the repair will be made by the Utility at the expense of the party responsible for the damage. Applicants are responsible for repairing their own facilities.

## 6. SUBDIVISION OF PREMISES

When the Utility's service facilities are located on private property and such private property is subsequently subdivided into separate Premises with ownership divested to other than Applicant or Customer, the subdivider is required to provide the Utility with adequate rights-of-way satisfactory to the Utility for its existing facilities and to notify property owners of the subdivided Premises of the existence of the rights-ofway. When adequate rights-of-way are not granted as a result of the property subdivision, the Utility shall have the right, upon written notice to Applicant, to discontinue service without obligation or liability. The existing owner, Applicant, or Customer shall pay to the Utility the total estimated cost of any required relocation or removal of the Utility's facilities. A new electric service will be re-established in accordance with the provisions of this Rule for new service and the provisions of any other applicable Utility rules.

## 7. EXCEPTIONAL CASES

When the application of this rule appears impractical or unjust to either party, or ratepayers, the Utility or Applicant may refer the matter to the Utility for a special ruling or for approval of special conditions, which may be mutually agreed upon.

# ELECTRIC RULE 17-METER TESTS AND ADJUSTMENT OF BILLS FOR METER ERROR 

## A. METER TESTS

Any Customer may, upon not less than five (5) working days notice, request that the Utility test the Customer's electric meter. No payment or deposit will be required from the Customer for such tests except when a Customer requests a meter test within six months after the date of installation of the meter, or more often than once each six months thereafter. A deposit to cover the reasonable cost of the test will be required of the Customer.

The deposit will be returned to the Customer if the meter is found to register more than two percent fast or slow under conditions of normal operation as a result of the test. A Customer shall have the right to request the Utility conduct the test in the Customer's presence or in the presence of an expert or other representative appointed by the Customer. A report giving the result of the test will be supplied to the Customer within a reasonable time after completion of the test. All electric meters will be tested at the time of their installation. No meter will be placed in service or allowed to remain in service which has an error in registration in excess of two percent under conditions of normal operation. On newly purchased single-phase meters, the manufacturer's test may be used as the installation test when the Utility's random tests indicate satisfactory test results for a particular manufacturer and for a particular shipment.

## B. ADJUSTMENT OF BILLS FOR METER ERROR

Meter error is the incorrect registration of energy usage resulting from a malfunctioning or defective meter. It does not include incorrect registration attributable to billing error or unauthorized use. Where, as the result of a meter test, a meter is found to be non-registering or incorrectly registering, the Utility may render an adjusted bill to the Customer for the amount of any undercharge without interest. The Utility shall issue a refund or credit to the Customer for the amount of any overcharge, without interest, computed back to the date that is determined to be when the meter error commenced, except that the period of adjustment shall not exceed the limits set forth in this Rule. Such adjusted bill shall be computed as follows:

## 1. FAST METER

If a meter, for either residential or nonresidential service, is found to be registering more than two percent fast, the Utility will calculate the amount of the overcharge for refund to the Customer based on the corrected usage for a period of up to 6 months. When it is known that the period of meter error was less than six months, the overcharge will be calculated for only those months during which the meter error occurred.

## 2. SLOW METER

If a meter, for either residential or nonresidential service is found to be registering more than two percent slow, the Utility may bill the Customer for the amount of the undercharge based on the corrected usage or based upon the Utility's estimate of the energy usage for a period of up to three years. However, if it is known that the period of meter error was less than three years, the undercharge will be calculated for only those months during which the meter error occurred.

## 3. NONREGISTERING METER

If a meter, for either residential or nonresidential service is found to be nonregistering, the Utility may bill the Customer for the amount of the undercharge based on the Utility's estimate of the electricity used, but not registered, for a period of up to three years. However, if it is known that the period the meter was non-registering was less than three years, the undercharge will be calculated for only those months the meter was non-registering. Where the condition of the meter renders it un-testable (no-test), the Utility may bill the Customer based upon the Utility's estimate of the unmetered energy. Nothing herein is intended to limit the Utility's authority to bill the Customer for unauthorized use.

## 4. NO-TEST METERS

Where the condition of the meter renders it untestable (no-test), the Utility may bill the Customer based upon the Utility's estimate of the unmetered energy. Nothing herein is intended to limit the Utility's authority to bill the Customer for unauthorized use.

## 5. ESTIMATED USAGE

When regular, accurate meter readings are not available or when the electric usage has not been accurately measured, the Utility may estimate the Customer's energy usage for billing purposes on the basis of information including, but not limited to, the physical condition of the metering equipment, available meter readings, records of historical use, and the general characteristics of the Customer's load and operation.

## ELECTRIC RULE 17.1-ADJUSTMENTS OF BILLING ERROR

## A. BILLING ERROR DEFINED

Billing error is the incorrect billing of an account due to an error by the Utility or the Customer, which results in incorrect charges to the Customer. Billing error includes, but is not limited to, incorrect meter reads or clerical errors, wrong daily billing factor, incorrect voltage discount, wrong connected load information, crossed meters, incorrect billing calculation, incorrect meter multiplier, incorrect rate, or the Utility's failure to provide the Customer with notice of rate options. Field error, including, but not limited to, installing the meter incorrectly and failure to close the meter potential or test switches, is also considered billing error. Billing error which does not entitle the Customer to a credit adjustment includes failure of the Customer to notify the Utility of changes in the Customer's connected load, equipment or operation or failure of the Customer to take advantage of any noticed rate option or condition of service for which the Customer becomes eligible subsequent to the date of application for service.

## B. ADJUSTMENT OF BILLS FOR BILLING ERROR

Where the Utility overcharges or undercharges a Customer as the result of a billing error, the Utility may render an adjusted bill to the Customer for the amount of any undercharge, without interest, and shall issue a refund or credit to the Customer for the amount of any overcharge, without interest, in accordance with the procedures and limitations set forth below.

## 1. BILLING ERROR RESULTING IN OVERCHARGES TO THE CUSTOMER

If either a residential or nonresidential service is found to have been overcharged due to billing error, the Utility will calculate the amount of the overcharge, for refund to the Customer, for a period of up to three years. However, if it is known that the period of billing error was less than three years, the overcharge will be calculated for only those months during which the billing error occurred.
2. BILLING ERRORS RESULTING IN UNDERCHARGES TO THE CUSTOMER

If either residential or nonresidential service is found to have been undercharged due to a billing error, the Utility may bill the Customer for the amount of the undercharge for a period of up to three years. However, if it is known that the period of billing error was less than three years, the undercharge will be calculated for only those months during which the billing error occurred.

## ELECTRIC RULE 172— ADJUSTMENT OF BILLS FOR UNAUTHORIZED USE

## A. UNAUTHORIZED USE DEFINED

Unauthorized use includes, but is not limited to:

1. Unmetered use of electricity resulting from unauthorized connections, alterations or modifications to electric supply lines and/or electric meters;
2. Placing conductive material in the meter socket to allow energy to flow from the line side of the service to the load side of the service without a meter (cut in flat);
3. Installing an unauthorized electric meter in place of the meter assigned to the account;
4. Inverting or otherwise repositioning the meter, thereby altering registration;
5. Damaging the meter to stop registration, thereby rendering it untestable;
6. Using the Utility service without compensation to the Utility in violation of applicable rules and/or statutes.

Where the Utility determines there has been unauthorized use, the Utility shall have the legal right to recover, from any Customer or other person who caused or benefited from such unauthorized use, the estimated undercharges for the full period of such unauthorized use. The estimated bill shall indicate unauthorized use for the most recent three years and, separately, unauthorized use beyond the three-year period for collection as provided by law. Nothing in this rule shall be interpreted as limiting the Utility's rights under any provisions of any applicable civil or criminal law.

## B. INVESTIGATION OF UNAUTHORIZED USE

Where unauthorized use is suspected by the Utility, the Utility shall promptly conduct an investigation.

Whenever possible, the Utility shall collect and preserve evidence in the matter, test the meter, and obtain connected load information from the Customer or other person to be charged for the unauthorized energy use. If the meter cannot be tested or connected load data cannot be obtained, the Utility will document the reasons why such information could not be obtained. Whenever possible, upon completion of the Utility's investigation, the Customer or other person being billed will be advised of the Utility's claim and shall be given an opportunity to respond to the claim. Notwithstanding any provisions herein, the Utility reserves all evidentiary privileges and rights.

## C. ADJUSTMENT OF BILLS FOR UNAUTHORIZED USE

1. ACTUAL USAGE

If accurate meter readings are available for the unauthorized use period, they will be used for billing purposes.

## 2. ESTIMATED USAGE

If accurate meter readings are not available or the electric usage has not been accurately measured, the Utility may estimate the energy usage for billing purposes. The basis for the estimate may include, without limitation and for illustrative purposes only, the physical condition of the metering equipment, available meter readings, records of historical use, or the general characteristics of the load and operation of the service being billed, with consideration of any appropriate seasonal adjustment. Estimated bills for the unauthorized use period may be determined by the Utility based on one or more of the following, without limitation and for illustrative purposes only:
a. Accurately metered use from a remote check meter;
b. The known percent error in metering attributable to the unauthorized use condition as determined by the Utility;
c. Accurately metered use prior to the onset of the unauthorized use;
d. The equipment and hours of operation of the service being billed;
e. Accurately metered subsequent use of 30 days or more (if available);
f. Annual use profile of at least five Customers with similar connected load, Premises load profiles, hours of energy use, etc. (percent of annual use); or
g. Other reasonable and supportable billing methodology when none of the aforementioned billing techniques is appropriate under the circumstances.

## D. INTEREST ON BILLS FOR UNAUTHORIZED USE

1. The Utility may bill and collect interest at a rate of 10 percent per annum on unauthorized use billings from the date the unauthorized use commenced, and/or
2. The Utility may bill and collect interest at a rate of 10 percent per annum on amortized repayment agreements.

## E. RECOVERY OF ASSOCIATED COSTS

The Utility may recover the associated costs resulting from the unauthorized use including, but not limited to, investigative and equipment damage costs.

## F. DISCONTINUANCE OF SERVICE

In accordance with the provisions of Electric Rule 11, where the Utility determines unauthorized use is occurring, the Utility may refuse service or discontinue service. If any part of the Customer's wiring or any other equipment, or the use thereof, is determined by the Utility or any other authorized public agency to be unsafe or in violation of applicable laws, ordinances, rules or regulations of public authorities, or is in such condition as to endanger the Utility's service facilities, the Utility may discontinue service. The Utility may also discontinue service in accordance with the provisions of its rules, for nonpayment of a delinquent billing for unauthorized use, and for associated costs, including nonpayment under an amortization agreement.

## ELECTRIC RULE 21—GENERATING FACILITY INTERCONNECTIONS

## A. APPLICABILITY

Applicability: This Rule describes the Interconnection, operating and Metering requirements for Generating Facilities to be connected to Moreno Valley Utility's ("MVU") Distribution System. Subject to the requirements of this Rule, MVU will allow the Interconnection of Generating Facilities with its Distribution System.

Definitions: Capitalized terms used in this Rule, and not defined in MVU's other rules, shall have the meaning ascribed to such terms in Section H of this Rule. The definitions set forth in Section H of this Rule shall only apply to this Rule and may not apply to MVU's other rules.

In the event of any conflict between this rule and any of the standards listed herein, the requirements of this rule shall take precedence.

## B. DEFINITIONS

The definitions in this Section are applicable only to this Rule, the Application and Interconnection Agreements.

Anti-Islanding: A control scheme installed as part of the Generating Facility or Interconnection Facilities that senses and prevents the formation of an Unintended Island.

Applicant: The entity submitting an Application for Interconnection pursuant to this Rule.
Application: A standard MVU provided form submitted to MVU for Interconnection of a Generating Facility.

Certification Test: A test pursuant to this Rule that verifies conformance of certain equipment with MVU-approved performance standards in order to be classified as Certified Equipment. Certification Tests are performed by NRTLs.

Certification; Certified; Certificate: The documented results of a successful Certification Testing.

Certified Equipment: Equipment that has passed all required Certification Tests.
Commissioning Test: A test performed during the commissioning of all or part of a Generating Facility to achieve one or more of the following:

- Verify specific aspects of its performance;
- Calibrate its instrumentation; and
- Establish instrument or Protective Function set-points.

Customer: The entity that receives or is entitled to receive Distribution Service through the MVU's Distribution System.

Dedicated Transformer; Dedicated Distribution Transformer: A transformer that provides electricity service to a single Customer. The Customer may or may not have a Generating Facility.

Device: A mechanism or piece of equipment designed to serve a purpose or perform a function. The term may be used interchangeably with the terms "equipment" and "function" without intentional difference in meaning. See also Function and Protective Function.

Distribution Service: All services required by, or provided to, a Customer pursuant to the approved rate schedules and rules of MVU.

Distribution System: All electrical wires, equipment, and other facilities owned or provided by MVU, by which MVU provides Distribution Service to its Customers.

Emergency: An actual or imminent condition or situation, which jeopardizes MVU's Distribution System Integrity.

Field Testing: Testing performed in the field to determine whether equipment meets MVU's requirements for safe and reliable Interconnection.

Function: Some combination of hardware and software designed to provide specific features or capabilities. Its use, as in Protective Function, is intended to encompass a range of implementations from a single-purpose device to a section of software and specific pieces of hardware within a larger piece of equipment to a collection of devices and software.

Generating Facility: All Generators, electrical wires, equipment, and other facilities owned or provided by Producer for the purpose of producing electric power.

Generator: A device converting mechanical, chemical or solar energy into electrical energy, including all of its protective and control Functions and structural appurtenances. One or more Generators comprise a Generating Facility.

Gross Nameplate Rating; Gross Nameplate Capacity: The total gross generating capacity of a Generator or Generating Facility as designated by the manufacturer(s) of the Generator(s).

Host Load: The electrical power, less the Generator auxiliary load, consumed by the Customer, to which the Generating Facility is connected.

Initial Review: The review by MVU, following receipt of an Application, to determine the following: (a) the Generating Facility qualifies for Simplified Interconnection; or (b) if the Generating Facility can be made to qualify for Interconnection with a Supplemental Review determining any additional requirements.

In-rush Current: The current determined by the In-rush Current Test.
Interconnection Agreement: An agreement between MVU and the Producer that gives certain rights and obligations to effect or end Interconnection.

Interconnection; Interconnected: The physical connection of a Generating Facility in accordance with the requirements of this Rule so that Parallel Operation with MVU's Distribution System can occur (or has occurred).

Interconnection Facilities: The electrical wires, switches and related equipment that are required in addition to the facilities required to provide electric Distribution Service to a Customer to allow Interconnection. Interconnection Facilities may be located on either side of the Point of Common Coupling as appropriate to their purpose and design. Interconnection Facilities may be integral to a Generating Facility or provided separately.

Interconnection Study: A study to establish the requirements for Interconnection of a Generating Facility with MVU's Distribution System.

Island; Islanding: A condition on MVU's Distribution System in which one or more Generating Facilities deliver power to Customers using a portion of MVU's Distribution System that is electrically isolated from the remainder of MVU's Distribution System.

Line Section: That portion of MVU's Distribution System connected to a Customer bounded by automatic sectionalizing devices or the end of the distribution line.

Load Carrying Capability: The maximum electrical load that may be carried by a section of MVU's Distribution System consistent with reliability and safety under the circumstances being evaluated.

Metering: The measurement of electrical power in kW and/or energy in kWh , and, if necessary, reactive power in kVAR at a point, and its display to MVU, as required by this Rule.

Metering Equipment: All equipment, hardware, software including meter cabinets, conduit, etc., that are necessary for Metering.

Momentary Parallel Operation: The interconnection of a Generating Facility to the Distribution System for one second (60 cycles) or less.

Nationally Recognized Testing Laboratory (NRTL): A laboratory accredited to perform the Certification Testing requirements under this Rule.

Net Energy Metering: Metering for the receipt and delivery of electricity between the Producer and MVU over a timeframe established per the applicable NEM rate, the difference between these two values yields either net consumption or surplus over the given time period.

Net Generation Output Metering: Metering of the net electrical power output in kW or energy in kWh , from a given Generating Facility. This may also be the measurement of the difference between the total electrical energy produced by a Generator and the electrical energy consumed by the auxiliary equipment necessary to operate the Generator. For a Generator with no Host Load and/or Public Utilities Code Section 218 Load (Section 218 Load), Metering that is located at the Point of Common Coupling. For a Generator with Host Load and/or Section 218 Load, Metering that is located at the Generator but after the point of auxiliary load(s) and prior to serving Host Load and/or Section 218 Load.

Net Nameplate Rating: The Gross Nameplate Rating minus the consumption of electrical power of a Generator or Generating Facility as designated by the manufacturer(s) of the Generator(s).

Network Service: More than one electrical feeder providing Distribution Service at a Point of Common Coupling.

Non-Export; Non-Exporting Scheme: Designed to prevent the transfer of electrical energy from the Generating Facility to MVU's Distribution System.

Non-Islanding: Designed to detect and disconnect an Unintended Island with matched load and generation. Reliance solely on under/over voltage and frequency trip is not considered sufficient to qualify as Non-Islanding.

Parallel Operation: The simultaneous operation of a Generator with power delivered or received by MVU while Interconnected. For the purpose of this Rule, Parallel Operation includes only those Generating Facilities that are Interconnected with MVU's Distribution System for more than 60 cycles (one second).

Paralleling Device: An electrical device, typically a circuit breaker, operating under the control of a synchronization function or by a qualified operator to connect an energized generator to an energized electric power system or two energized power systems to each other.

Periodic Test: A test performed on part or all of a Generating Facility/Interconnection Facilities at pre-determined time or operational intervals to achieve one or more of the following:

- Verify specific aspects of its performance
- Calibrate instrumentation
- Verify and re-establish instrument or Protective Function set-points.

Point of Common Coupling (PCC): The transfer point for electricity between the electrical conductors of MVU and the electrical conductors of the Producer.

Point of Common Coupling Metering: Metering located at the Point of Common Coupling. This is the same Metering as Net Generation Metering for Generating Facilities with no Host Load and/or Section 218 Load.

Point of Interconnection: The electrical transfer point between a Generating Facility and MVU's Distribution System. This may or may not be coincident with the Point of Common Coupling.

Producer: The entity that executes an Interconnection Agreement with MVU. The Producer may or may not own or operate the Generating Facility but is responsible for the rights and obligations related to the Interconnection Agreement.

Production Test: A test performed on each device coming off the production line to verify certain aspects of its performance.

Protective Function(s): The equipment, hardware and/or software in a Generating Facility (whether discrete or integrated with other functions) whose purpose is to protect against Unsafe Operating Conditions.

Prudent Electrical Practices: Those practices, methods, and equipment, as changed from time to time, that are commonly used in prudent electrical engineering and operations to design and operate electric equipment lawfully and with safety, dependability, efficiency and economy.

Scheduled Operation Date: The date specified in the Interconnection Agreement when the Generating Facility is, by the Producer's estimate, expected to begin operation pursuant to this Rule.

Secondary Network: A network supplied by several primary feeders suitably interlaced through the area in order to achieve acceptable loading of the transformers under emergency conditions and to provide a system of extremely high service reliability. Secondary networks usually operate at 600 V or lower.

Section 218 Load: Electrical power that is supplied in compliance with California Public Utilities Code Section 218. Public Utilities Code Section 218 defines an "Electric Corporation" and provides conditions under which a transaction involving a Generating Facility would not classify a Producer as an Electric Corporation. These conditions relate to "over-the-fence" sale of electricity from a Generating Facility without using MVU's Distribution System.

Short Circuit (Current) Contribution Ratio (SCCR): The ratio of the Generating Facility's short circuit contribution to the short circuit contribution provided through MVU's Distribution System for a three-phase fault at the high voltage side of the distribution transformer connecting the Generating Facility to MVU's system.

Simplified Interconnection: Interconnection conforming to the Initial Review requirements under this Rule, as determined by Section I.

Single Line Diagram; Single Line Drawing: A schematic drawing, showing the major electric switchgear, Protective Function devices, wires, Generators, transformers and other devices, providing sufficient detail to communicate to a qualified engineer the essential design and safety of the system being considered.

Special Facilities: As defined in MVU's Rules governing Special Facilities.
Starting Voltage Drop: The percentage voltage drop at a specified point resulting from In-rush Current. The Starting Voltage Drop can also be expressed in volts on a particular base voltage, (e.g., 6 volts on a 120 -volt base, yielding a $5 \%$ drop).

Supplemental Review: A process wherein MVU further reviews an Application that fails one or more of the Initial Review Process steps. The Supplemental Review may result in one of the following: (a) approval of Interconnection; (b) approval of Interconnection with additional requirements; or (c) required modifications for interconnection.

System Integrity: The condition under which MVU's Distribution System is deemed safe and can reliably perform its intended functions in accordance with the safety and reliability rules of MVU.

Telemetering: The electrical or electronic transmittal of Metering data in real-time to MVU.

Transfer Trip: A Protective Function that trips a Generating Facility remotely by means of an automated communications link controlled by MVU.

Type Test: A test performed on a sample of a particular model of a device to verify specific aspects of its design, construction and performance.

Unintended Island: The creation of an island, usually following a loss of a portion of MVU's Distribution System, without the approval of MVU.

Unsafe Operating Conditions: Conditions that, if left uncorrected, could result in hard to personnel, damage to equipment, loss of System Integrity or operation outside preestablished parameters required by the Interconnection Agreement.

Visible Disconnect: An electrical switching device that can separate the Generating Facility from the Distribution System and is designed to allow visible verification that separation has been accomplished. This requirement can be met by opening the enclosure to observe the contact separation.

## C. GENERAL REQUIREMENTS

1. Authorization Required to Operate:

A Producer must comply with this Rule and receive MVU's express written permission before Parallel Operation of its Generating Facility with MVU's Distribution System. MVU shall apply this Rule in a non-discriminatory manner and shall not unreasonably withhold its permission for Parallel Operation of Producer's Generating Facility with MVU's Distribution System.

## 2. Access to Premises:

MVU may enter Customer's premises without prior notice (a) to inspect, at all reasonable hours, Customer's protective devices and read or test any meter for the Facility and (b) to
disconnect, at any time, without notice, the Facility if, in MVU's sole opinion, a hazardous condition exists and that immediate action is necessary to protect persons, or MVU's facilities, or property of others from damage or interference caused by (1) Customer's Facility, or (2) Customer's failure to comply with the requirements of this Rule.

## 3. Separate Agreements Required for Other Services:

Producer requiring other electric services from MVU including, but not limited to, Distribution Service during periods of curtailment or interruption of the Producer's Generating Facility, will comply with these Rules and agrees to abide by all requirements as set forth by MVU for such services in accordance with MVU's City Council-approved Electric Rules.

## 4. Transmission Service Not Provided with Interconnection:

Interconnection with MVU's Distribution System under this Rule does not provide a Producer any rights to utilize MVU's System for the transmission, distribution, or wheeling of electric power.

## 5. Design Reviews and Inspections:

MVU shall have the right to review the design of a Producer's Generating and/or Interconnection Facilities and to inspect a Producer's Generating and/or Interconnection Facilities prior to the commencement of Parallel Operation with MVU's Distribution System. MVU may require a Producer to make modifications as necessary to comply with the requirements of this Rule. MVU's review and authorization for Parallel Operation shall not be construed as confirming or endorsing the Producer's design or as warranting the Generating and/or Interconnection Facilities' safety, durability or reliability. MVU shall not, by reason of such review or lack of review, be responsible for the strength, adequacy or capacity of such equipment.

## 6. Design Requirements:

a. Customer's Facility, and all portions of it used to provide or distribute electrical power and parallel interconnection with MVU's distribution equipment shall be designed, installed, constructed, operated, and maintained in compliance with this Rule. Compliance with this section is mandatory.
b. Customer shall conform to all applicable solar or wind electrical generating system safety and performance standards established by this rule, the National Electrical Code (NEC), the Institute of Electrical and Electronics Engineers (IEEE), and accredited testing laboratories such as Underwriters Laboratories, and where applicable, rules of the Public Utilities Commission regarding safety and reliability, and applicable building codes.

## 7. Testing and Compliance:

Generating facilities must meet all applicable safety and performance standards established by the National Electrical Code, the Institute of Electrical and Electronics Engineers, and accredited testing laboratories such as Underwriters Laboratories. All generating facilities must have a warranty of at least 10 years for all equipment and the associated installation from the system provider (not from MVU). All major solar system components (including

PV panels and other generation equipment, inverters and meters) must be on the verified equipment list maintained by the CEC. Any other equipment, as determined by MVU, must be verified as having safety certification from a Nationally Recognized Testing Laboratory.

## 8. Sized to offset all or part of load:

The Customer's generating facilities must be sized to offset part or all of the customer's own electrical requirements and cannot be oversized.

## 9. Transferability of Generating Facility:

A new Customer of record who owns, rents, or leases a premise that includes a generating facility that was approved by MVU for parallel operation prior to the new Customer moving in and/or taking electric service with MVU will take service under this Schedule as long as the requirements of this Schedule are met. This provision also applies to premises where the developer/contractor establishes the interconnection.

## 10. System Modifications:

Existing generating facilities currently under a legacy NEM Schedule that are modified such that: (1) the generating capacity or output increases by $10 \%$ or more; or (2) adding battery storage will be placed under the most recent NEM Schedule.

## 11. NEM Schedule Agreement:

Existing Customers under a legacy NEM schedule will remain under their legacy Schedule for a period of fifteen (15) years from the original year in which their generating facility was interconnected to MVU's grid as determined from the date the Customer received the permission to operate (PTO), and then will be switched to the most recent NEM schedule or any otherwise applicable rate schedule. Existing Customers under Schedule NEM can request to be placed under the most recent NEM Schedule at any time; the Customer's account will be trued up at the time of the request. This means that any outstanding balance due or credit due will be applied to the next regular billing.

## 12. Interruption or Reduction of Deliveries:

a. MVU shall not be obligated to accept, and MVU may require Customer to interrupt or reduce, deliveries of energy to MVU: (a) when necessary in order to construct, install, maintain, repair, replace, remove, investigate, or inspect any of MVU's equipment or part of the MVU system; or (b) if MVU determines that curtailment, interruption, or reduction of receipt of energy from Customer's Facility is necessary because of emergencies, forced outages, force majeure, or compliance with prudent electrical practices.
b. Notwithstanding any other provision of this Rule, if at any time MVU, in its sole discretion, determines that either (a)the Facility may endanger MVU personnel or members of the general public, or (b) the continued operation of Customer's Facility may impair the integrity of MVU's electric distribution system, MVU shall have the right to disconnect Customer's Facility from MVU's electric distribution system. Customer's Facility shall remain disconnected until such time as MVU is satisfied that the condition(s) referenced in (a) or (b) of this paragraph have been corrected, and MVU shall
not be obligated to compensate Customer for any loss of use of generation or energy during any and all periods of such disconnection.

## 13. Maintenance and Permits:

Customer shall: (a) maintain the Facility and interconnection facilities in a safe and prudent manner and in conformance with all applicable laws and regulations including, but not limited to, requirements of Section 5 above, and (b) to the extent that future requirements may require, obtain any governmental authorizations or permits required for the operation of the Facility. Customer shall reimburse MVU for any and all losses, damages, claims, penalties, or liability MVU incurs as a result of Customer's failure to obtain or maintain any governmental authorizations and permits required for construction and operation of the Customer's Facility.

## 14. Indemnity and Liability by Customer:

a. Customer shall indemnify and hold MVU, its directors, officers, agents and employees harmless against all loss, damages expense and liability to third persons for injury to or death of persons or injury to property caused by the Customer's engineering design, construction, installation, ownership, maintenance or operations of the Facility in connection with this Agreement by reason of omission or negligence, whether active or passive. Customer shall, on MVU's request, defend any suit asserting a claim covered by this indemnity. Customer shall pay all costs that may be incurred by MVU in enforcing this indemnity.
b. Neither MVU, its officers, agents nor employees shall be liable for any claims, demands, costs, losses, causes of action, or any other construction, ownership, maintenance or operation of, or making of replacements, additions or betterment to, Customer's Facility except to the extent actually caused by the sole and gross negligence of the MVU.
c. Neither MVU, its officers, agents nor employees shall be liable for damages of any kind to the Facility caused by any electrical disturbance of the MVU system or on the system of another, whether or not the electrical disturbance results from the negligence of MVU.

## D. PROTECTION REQUIREMENTS

## 1. General Interconnection and Protective Function Requirements

The Protective Functions and requirements of this Rule are designed to protect MVU's Distribution System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for its Generating Facility and Interconnection Facilities. The Producer's Protective Functions shall not impact the operation of other Protective Functions utilized on MVU's Distribution System in a manner that would affect MVU's capability of providing reliable service to its Customers.
a. Protective Functions Required Generating Facilities operating in parallel with MVU's Distribution System shall be equipped with the following Protective Functions to sense abnormal conditions on MVU's Distribution System and cause the Generating Facility to be automatically disconnected from MVU's Distribution System or to prevent the Generating Facility from being connected to MVU's Distribution System inappropriately:

1) Over and under voltage trip functions and over and under frequency trip functions;
2) A voltage and frequency sensing and time-delay function to prevent the Generating Facility from energizing a de-energized Distribution System circuit and to prevent the Generating Facility from reconnecting with MVU's Distribution System unless MVU's Distribution System service voltage and frequency is within the Voltage Range of 106 V to 127 V (on a 120 V basis), inclusive, and a frequency range of 59.3 Hz to 60.5 Hz , inclusive, and are stable for at least 60 seconds; and
3) A function to prevent the Generating Facility from contributing to the formation of an Unintended Island and cease to energize the MVU's Distribution System within two seconds of the formation of an Unintended Island.

The Generating Facility shall cease to energize MVU's Distribution System for faults on MVU's Distribution System circuit to which it is connected. The Generating Facility shall cease to energize MVU's Distribution circuit prior to re-closure by MVU' Distribution System equipment.
b. Momentary Paralleling Generating Facilities. With MVU's approval, the transfer switch or scheme used to transfer the Producer's loads from MVU's Distribution System to Producer's Generating Facility may be used in lieu of the Protective Functions required for Parallel Operation.
c. Purpose of Protective Functions. The Protective Functions and requirements of this Rule are designed to protect MVU's Distribution System and not the Generating Facility. A Producer shall be solely responsible for providing adequate protection for its Generating Facility and Interconnection Facilities. The Producer's protective devices utilized on the Distribution System in a manner that would affect MVU's capability of providing reliable service to its Customers.
d. Suitable Equipment Required. Circuit breakers or other interrupting equipment located at the Point of Common Coupling must be Certified or "Listed" (as defined in Article 100, the Definitions Section of the National Electrical Code) as suitable for their intended application. This includes being
capable of interrupting the maximum available fault current expected at their location. Producer's Generating Facility and Interconnection Facilities shall be designed so that the failure of any single device or component shall not potentially compromise the safety and reliability of MVU's Distribution System.
e. Visible Disconnect Required. When required by MVU's operating practices, the Producer shall furnish and install a ganged, manually-operated isolating switch (or a comparable device mutually agreed upon by MVU and the Producer) near the Point of Interconnection to isolate the Generating Facility from MVU's Distribution System. The device does not have to be rated for load break nor provide over-current protection.

The device must:

1) allow visible verification that separation has been accomplished. (This requirement may be met by opening the enclosure to observe contact separation.)
2) include markings or signage that clearly indicate open and closed positions.
3) be capable of being reached quickly and conveniently 24 hours a day by MVU personnel for construction, operation, maintenance, inspection, testing or reading, without obstacles or requiring those seeking access to obtain keys, special permission, or security clearances.
4) be capable of being locked in the open position.
5) be clearly marked on the submitted single line diagram and its type and location approved by the MVU prior to installation. If the device is not adjacent to the Point of Common Coupling, permanent signage must be installed at an MVU-approved location providing a clear description of the location of the device.

Generating Facilities with Non-Islanding inverters totaling one (1) kilovolt-ampere $(\mathrm{kVA})$ or less are exempt from this requirement.
f. Drawings Required. Prior to Parallel Operation or Momentary Parallel Operation of the Generating Facility, MVU shall approve the Producer's Protective Function and control diagrams. Generating Facilities equipped with Protective Functions and a control scheme previously approved by MVU for system-wide application or only Certified Equipment may satisfy this requirement by reference to previously approved drawings and diagrams.
g. Generating Facility Conditions Not Identified. In the event this Rule does not address the Interconnection conditions for a particular Generating Facility, MVU and Producer may agree upon other arrangements.

## 2. Prevention of Interference:

The Producer shall not operate Generating or Interconnection Facilities that superimpose a voltage or current waveform upon MVU's Distribution System that interferes with MVU operations, service to MVU Customers, or communication facilities. If such interference occurs, the Producer must diligently pursue and take corrective action at its own expense after being given notice and reasonable time to do so by MVU. If the Producer does not take corrective action in a timely manner, or continues to operate the facilities causing interference without restriction or limit, MVU may, without liability, disconnect the Producer's facilities from MVU's Distribution System. To eliminate undesirable interference caused by its operation, each Generating Facility shall meet the following criteria:
a. Voltage Regulation: The Generating Facility shall not actively regulate the voltage at the Point of Common Coupling while in parallel with MVU's Distribution System.
b. Operating Voltage Range: The voltage ranges in Table D. 1 define protective trip limits for the Protective Function and are not intended to define or imply a voltage regulation Function. Generating Facilities shall cease to energize MVU's Distribution System within the prescribed trip time whenever the voltage at the Point of Common Coupling deviates from the allowable voltage operating range. The Protective Function shall detect and respond to voltage on all phases to which the Generating Facility is connected.

1) Generating Facilities ( 30 kVA or less). Generating Facilities with a Gross Nameplate Rating of 30 kVA or less shall be capable of operating within the voltage range normally experienced on MVU's Distribution System. The operating range shall be selected in a manner that minimizes nuisance tripping between 106 volts and 132 volts on a 120 -volt base ( $88 \%-110 \%$ of nominal voltage). Voltage shall be detected at either the Point of Common Coupling or the Point of Interconnection.
2) Generating Facilities (greater than 30 kVA ). MVU may require adjustable operating voltage settings. In the absence of such requirements, the Generating Facility shall operate at a range between $88 \%$ and $110 \%$ of the applicable interconnection voltage. Voltage shall be detected at either the Point of Common Coupling or the Point of Interconnection, with settings compensated to
account for the voltage at the Point of Common Coupling, Generating Facilities that are Certified Non-Islanding or that meet one of the options of the Export Screen (Section I.3.b) may detect voltage at the Point of Interconnection without compensation.
3) Voltage Disturbances. Whenever MVU's Distribution System voltage at the Point of Common Coupling varies from and remains outside normal (nominally 120 volts) for the predetermined parameters set forth in Table D-1, the Generating Facility's Protective Functions shall cause the Generator(s) to become isolated from MVU's Distribution System:

Table D. 1 Voltage Trip Settings

| Voltage at Point of Common Coupling |  | Maximum Trip Time* \# of Cycles |  |
| :---: | :---: | :---: | :---: |
| (Assuming 120 V Base) | \% of Nominal Voltage | (Assuming 60Hz <br> Nominal) | Seconds |
| Less than 60 Volts | Less than 50\% | 10 Cycles | 0.16 Seconds |
| Greater than or equal to 60 <br> volts but less than 106 volts | Greater than or equal to <br> $50 \%$ but less than $88 \%$ | 120 Cycles | 2 Seconds |
| Greater than or equal to 106 <br> volts but less than 132 volts | Greater than or equal to <br> $88 \%$ but less than $110 \%$ | Normal Operation |  |
| Greater than or equal to 132 <br> volts but less than 144 volts | Greater than or equal to <br> $110 \%$ but less than $120 \%$ | 120 Cycles | 2 Seconds |
| Greater than 144Volts | Greater than 120\% | 10 Cycles | 0.16 Seconds |

* "Maximum Trip time" refers to the time between the onset of the abnormal condition and the Generating Facility ceasing to energize MVU's Distribution System. Protective Function sensing equipment and circuits may remain connected to MVU's Distribution System to allow sensing of electrical conditions for use by the "reconnect" feature. The purpose of the allowed time delay is to allow a Generating Facility to "ride through" short-term disturbances to avoid nuisance tripping. Set points shall not be user adjustable (though they may be field adjustable by qualified personnel). For Generating Facilities with a Gross Nameplate Rating greater than 30 kVA, set points shall be field adjustable and different voltage set points and trip times from those in Table D. 1 may be negotiated with MVU.
c. Paralleling. The Generating Facility shall parallel with MVU's Distribution System without causing a voltage fluctuation at the Point of Common Coupling greater than $\pm 5 \%$ of the prevailing voltage level of MVU's Distribution System at the Point of Common Coupling.
d. Flicker. The Generating Facility shall not create objectionable flicker for other Customers on MVU's Distribution System. To minimize the adverse voltage effects experienced by other Customers (IEEE1547-4.3.2), flicker at the Point of Common Coupling caused by the Generating Facility should not exceed the limits defined by the "Maximum Borderline of Irritation Curve" identified in IEEE 519-1992 (IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems, IEEE STD 519-1992). This requirement is necessary to minimize the adverse voltage affects experienced by other Customers on MVU's Distribution System. Generators may be connected and brought up to synchronous speed (as an induction motor) provided these flicker limits are not exceeded.
e. Integration with MVU's Distribution System Grounding. The grounding scheme of the Generating Facility interconnection shall not cause over-voltages that exceed the rating of the equipment connected to the MVU's Distribution System and shall not disrupt the coordination of the ground fault protection on the MVU's Distribution System (IEEE15474.1.2) (See Section I.3.h).
f. Frequency: MVU controls system frequency, and the Generating Facility shall operate in synchronism with the MVU's Distribution System. Whenever MVU's Distribution System frequency at the Point of Common Coupling is outside of the acceptable operating range (59.3-60.5 Hertz) for more than ten cycles, the Generating Facility's Protective Functions shall cease to energize MVU's Distribution System.
g. Harmonics. Harmonic distortion shall be in compliance with IEEE 519.
h. Direct Current Injection. Generating Facilities should not inject direct current greater than $0.5 \%$ of rated output current into MVU's Distribution System.
i. Power Factor. Each Generator in a Generating Facility shall be capable of operating at some point within a power factor range from 0.9 leading to 0.9 lagging. Operation outside this range is acceptable provided the reactive power of the Generating Facility is used to meet the reactive power needs of the Host Loads or that reactive power is otherwise provided under Rate Schedule by MVU. The Producer shall notify MVU if it is using the Generating Facility for power factor correction. Unless otherwise agreed upon by the Producer and MVU, Generating Facilities shall automatically regulate power factor, not voltage, while operating in parallel with MVU's Distribution System.
j. Unintended Islanding. Generating Facilities must mitigate their potential contribution to an Unintended Island. This can be accomplished by one of the following options: (1) incorporating certified Non-Islanding control functions into the Protective Functions, or (2) installation of non-export
relays and protective equipment or (3) verifying that local loads always sufficiently exceed the Net Nameplate Rating of the Generating Facility.
k. Fault Detection. A Generating Facility shall be equipped with Protective Functions designed to detect Distribution System faults, both line-to-line and line-to-ground, and promptly cease to energize the Distribution System in the event of a fault. For a Generating Facility that cannot detect these faults within two seconds, a transfer trip or equivalent function may be required. Reclose-blocking of MVU's affected recloser(s) may also be required.


## 3. Technology Specific Requirements:

a. Three-Phase Synchronous Generators. For three-phase Generators, the Generating Facility circuit breakers shall be three-phase devices with electronic or electromechanical control. The Producer shall be responsible for properly synchronizing its Generating Facility with MVU's Distribution System by means of either manual or automatic synchronizing equipment. Automatic synchronizing is required for all synchronous Generators that have a Short Circuit Contribution Ratio (SCCR) exceeding 0.05. Loss of synchronism protection is not required except as may be necessary to meet Section D.2.d (Flicker) (IEEE1547-4.2.5). Unless otherwise agreed upon by the Producer and MVU, synchronous Generators shall automatically regulate power factor, not voltage, while operating in parallel with MVU's Distribution System. A power system stabilization function is specifically not required for Generating Facilities under 10 MW Net Nameplate Rating.
b. Induction Generators. Induction Generators (except self-excited Induction Generators) do not require a synchronizing Function. Starting or rapid load fluctuations on induction generators can adversely impact MVU's Distribution System's voltage. Corrective step-switched capacitors or other techniques may be necessary and may cause undesirable ferro-resonance. When these counter measures (e.g., additional capacitors) are installed on the Producer's side of the Point of Common Coupling, MVU must review these measures. Additional equipment may be required as determined in a Supplemental Review or an Interconnection Study.
c. Inverters. Utility-interactive inverters do not require separate synchronizing equipment. Non-utility-interactive or "stand-alone" inverters shall not be used for Parallel Operation with MVU's Distribution System.
d. Single-Phase Generators. For single-phase Generators connected to a shared single-phase secondary system, the maximum Net Nameplate Rating of the Generating Facilities shall be 20 kVA . Generators connected to a center-tapped neutral 240 -volt service must be installed such that no more than 6 kVA of imbalanced power is applied to the two "legs" of the 240 -volt service. For Dedicated Distribution Transformer services, the maximum Net Nameplate

Rating of a single-phase Generating Facility shall be the transformer nameplate rating.

## E. INTERCONNECTION FACILITIES AND DISTRIBUTION SYSTEM MODIFICATIONS

## 1. Scope and Ownership of Interconnection Facilities and Distribution System Modifications

a. Scope. Parallel Operation of Generating Facilities may require Interconnection Facilities or modifications to MVU's Distribution System ("Distribution System modifications"). The type, extent and costs of Interconnection Facilities and Distribution System modifications shall be consistent with this Rule and determined through the Supplemental Review and/or Interconnection Studies described in the application process.
b. Ownership. Interconnection Facilities installed on Producer's side of the Point of Common Coupling may be owned, operated and maintained by the Producer or MVU. Interconnection Facilities installed on MVU's side of the Point of Common Coupling and Distribution System modifications shall be owned, operated and maintained only by MVU.

## 2. Responsibility of Costs of Interconnecting a Generating Facility

a. Review, Study, and Additional Commissioning Test Verification (preparallel inspections) Costs. A producer shall be responsible for the reasonably incurred costs of the review's studies, and additional Commissioning Test verifications (pre-parallel inspections) conducted pursuant to the application section of this Rule. If the initial Commissioning Test verification (pre-parallel inspection) is not successful through no fault of MVU, MVU may impose upon the Producer a cost-based charge for subsequent Commissioning Test verifications (pre-parallel inspections). All Costs for additional Commissioning Test verifications (pre-parallel inspections) shall be paid by Producer within thirty days of receipt of MVU's invoice. Additional costs, if any, will be specified on the invoice. If the initial Commissioning test (pre-paralleling inspection) is not successful through the fault of the MVU, that visit will not be considered the initial Commissioning Test (pre-parallel inspection).
b. Facility Costs. A Producer shall be responsible for all costs associated with Interconnection Facilities owned by the Producer. The Producer shall also be responsible for any costs reasonably incurred by MVU in providing, operating, or maintaining the Interconnection Facilities and Distribution System modifications required solely for the Interconnection of the Producer's Generating Facility with MVU's Distribution System.
c. Separation of Costs. Should MVU combine the installation of Interconnection Facilities or Distribution System modifications required for the Interconnection of a Generating Facility with modifications to MVU's Distribution System to serve other Customers or Producers, MVU shall not include the costs of such separate or incremental facilities in the amounts billed to the Producer.

## 3. Installation of Interconnection Facilities and Distribution System Modifications

a. Agreement Required. The costs for Interconnection Facilities and Distribution System modifications shall be paid by the Producer pursuant to the provisions contained in the Interconnection Agreement. Where the type and extent of the Interconnection Facilities and Distribution System Improvements warrant additional detail, the detail shall be found in a separate agreement between the Producer and MVU, and MVU's applicable rate schedules and rules for Added Facilities.
b. Interconnection Facilities and Distribution System Modifications. Except as provided for in Section E.3.c. of this Rule, Interconnection Facilities connected to MVU's side of the Point of Common Coupling and Distribution System modifications shall be provided, installed, owned and maintained by MVU at Producer's expense.
c. Third-Party Installations. Subject to the approval of MVU, a Producer may at its option employ a qualified contractor to provide and install Interconnection Facilities or Producer paid Distribution System modifications, to be owned and operated by MVU, on MVU's side of the Point of Common Coupling. Such Interconnection Facilities and Distribution System modifications shall be installed in accordance with MVU's design and specifications. Upon final inspection and acceptance by MVU, the Producer shall transfer ownership of such Producer installed Interconnection Facilities or Distribution System modifications to MVU and such facilities shall thereafter be owned and maintained by MVU. The Producer shall pay MVU's reasonable cost of design, administration, and monitoring of the installation for such facilities to ensure compliance with MVU's requirements. The Producer shall also be responsible for all costs associated with the transfer of Producer installed Interconnection Facilities and Distribution System modifications to MVU.

## F. METERING, MONITORING AND TELEMETRY

1. General Requirements: All Generating Facilities shall be metered in accordance with this Section F and shall meet all applicable standards of MVU contained in MVU's applicable rules and published MVU manuals dealing with specifications.
2. Metering By Non-MVU Parties: The ownership, installation, operation, reading and testing of revenue Metering Equipment for Generating Facilities shall be by MVU.
3. Net Generation Output Metering (NGOM): Generating Facilities' Customers may be required to install NGOM for evaluation, monitoring and verification purposes, to satisfy applicable CAISO reliability requirements, and for Distribution System planning and operations.

The relevant factors in determining the need for NGOM are as listed below:
a. Data requirements in proportion to need for information;
b. Producer's election to install equipment that adequately addresses MVU's operational requirements;
c. Accuracy and type of required Metering consistent with purposes of collecting data;
d. Cost of Metering relative to the need for and accuracy of the data;
e. The Generating Facility's size relative to the cost of the Meter/monitoring;
f. Other means of obtaining the data (e.g., Generating Facility logs, proxy data etc.);
g. Requirements under any interconnection Agreement with the Producer.

The requirements in this Section may not apply to Metering of Generating Facilities operating under MVU's Net Energy Metering Rate Schedule pursuant to the California Public Utilities Cod Section 2827, et seq. Nothing in this Section F. 3 supersedes Section B.4.
4. Point of Common Coupling Metering: For purposes of assessing MVU charges for retail service, the Producer's PCC Metering shall be a bi-directional meter so that power deliveries to and from the Producer's site can be separately recorded. Alternately, the Producer may, at its sole option and cost, require MVU to install multi-metering equipment to separately record power deliveries to MVU's Distribution System and retail purchases from MVU. Where necessary, such PCC Metering shall be designed to prevent reverse registration.
5. Telemetering: If the nameplate rating of the Generating Facility is 1 MW or greater, Telemetering equipment at the Net Generator Output Metering location may be required at the Producer's expense. If the Generating Facility is Interconnected to a portion of MVU's Distribution System operating at a voltage below 10 kV , then Telemetering equipment may be required on Generating Facilities 250 kW or greater. MVU shall only require Telemetering to the extent
that less intrusive and/or more cost effective options for providing the necessary data in real time are not available.
6. Location: Where MVU-owned Metering is located on the Producer's premises, Producer shall provide, at no expense to MVU, a suitable location for all such Metering Equipment.
7. Costs of Metering: The Producer will bear all costs of the Metering required by this Rule, including the incremental costs of operating and maintaining the Metering Equipment.

## G. DISPUTE RESOLUTION PROCESS

The following procedures will apply for disputes arising from this Rule:

1. The City Council shall have jurisdiction to interpret, add, delete or modify any provision of this Rule or of any agreements entered into between MVU and the Producer to implement this Rate Schedule ("The Implementing Agreements") and to resolve disputes regarding MVU's performance of its obligations under its rules, the applicable agreements, and requirements related to the Interconnection of the Producer's Generating or Interconnection Facilities pursuant to this Rule.
2. The dispute shall be submitted in writing by the Producer to MVU. Authorized representatives from both Parties shall meet and confer to try to resolve the dispute. If the Parties cannot resolve the dispute, the dispute will be submitted to the City Council for resolution. Their decision shall be final.
3. Pending resolution of any dispute under this Section, the Parties shall proceed diligently with the performance of their respective obligations under this Rule and the Implementing Agreements, unless the Implementing Agreements have been terminated. Disputes as to the application and implementation of this Section shall be subject to resolution pursuant to the procedures set forth in this Section.

## H. SYSTEM SIZING REQUIREMENTS

## 1. Residential Systems

## a. $\mathbf{1 2}$ Months of Usage Data Exists

Residential Systems must be designed such that they do not produce more power than they consume on an annual basis. This means that the estimated output of the generating facility, using the CEC-AC nameplate rating for inverter-based generating facilities, must not exceed the Customer's previous annual usage in kWh .
b. $\mathbf{1 2}$ Months of Usage Data Does Not Exist

In the event that there is less than 12 months of previous recorded usage data, the following equation will be used to determine the maximum allowable CECAC nameplate rating for the inverter-based generating facility in watts:
$1692 \times$ [Number of Dwelling Units] + $0.75 \times$ [Dwelling conditioned floor area in square feet]
c. Electric Vehicle Usage Calculation Proration

If the Customer enrolls in the Electric Vehicle Off-Peak Charging Discount Program, they can prorate their calculated usage or maximum allowable system size as follows:
i. The number of months that will be used to estimate the prorated usage from the electric vehicle shall be calculated as:
Number of Months $=12-$ [number of months the vehicle has been registered to the Customer at the address]
If the Number of Months is calculated to be negative, no proration will be allowed.
ii. If the Customer has 12 months of recorded usage data, the following equation will be used to determine their annual usage in kWh :
iii. [Customer's previous annual usage in kWh ] $+500 \mathrm{kWh} x$ Number of Months
iv. If the Customer has less than 12 months of recorded usage data, the following equation will be used to determine the maximum allowable CEC-AC nameplate rating for the inverter-based generating facility in watts:
$1692 \times$ [Number of Dwelling Units] $+0.75 \times$ [Dwelling conditioned floor area in square feet] +170 x Number of Months

## 2. Commercial or Industrial Systems

## a. Expedited Interconnection

The estimated output of the Generating Facility must not exceed $50 \%$ of the Customer's verified annual minimum daytime load. If there is less than 12 months of previous recorded usage data, the maximum allowable size in watts will be determined by MVU through Supplemental Review.

## b. Supplemental Review Required

Supplemental review will be required if the Customer intends to install a generating facility that exceeds $50 \%$ of the Customer's verified annual minimum daytime load. Supplemental review will fall into two categories:

1. Generating facilities sized up to $100 \%$ of minimum daytime load with the installation of non-export relays which are deeded to MVU at the completion of installation.
2. Generating facilities sized up to $100 \%$ of annual usage with the purchase and deeding of utility scale batteries to MVU. The batteries will be sized to account for at least $50 \%$ of the instantaneous load of the generating facility. This size will be rounded up to the nearest 250 kW size.

If there is less than 12 months of previous recorded usage data, the maximum allowable size in watts of the generation system and amount of required storage will be determined by MVU during the Supplemental Review process.

## I. APPLICATION AND INTERCONNECTION PROCESS

## 1. Application Process

a. Applicant Initiates Contact with MVU. Upon request, MVU will provide information and documents (such as requirements, Application, technical information, listing of Certified Equipment, Initial and Supplemental Review deposit information, applicable tariff schedules, Metering requirements and Rules) to a potential Applicant. Unless otherwise agreed upon, all such information shall normally be sent to an Applicant within three (3) business days following the initial request from the Applicant. MVU will establish an individual representative as the single point of contact for the Applicant but may allocate responsibilities among its staff to best coordinate the Interconnection of an Applicant's Generating Facility.
b. Applicant Completes an Application: All Applicants shall complete and file an Application and supply any relevant additional information requested by MVU. Application Fees will be determined in accordance with the fee schedule.
i. Normally, within 10 business days of receiving the Application, MVU shall acknowledge its receipt and state whether the Application has been completed adequately. If defects are noted, MVU and Applicant shall cooperate in a timely manner to establish a satisfactory Application.
ii. Fifty Percent of the deposit associated with the Initial Review will be returned to the Applicant if the Application is rejected by MVU exactly as submitted or the Applicant retracts the Application.
iii. The Applicant may propose and MVU may negotiate specific costs for processing non-standard applications such as multi-units, multi-sites, or otherwise as conditions warrant. The fees for the Initial Review and Supplemental Review contained in the fee schedule do not apply in these situations.
iv. Applications that are over one year old (from the date of MVU's acknowledgement) without a completed application, or a Generating Facility that has not been approved for parallel operation within one year of completion of all applicable review and/or studies are subject to cancellation by MVU; however, MVU may not cancel an Application if the Producer provides reasonable evidence that the project is still active.

## c. MVU Performs Expedited or Supplemental Review

i. Upon receipt of a satisfactorily completed Application and any additional information necessary to evaluate the Interconnection of a Generating Facility, MVU shall perform an Initial Review using the process defined in Section I. The Initial Review determines if: (a) the Generating Facility qualifies for Simplified Interconnection; or (b) the Generating Facility requires a Supplemental Review.
ii. MVU shall complete its Initial Review, absent any extraordinary circumstances, within 10 business days after its determination that the Application is complete. If the Initial Review determines the proposed Generating Facility can be Interconnected by means of a Simplified Interconnection, MVU will provide the Applicant with an Interconnection Authorization.
iii. If the Generating Facility does not pass the Initial Review for Simplified Interconnection as proposed, MVU will notify the applicant and perform a Supplemental Review as described in Section I. Applicant shall pay an additional fee for the Supplemental Review, unless the Application is withdrawn. The Supplemental Review will result in MVU providing either: (a) Interconnection requirements beyond those for a Simplified Interconnection, and an Interconnection Authorization; or (b) a cost estimate and schedule for an Interconnection Study. The Supplemental Review shall be completed, absent any extraordinary circumstances, within 20 business days of receipt of a completed Application and fees.

## 2. Interconnection Process

a. Applicant shall comply with the Interconnection Requirements as stated in this Rule. MVU shall review with the Applicant all requirements for Interconnection and Net Energy Metering appropriate for the Applicant's Generating Facility and desired mode of operation. These requirements are detailed in Electric Rule 21A, Interconnection Rules, Terms \& Conditions. Electric Rule 21A sets forth MVU's and the Applicant's responsibilities, completion schedules, and fixed price or estimated costs for the required work.
b. Where Applicable (for commercial systems greater than 1MW), MVU or Producer Installs Required Interconnection Facilities or Modifies MVU's Distribution System. After executing the applicable agreements, MVU or Producer will commence construction/ installation of MVU's Distribution System modifications or Interconnection Facilities which have been identified in the agreement and application. The parties will use good faith efforts to meet schedules and estimated costs as appropriate.
c. Producer Arranges for and Completes Commissioning Testing of Generating Facility and Producer's Interconnection Facilities. The Producer is responsible for testing new Generating Facilities and associated Interconnection Facilities according to Section J. 5 to ensure compliance with the safety and reliability provisions of this Rule prior to being operated in parallel with MVU's Distribution System. For non-Certified Equipment, the Producer shall develop a written testing plan to be submitted to MVU for its review and acceptance. Alternatively, the Producer and MVU may agree to have MVU conduct the required testing at the Producer's expense. Where applicable, the test plan shall include the installation test procedures published by the manufacturer of the generation or Interconnection equipment. Facility testing shall be conducted at a mutually agreeable time, and depending on who conducts the test, MVU or Producer shall be given the opportunity to witness the tests.
d. MVU Authorizes Parallel Operation or Momentary Parallel Operation. MVU shall authorize the Producer's Generating Facility for Parallel Operation or Momentary Parallel Operation with MVU's Distribution System, in writing, within 5 calendar days of satisfactory compliance with the terms of all applicable Rules. Compliance may include, but not be limited to, provision of any required documentation and satisfactorily completing any required inspections or tests as described herein or in the agreements formed between the Producer and MVU. A Producer shall not commence Parallel Operation of its Generating Facility with MVU's system unless it has received MVU's express written permission to do so.
e. For Net Energy Metering Generating facilities, MVU authorization for Parallel Operation shall normally be provided no later than 30 business days following MVU's receipt of 1) a completed Net Energy Metering Application including all supporting documents and required payments; 2) a completed signed Net Energy Metering Interconnection Agreement; and 3) evidence of the Producer's final inspection clearance from the governmental authority having jurisdiction over the Generating Facility. If the 30-day period cannot be met, the MVU shall notify the Applicant and the Commission.

## J. REVIEW PROCESS FOR APPLICATIONS TO INTERCONNECT GENERATION FACILITIES

1. Introduction

This Review Process allows for rapid approval for the interconnection of those Generating Facilities that do not require an Interconnection Study. The review process includes a screening to determine if a Supplemental Review is required.

Note: Failure to pass any step of the review process means only that further review and/or studies are required before the Generating Facility can be approved for Interconnection with MVU's Distribution System. It does not mean that the Generating Facility cannot be Interconnected. Though not explicitly covered in the Initial Review Process the Generating Facility shall be designed to meet all of the applicable requirements in Section D.

## 2. Purpose

The review determines the following:
a. If a Generating Facility qualifies for Simplified Interconnection;
b. If a Generating Facility can be made to qualify for Interconnection with a Supplemental Review determining any additional requirements; or
c. If an Interconnection Study is required, the cost estimate and schedule for performing the Interconnection Study.

## 3. Review Process:

a. If the Application has sufficient data and the design meets the size restrictions for Residential Service, or Expedited Interconnection for Commercial or Industrial Service per Section H. The application qualifies for Simplified Interconnection.
b. If the Application is requesting service under any of the additional authorized uses, MVU will perform Supplemental Review to provide feedback to the Applicant for next steps to follow in the Interconnection Process.

## K. CERTIFICATION AND TESTING CRITERIA

## 1. INTRODUCTION

This Section describes the test procedures and requirements for equipment used for the Interconnection of Generating Facilities to MVU's Distribution System. Included are Type Testing, Production Testing, Commissioning Testing and Periodic Testing. The procedures listed rely heavily on those described in appropriate Underwriters Laboratory (UL), Institute of Electrical and Electronic Engineers (IEEE), and International Electrotechnical Commission (IEC) documents-most notably UL 1741 and IEEE 929, as well as the testing described in May 1999 New York State Public Services Commission Standardized

Interconnection Requirements. As noted in Section A, this rule has been revised to be consistent with ANSI/IEEE 1547-2003 Standard for Interconnecting Distributed Resources with Electric Power Systems.

The tests described here, together with the technical requirements in Section D of this Rule, are intended to provide assurance that the Generating Facility's equipment will not adversely affect MVU's Distribution System and that a Generating Facility will cease providing power to MVU's Distribution System under abnormal conditions. The tests were developed assuming a low level of Generating Facility penetration or number of connections to MVU's Distribution System. At high levels of Generating Facility penetration, additional requirements and corresponding test procedures may need to be defined.

Section J also provides criteria for "Certifying" Generators or inverters. Once a Generator or inverter has been Certified per this Rule, it may be considered suitable for Interconnection with MVU's Distribution System. Subject to the exceptions described in Section J, MVU will not repeat the design review or require retesting of such Certified Equipment. It should be noted that the Certification process is intended to facilitate Generating Facility Interconnections. Certification is not a prerequisite to interconnect a Generating Facility.

The revisions made to this rule relative to IEEE 1547-2003 have resulted in changes in set points, test criteria, test procedures, and other requirements that will impact previously certified or listed equipment as well as equipment currently under evaluation. These changes were made to provide consistency with IEEE 1547. Equipment that is certified or that has been submitted to a Nationally Recognized Testing Laboratory (NRTL) for testing prior to the adoption of the revised Underwriters Laboratories (UL) 1741 titled Inverters, Converters, Controllers and Interconnection Systems Equipment for use with Distributed Energy Resources and that subsequently meet the provisions Rule 21 certification requirements will continue to be accepted as Certified Equipment for Interconnection Applications submitted through May 7, 2007, the effective date of the revised UL 1741. [this change will be incorporated by Advice Letter in Dec. 2005]

## 2. CERTIFIED AND NON-CERTIFIED INTERCONNECTION EQUIPMENT

a. Certified Equipment

Equipment tested and approved (e.g., "Listed") by an accredited NRTL as having met both the Type Testing and Production Testing requirements described in this document is considered to be Certified Equipment for purposes of Interconnection with MVU's Distribution System. Certification may apply to either a pre-packaged system or an assembly of components that address the necessary functions. Type Testing may be done in the manufactures' factory or test laboratory, or in the field. At the discretion of the testing laboratory, field-certification may apply only to the particular
installation tested. In such cases, some or all of the tests may need to be repeated at other installations.

When equipment is certified by a NRTL, the NRTL shall provide to the manufacturer, at a minimum, a Certificate with the following information for each device:

Administrative:

1) The effective date of Certification or applicable serial number (range or first in series), and/or other proof that Certification is current;
2) Equipment model number(s) of the Certified Equipment;
3) The software version utilized in the equipment, if applicable;
4) Test procedures specified (including date or revision number); and
5) Laboratory accreditation (by whom and to what standard).

Technical (as appropriate):

1) Device ratings (kW, kVA, Volts, Amps, etc.);
2) Maximum available fault current in Amps;
3) In-rush Current in Amps;
4) Trip points, if factory set (trip value and timing);
5) Trip point and timing ranges for adjustable settings;
6) Nominal power factor or range if adjustable;
7) If the equipment is Certified for Non-Exporting and the method used (reverse power or under power); and
8) If the equipment is Certified Non-Islanding.

It is the responsibility of the equipment manufacturer to ensure that Certification information is made publicly available by the manufacturer, the testing laboratory or by a third party.
b. Non-Certified Equipment

For non-Certified Equipment, some or all of the tests described in this Rule may be required by MVU for each Generating Facility and/or Interconnection Facilities. The manufacturer or a laboratory acceptable to

MVU may perform these tests. Test results for Non-Certified Equipment must be submitted to MVU for the Supplemental Review. Approval by MVU for equipment used in a particular Generating Facility and/or Interconnection Facilities does not guarantee MVU's approval for use in other Generating Facility and/or Interconnection Facilities.

## 3. TYPE TESTING

a. Type Tests and Criteria for Interconnection Equipment Certification. Type Testing provides a basis for determining that equipment meets the specifications for being designated as Certified Equipment under this Rule. The requirements described in this Section cover only issues related to Interconnection and are not intended to address equipment safety or other issues.

Table J.1. defines the test criteria by Generator or inverter technology. While UL 17411 was written specifically for inverters, the requirements are readily adaptable to synchronous Generators, induction Generators, as well as single/multi-function controllers and protection relays. Until a universal test standard is developed, MVU or NRTL shall adapt the procedures referenced in Table J. 1 as appropriate and necessary for a Generating Facility and/or Interconnection Facilities or associated equipment performance and its control and Protective Functions. The tests shall be performed in the sequence shown in Table J. 2 below.

Table J. 1 Type Tests and Requirements for Interconnection Equipment Certification

| Type Test | Reference (1) | Inverter | Synchronous Generator | Induction Generator |
| :---: | :---: | :---: | :---: | :---: |
| Utility Interaction | UL 1741-39 | $X$ | X | $X$ |
| DC Isolation | UL 1741-40.1 | X | - | - |
| Simulated PV Array (Input) | UL 1741-41.2 | X | - | - |
| Requirements |  |  |  |  |
| Dielectric Voltage Withstand | UL 1741-44 | X | X | X |
| Power Factor | $\begin{aligned} & \text { UL } 1741 \text { - } \\ & 45.2 .2 \end{aligned}$ | X | X | X |
| Harmonic Distortion | UL 1741-45.4 | $X$ | X | X |
| DC Injection | UL 1741-45.5 | X | - | - |
| Utility Voltage and Frequency Variation | UL 1741-46.2 | X | X | X |
| Reset Delay | $\begin{aligned} & \text { UL } 1741 \text { - } \\ & 46.2 .3 \end{aligned}$ | $X$ | X | $X$ |
| Loss of Control Circuit | UL 1741-46.4 | X | X | X |
| Short Circuit | UL 1741-47.3 | X | X | X |
| Load Transfer | UL 1741-47.7 | $X$ | X | $X$ |
| Surge Withstand Capability | J.3.e | X | X | X |
| Anti-Islanding | J.3.b | (2) | (2) | (2) |
| Non-Export | J.3.C | (3) | (3) | (3) |
| In-rush Current | J.3.d | - | - | (4) |
| Synchronization | J.3.f | (5) | X | (5) |

Table Notes: (1) References are to section numbers in either UL 1741 (Inverters, Converters and Charge Controllers for use in Independent Power Systems) or this Rule. References in UL 1741 to "photovoltaics" or "inverter" may have to be adapted to the other technologies by the testing laboratory to appropriately apply in the tests to other technologies.
(2) Required only if Non-Islanding designation
(3) Required only if Non-Export designation is desired.
(4) Required for Generators that use MVU power to motor to speed.
(5) Required for all self-excited induction Generators as well as Inverters that operate as voltage sources when connected to MVU's Distribution System.
X $=$ Required , - = Not Required

Table J. 2 Type Tests Sequence for Interconnection Equipment Certification

| Test No. | Type Test |
| :---: | :--- |
| 1 | Utility Voltage and Frequency Variation |
| 2 | Synchronization |
| 3 | Surge Withstand Capability |
| 4 | Utility Voltage and Frequency Variation |
| 5 | Synchronization |
| 6 | Other Required and Optional Tests |
| Tests 1, 2, and 3, must be done first and in the order shown. Tests 4 <br> and on follow in order convenient to the test agency. |  |

b. Anti-Islanding Test

Devices that pass the Anti-Islanding test procedure described in UL 1741 Section 46.3 will be considered Non-Islanding for the purposes of these
interconnection requirements. The test is required only for devices for which a Certified Non-Islanding designation is desired.
c. Non-Export Test

Equipment that passes the Non-Export test procedure described in Section J.7.a. will be considered Non-Exporting for the purposes of these Interconnection requirements. This test is required only for equipment for which a Certified Non-Export designation is desired.
d. In-rush Current Test

Generation equipment that utilizes MVU power to motor up to speed will be tested using the procedure defined in Section J.7.b. to determine the maximum current drawn during this startup process. The resulting In-rush Current is used to estimate the Starting Voltage Drop.
e. Surge Withstand Capability Test

The interconnection equipment shall be tested for the surge withstand requirement in D.1.c in all normal operating modes in accordance with IEEE Std C62.45-2002 for equipment rated less than 1000 V to confirm that the surge withstand capability is met by using the selected test level(s) from IEEE Std C62.41.2-2002. Interconnection equipment rated greater than 1000 V shall be tested in accordance with manufacturer or system integrator designated applicable standards. For interconnection equipment signal and control circuits, use IEEE Std C37.90.1-2002. These tests shall confirm the equipment did not fail, did not misoperate, and did not provide misinformation (IEEE15475.1.3.2). The location/exposure category for which the equipment has been tested shall be clearly marked on the equipment label or in the equipment documentation. External surge protection may be used to protect the equipment in harsher location/exposure categories.

## f. Synchronization Test

This test is applied to synchronous Generators, self-excited induction generators, and inverters capable of operating as voltage-source while connected to MVU's Distribution System. The test is also applied to the resynchronization Function (transition from stand-alone to parallel operation) on equipment that provides such functionality. This test may not need to be performed on both the synchronization and re-synchronization functions if the manufacturers can verify to the satisfaction of the testing organization that monitoring and controls hardware and software are common to both functions. This test is not necessary for induction generators or current-source inverters. Instead, the ln-rush Current test Section J.3.d shall be applied to those generators.

This test shall demonstrate that at the moment of the paralleling-device closure, all three synchronization parameters in Table J. 3 are within the stated limits.

This test shall also demonstrate that if any of the parameters are outside of the limits stated in the table, the paralleling-device shall not close (IEEE 15475.1.2A). The test will start with only one of the three parameters: (1) voltage difference between Generating Facility and MVU's Distribution System; (2) frequency difference; or (3) phase angle outside of the synchronization specification. Verify that the Generating Facility is brought within specification prior to synchronization. Repeat the test five times for each of the three parameters. For manual synchronization with synch check or manual control with auto synchronization, the test must verify that paralleling does not occur until the parameters are brought within specifications.

Table J.3. Synchronization Parameter Limits [1]

| Aggregate Rating <br> of Generator Units <br> $(\mathrm{kVA})$ | Frequency <br> Difference <br> $(\Delta \mathrm{f}, \mathrm{Hz})$ | Voltage <br> Difference <br> $(\Delta \mathrm{V}, \%)$ | Phase Angle <br> Difference <br> $(\Delta \phi, \square)$ |
| :---: | :---: | :---: | :---: |
| $0-500$ | 0.3 | 10 | 20 |
| $>500-1,500$ |  |  |  |
| $>1,500-10,000$ | 0.2 | 5 | 15 |

[1] - IEEE 1547-5.1.1B
g. Paralleling Device Withstand Test

The di-electric voltage withstand test specified in Section J. 1 shall be performed on the paralleling device to ensure compliance with those requirements specified in Section D.1.c (IEEE 1547-5.1.3.3).
4. Production Testing

As a minimum, each interconnection system shall be subjected to the Utility Voltage and Frequency Variation Test procedure described in UL1741 under Manufacturing and Production Tests, Section 68 and the Synchronization test specified in Section J.3.f Interconnection systems with adjustable set points shall be tested at a single set of set points as specified by the manufacturer. This test may be performed in the factory or as part of a Commissioning Test (Section J.5.).
5. Commissioning Testing
a. Commissioning Testing, where required, will be performed on-site to verify protective settings and functionality. Upon initial Parallel Operation of a Generating Facility, or any time interface hardware or software is changed that may affect the functions listed below, a Commissioning Test must be performed. An individual qualified in testing protective equipment (professional engineer, factory-certified technician, or licensed electrician with experience in testing protective equipment) must perform Commissioning Testing in accordance with the manufacturer's
recommended test procedure to verify the settings and requirements per this Rule.

MVU may require written Commissioning test procedure be submitted to MVE at least 10 working days prior to the performance of the Commissioning Test. MVU has the right to witness Commissioning Test, MVU may also require written certification by the installer describing which tests were performed and their results. Protective Functions to be tested during commissioning, particularly with respect to non-Certified equipment, may consist of the following:
(1) Over and under voltage
(2) Over and under frequency
(3) Anti-Islanding function (if applicable)
(4) Non-Exporting function (if applicable)
(5) Inability to energize dead line
(6) Time delay on restart after utility source is stable
(7) Utility system fault detection (if used)
(8) Synchronizing controls (if applicable)
(9) Other Interconnection Protective Functions that may be required as part of the Interconnection Agreement

Commissioning Test shall include visual inspections of the interconnection equipment and protective settings to confirm compliance with the interconnection requirements.
b. Other checks and tests that may need to be performed include:
(1) Verifying final Protective Function settings
(2) Trip test (J.5.f)
(3) In-service tests (J.5.g)
c. Certified Equipment

Generating Facilities qualifying for Simplified Interconnection incorporate Certified Equipment that have, at a minimum, passed the Type Tests and Production Tests described in this Rule and are judged to have little or no potential impact on MVU's Distribution System. For such Generating Facilities, it is necessary to perform only the following tests:
(1) Protective Function settings that have been changed after Production Testing will require field verification. Tests shall be performed using injected secondary frequencies, voltages and currents, applied waveforms, at a test connection using a Generator to simulate abnormal utility voltage or frequency, or varying the set points to show that the device trips at the measured (actual) utility voltage or frequency.
(2) The Non-Islanding function shall be checked by operating a load break disconnect switch to verify the Interconnection equipment ceases to energize MVU's Distribution System and does not reenergize it for the required time delay after the switch is closed. The Non-Exporting function shall be checked using secondary injection techniques. This function may also be tested by adjusting the Generating Facility output and local loads to verify that the applicable Non-Exporting criteria (i.e., reverse power or underpower) are met.
The Supplemental Review or an Interconnection Study may impose additional components or additional testing.

## d. Non-Certified Equipment

Non-certified Equipment shall be subjected to the appropriate tests described in Type Testing (Section J.3.) as well as those described in Certified Equipment Commissioning Tests (Section J.5.c.). With MVU's approval, these tests may be performed in the factory, in the field as part of commissioning, or a combination of both. MVU, at its discretion, may also approve a reduced set of tests for a particular Generating Facility or, for example, if it determines it has sufficient experience with the equipment.
e. Verification of Settings

At the completion of Commission testing, the Producer shall confirm all devices are set to MVU-approved settings. Verification shall be documented in the Commissioning Test Certification.
f. Trip Tests

Interconnection Protective Functions and devices (e.g. reverse power relays) that have not previously been tested as part of the Interconnection Facilities with their associated interrupting devices (e.g. contactor or circuit breaker) shall be trip tested during commissioning. The trip test shall be adequate to prove that the associated interrupting devices open when the protective devices operate. Interlocking circuits between Protective Function devices or between interrupting devices shall be similarly tested unless they are part of a system that has been tested and approved during manufacturing.
g. In-service Tests

Interconnection Protective Functions and devices that have not previously been tested as part of the Interconnection Facilities with their associated instrument transformers or that are wired in the field shall be given an in-service test during commissioning. This test will verify proper wiring, polarity, CT/PT ratios, and proper operation of the measuring circuits. The in-service test shall be made with the power system energized and carrying a known level of current. A measurement shall be made of the magnitude and phase angle of each

Alternating Current (AC) voltage and current connected to the protective device and the results compared to expected values. For protective devices with builtin Metering Functions that report current and voltage magnitudes and phase angles, or magnitudes of current, voltage, and real and reactive power, the metered values may be used for in-service testing. Otherwise, portable ammeters, voltmeters, and phase-angle meters shall be used.
6. Periodic Testing

Periodic Testing of Interconnection-related Protective Functions shall be performed as specified by the manufacturer, or at least every four years. All Periodic Tests prescribed by the manufacturer shall be performed. The Producer shall maintain Periodic Test reports or a $\log$ for inspection by MVU. Periodic Testing conforming to MVU test intervals for the particular Line Section may be specified by MVU under special circumstances, such as high fire hazard areas. Batteries used to activate any Protective Function shall be checked and logged once per month for proper voltage.

Once every four years, the battery must be either replaced or a discharge test performed.
7. Type Testing Procedures Not Defined in Other Standards

This Section describes the additional Type Tests necessary to qualify a device as Certified under this Rule. These Type Tests are not contained in Underwriters Laboratories UL 1741 Standard Inverters, Converters and Controllers for Use in Independent Power Systems, or other referenced standards.
a. Non-Exporting Test Procedures

The Non-Exporting test is intended to verify the operation of relays, controllers and inverters designed to limit the export of power and certify the equipment as meeting the requirements of Screen 2, Options 1 and 2, of the review process. Tests are provided for discrete relay packages and for controllers and inverters with the intended Functions integrated.
(1) Discrete Reverse Power Relay Test

This version of the Non-Exporting test procedure is intended for discrete reverse power and underpower relay packages provided to meet the requirements of Options 1 and 2 of Screen 2. It should be understood that in the reverse power application, the relay will provide a trip output with power flowing in the export (toward MVU's Distribution System) direction.

## Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the corresponding secondary pickup current for the desired export power flow of 0.5 secondary watts (the minimum pickup setting, assumes 5 amp and 120 V CT/PT secondary). Apply nominal voltage with minimum current setting at zero (0) degrees phase angle in the trip direction. Increase the current to pickup level. Observe the relay's (LCD or computer display) indication of power
values. Note the indicated power level at which the relay trips. The power indication should be within $2 \%$ of the expected power. For relays with adjustable settings, repeat this test at the midpoint, and maximum settings. Repeat at phase angles of 90, 180 and 270 degrees and verify that the relay does not operate (measured watts will be zero or negative).

## Step 2: Leading Power Factor Test

Apply rated voltage with a minimum pickup current setting (calculated value for system application) and apply a leading power factor load current in the non-trip direction (current lagging voltage by 135 degrees). Increase the current to relay rated current and verify that the relay does not operate. For relays with adjustable settings, this test should be repeated at the minimum, midpoint, and maximum settings.

## Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Increase the current level to pickup (about 10 times higher than at 0 degrees) and verify that the relay operates. Repeat for phase angles of 90,180 and 270 degrees and verify that the relay does not operate.

## Step 4: Negative Sequence Voltage Test

Using the pickup settings determined in Step 1, apply rated relay voltage and current at 180 degrees from tripping direction, to simulate normal load conditions (for three-phase relays, use Ia at $180, \mathrm{Ib}$ at 60 and Ic at 300 degrees). Remove phase- 1 voltage and observe that the relay does not operate. Repeat for phases-2 and 3.

## Step 5: Load Current Test

Using the pickup settings determined in Step 1, apply rated voltage and current at 180 degrees from the tripping direction, to simulate normal load conditions (use Ia at 180, Ib at 300 and Ic at 60 degrees). Observe that the relay does not operate.

## Step 6: Unbalanced Fault Test

Using the pickup settings determined in Step 1, apply rated voltage and 2 times rated current, to simulate an unbalanced fault in the nontrip direction (use Va at 0 degrees, Vb and Vc at 180 degrees, Ia at 180 degrees, Ib at 0 degrees, and Ic at 180 degrees). Observe that the relay, especially single phase, does operate properly.

Step 7: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings.

## Step 8: Dielectric Test

Perform the test described in IMVU 414 using 2 kV RMS for 1 minute.

## Step 9: Surge Withstand Test

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand capability test described in J.3.e.
(2) Discrete Underpower Relay Test

This version of the Non-Exporting test procedure is intended for discrete underpower relay packages and meets the requirements of Option 2 of Screen 2. A trip output will be provided when import power (toward the Producer's load) drops below the specified level.

Note: For an underpower relay, pickup is defined as the highest power level at which the relay indicates that the power is less than the set level.

## Step 1: Power Flow Test at Minimum, Midpoint and Maximum Pickup Level Settings

Determine the corresponding secondary pickup current for the desired power flow pickup level of $5 \%$ of peak load minimum pickup setting. Apply rated voltage and current at 0 (zero) degrees phase angle in the direction of normal load current. Decrease the current to pickup level. Observe the relay's (LCD or computer display) indication of power values. Note the indicated power level at which the relay trips. The power indication should be within $2 \%$ of the expected power. For relays with adjustable settings, repeat the test at the midpoint, and maximum settings. Repeat at phase angles of 90,180 and 270 degrees and verify that the relay operates (measured watts will be zero or negative).

## Step 2: Leading Power Factor Test

Using the pickup current setting determined in Step 1, apply rated voltage and rated leading power factor load current in the normal load direction (current leading voltage by 45 degrees). Decrease the current to $145 \%$ of the pickup level determined in Step 1 and verify that the relay does not operate. For relays with adjustable settings, repeat the test at the minimum, midpoint, and maximum settings.

Step 3: Minimum Power Factor Test

At nominal voltage and with the minimum pickup (or ranges) determined in Step 1, adjust the current phase angle to 84 or 276 degrees. Decrease the current level to pickup (about $10 \%$ of the value at 0 degrees) and verify that the relay operates. Repeat for phase angles 90,180 and 270 degrees and verify that the relay operates for any current less than rated current.

Step 4: Negative Sequence Voltage Test
Using the pickup settings determined in Step 1, apply rated relay voltage and $25 \%$ of rated current in the normal load direction, to simulate light load conditions. Remove phase 1 voltage and observe that the relay does not operate. Repeat for Phases-2 and 3.

Step 5: Unbalanced Fault Test
Using the pickup settings determined in Step 1, apply rated voltage and two times rated current, to simulate an unbalanced fault in the normal load direction (use Va at 0 degrees, Vb and Vc at 180 degrees, Ia at 0 degrees, Ib at 180 degrees, and Ic at 0 degrees). Observe that the relay (especially single-phase types) operates properly.

## Step 6: Time Delay Settings Test

Apply Step 1 settings and set time delay to minimum setting. Adjust the current source to the appropriate level to determine operating time, and compare against calculated values. Verify that the timer stops when the relay trips. Repeat at midpoint and maximum delay settings.

## Step 7: Dielectric Test

Perform the test described in IEC 414 using 2 kV RMS for 1 minute.

## Step 8: Surge Withstand Test

Perform the surge withstand test described in IEEE C37.90.1.1989 or the surge withstand test described in Section J.3.e.

Tests for Inverters and Controllers with Integrated Functions
Inverters and controllers designed to provide reverse or underpower functions shall be tested to certify the intended operation of this function. Two methods are acceptable:

Method 1: If the inverter or controller utilizes external current/voltage measurement to determine the reverse or underpower condition, then the inverter or controller shall be functionally tested by application of appropriate secondary currents and potentials as described in the Discrete Reverse Power Relay Test, Section J.7.a.(1) of this Rule.

Method 2: If external secondary current or voltage signals are not used, then unit-specific tests must be conducted to verify that power cannot be exported across the PCC for a period exceeding two seconds. These may be factory tests, if the measurement and control points are integral to the unit, or they may be performed in the field.
b. In-rush Current Test Procedures

This test will determine the maximum In-rush Current drawn by the Generator.
(1) Locked-Rotor Method

Use the test procedure defined in NEMA MG-1 (manufacturer's data is acceptable if available).
(2) Start-up Method

Install and setup the Generating Facility equipment as specified by the manufacturer. Using a calibrated oscilloscope or data acquisition equipment with appropriate speed and accuracy, measure the current draw at the Point of Interconnection as the Generating Facility starts up and parallels with MVU's Distribution System. Startup shall follow the normal, manufacturerspecified procedure. Sufficient time and current resolution and accuracy shall be used to capture the maximum current draw within $5 \%$. In-rush Current is defined as the maximum current draw from MVU during the startup process, using a 10 -cycle moving average. During the test, the utility source, real or simulated, must be capable of maintaining voltage within $+/-5 \%$ of rated at the connection to the unit under test. Repeat this test five times. Report the highest 10-cycle current as the In-rush Current. A graphical representation of the time-current characteristic along with the certified In-rush Current must be included in the test report and made available to MVU.

## CHART OF CHARGES AND FEES

| Item | Charge |
| :---: | :---: |
| Service Initiation Charge |  |
| Next Day, Normal Business Hours | \$15.00 |
| Identity Verification Fee | \$5.00 |
| Additional Charge for Same Day Turn On of Service | \$30.00 |
| Additional Charge for Weekends and After Hours Turn On of Service | \$50.00 |
| Deposits |  |
| Residential Service - Single Family | Twice Average Monthly Bill, minimum \$235 |
| Residential Service - Mulit-Family | Twice Average Monthly Bill, minimum \$105 |
| Non Residential Service | Twice Maximum Monthly Bill |
| Reestablishment of Credit | Twice Maximum Monthly Bill |
| Interest on Deposits | $1 / 12^{\text {th }}$ of the Interest Rate on Commercial Paper (Prime, 3 Months) |
| Interest on Unauthorized Use Billings | 10\% Per Annum |
| Interest on Amortized Repayment Agreements | 10\% Per Annum |
| Return Check Charge | \$31.00 |
| Field Notification Charge | \$10.00 |
| Collection Processing Fee | \$30.00 |
| Meter Test Deposit - (Refunded if Meter Registers within Parameters) |  |
| Meter Installed without Current or Potential Transformer | \$20.00 |
| Meter Installed with Current or Potential Transformer | \$100.00 |
| Late Charge | $0.9 \%$ per Month of Unpaid Balance |
| Utility Users Tax | 5.75\% |
| Reconnection Charge |  |
| Meter Panel - Next Day | \$20.00 |
| Meter Panel - Same Day During Working Hours | \$30.00 |
| Meter Panel - Weekends and After Hours | \$50.00 |
| Pole / Service Structure - Next Day | \$60.00 |
| Pole / Service Structure - Same Day During Working Hours | \$75.00 |
| Pole / Service Structure - Weekends and After Hours | \$90.00 |
| Transformer/Structure Due to Energy Theft | \$150.00 |
| Damaged Steel Lock-ring | \$15.00 |
| Damaged Aluminum Lock-ring | \$5.00 |
| Replaced Damaged Meter | $\begin{gathered} \text { Actual cost } \\ \text { (time and material) } \\ \$ 2,000 \end{gathered}$ |

Rule 21 Application Fee ..... $\$ 75.00$
Rule 21 Supplemental Review Fee ..... $\$ 800.00$

## PLAN CHECKING and INSPECTIONTESTING FEES

Upon submittal of improvement plan(s) for a project's electrical distribution system, line extension facilities and/or structures for plan review, the submittal shall be accompanied with a deposit of an amount equal to $3.25 \%$ of the engineer's estimated construction costs for improvements. Prior to second submittal of improvement plans, the City Engineer will approve a final cost for improvements and a plan review fee will be established. From this final fee, the deposit will be deducted. This fee shall be paid prior to the second submittal of the improvement plan(s).

## Improvement Plans

(Total cost of construction)
Off-Site \& On-Site 1-3 submittals

| First $\$ 20,000.00$ | $4.0 \%$ |
| :--- | :--- |
| Next $\$ 80,000.00$ | $3.5 \%$ |
| Over $\$ 100,000.00$ | $3.25 \%$ |
| $4^{\text {th }}$ and subsequent submittals per sheet | $\$ 248.00 /$ sheet <br> or as directed by <br> City Engineer |

## Revisions (Improvement Plans)

Minor per sheet
$\$ 261.00$
Major per sheet (minimum fee)
$\$ 269.00$

## Inspection and Testing

(Total cost of construction)
Off-Site \& On- Site

| First $\$ 20,000.00$ | $4.0 \%$ |
| :--- | :---: |
| Next $\$ 80,000.00$ | $3.5 \%$ |
| Over $\$ 100,000.00$ | $3.25 \%$ |

Moreno Valley Utility
Average Change by Customer Class
November 29, 2023

| Rate | Average Total of Revenue p | Average (\%) | Estimated Total (\$) |  |
| :---: | :---: | :---: | :---: | :---: |
| General Service | \$ 100,394.03 | 13.80\% | \$ | 13,854.38 |
| Large General Service | \$ 843,577.01 | 12.56\% | \$ | 105,953.27 |
| Large General Servlce/TOU | \$ 1,304,006.07 | 15.87\% | \$ | 206,945.76 |
| Pumping | \$ 21,542.89 | 15.53\% | \$ | 3,345.61 |
| Street Lighting | \$ 30,169.49 | 11.65\% | \$ | 3,514.75 |
| Traffic Control | \$ 3,792.74 | 10.41\% | \$ | 394.82 |
| Residential | \$ 990,631.22 | 12.89\% | \$ | 127,692.36 |
| Industrial | \$ 172,762.62 | 17.04\% | \$ | 29,438.75 |
| Total per Month | \$ 3,540,031.72 |  | \$ | 503,392.51 |
| Total per Year | \$ 42,480,380.69 |  | \$ | 6,040,710.13 |
|  |  |  |  | 14.22\% |

Report to City Council
TO: Mayor and City Council
FROM:
Melissa Walker, Public Works Director/City Engineer
AGENDA DATE:
December 19, 2023
TITLE:
ACCEPTANCE OF CYCLE 6 ACTIVE TRANSPORTATION PROGRAM (ATP) GRANT FUNDS FOR ADA CURB RAMP REMEDIATION PROJECT

## RECOMMENDED ACTION

## Recommendations:

1. Accept and approve the Program Supplement Agreements between California Department of Transportation (Caltrans) and the City of Moreno Valley (City) for the ADA Curb Ramps Remediation Project in the amount of $\$ 1,523,000$ (Fund 2301); and
2. Authorize the Public Works Director/City Engineer to execute the Program Supplement Agreements and any subsequent amendments, subject to the approval of the City Attorney; and
3. Authorize a budget adjustment as set forth in the Fiscal Impact section of this report.

## SUMMARY

This report recommends the City Council acceptance of the Cycle 6 Active Transportation Program (ATP) grant funding and authorize the Public Works Director/City Engineer to execute the Program Supplement Agreements with Caltrans. The total grant fund is $\$ 1,523,000$; with no local match required.

## DISCUSSION

The Active Transportation Program (ATP) was created by Senate Bill 99 (Chapter 359, Statutes of 2013) and California Assembly Bill 101 (Chapter 354, Statutes of 2013) to encourage increased use of active modes of transportation, such as walking and biking.

The ATP Program consolidated existing federal and state transportation programs into a single program and is annually funded by approximately $\$ 123$ million of various state and federal funds from appropriations in the annual Budget Act. The goals of the ATP include, but are not limited to, increasing the proportion of trips accomplished by walking and biking, increasing the safety and mobility of non-motorized users, advancing efforts of regional agencies to achieve greenhouse gas reduction goals, enhancing public health, and providing a broad spectrum of projects to benefit many types of users including disadvantaged communities.

The City submitted an application for ADA Curb Ramps Remediation Project as component of the Citywide Pavement Rehabilitation Program. This award will subsidize the City's paving projects and build 66 pedestrian curb ramps.

The Program Supplement Agreement (PSA) provided at this time funds the first phase of environmental clearance. Subsequent project phases will be funded through PSA Amendments.

## ALTERNATIVES

1. Approve and authorize the recommendations as presented in this report. This alternative will allow the projects to move forward in a timely manner and enable the city to receive reimbursement from Caltrans.
2. Do not approve the recommended actions as presented in this staff report. This alternative will increase cost of the City's paving project by $\$ 1,523,000$.

## FISCAL IMPACT

The ADA Curb Ramps Remediation Project is funded by the Caltrans Cycle 6 Active Transportation Program (ATP) grant. The total project cost will be $\$ 1,523,000$. The total grant amount of $\$ 1,523,000$, will be allocated to Fund 2301 (Capital Projects Grants). Local match is not required and there is no impact to the General Fund.
$\left.\begin{array}{|l|l|l|l|l|l|l|}\hline \text { Category } & \text { Fund } & \text { GL Account No. } & \text { Type } & \text { Original Budget } & \begin{array}{l}\text { Proposed } \\ \text { Adjustments }\end{array} & \text { Revised Budget } \\ \hline \text { CIP } & \begin{array}{l}\text { Capital Projects Grants } \\ (2301)\end{array} & \begin{array}{l}2301-99-99-92301-486010 \\ \text { Project No. 801 0109-2301-98 }\end{array} & \text { Rev } & \$ 0 & \$ 1,523,000 & \$ 1,523,000 \\ \hline \text { CIP } & \begin{array}{l}\text { Capital } \\ (2301)\end{array} & \text { Projects Grants } & \begin{array}{l}\text { 2301-70-76-80001-720199 } \\ \text { Project No. 801 0109-2301-99 }\end{array} & \text { Exp } & \$ 0 & \$ 1,523,000\end{array}\right\} \$ 1,523,000 ~\left(\begin{array}{ll} \\ \hline\end{array}\right.$

## NOTIFICATION

Publication of agenda

## PREPARATION OF STAFF REPORT

## CITY COUNCIL GOALS

Public Facilities and Capital Projects. Ensure that needed public facilities, roadway improvements, and other infrastructure improvements are constructed and maintained.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. 5441082 PSA to Agency
2. DOTLAPG25A_City of Moreno Valley_ADA Curb Ramps
3. Project Locations-ADA Curb Ramps

## APPROVALS

Budget Officer Approval
City Attorney Approval
City Manager Approval
$\checkmark$ Approved
12/10/23 6:34 PM
$\checkmark$ Approved $\checkmark$ Approved


This Program Supplement, effective 10/19/2023, hereby adopts and incorporates into the Administering Agency-State Agreement No. 08-5441S21 for State Funded Projects which was entered into between the ADMINISTERING AGENCY and the STATE with an effective date of $02 / 14 / 2022$ and is subject to all the terms and conditions thereof. This PROGRAM SUPPLEMENT is executed in accordance with Article I of the aforementioned Master Agreement under authority of Resolution No. approved by the ADMINISTERING AGENCY on
(See copy attached).
The ADMINISTERING AGENCY further stipulates that as a condition to the payment by the State of any funds derived from sources noted below encumbered to this project, Administering Agency accepts and will comply with the Special Covenants and remarks set forth on the following pages.

PROJECT LOCATION: Citywide- 27 city intersections for a total of 66 ramps.
TYPE OF WORK: Pedestrian Walkway
LENGTH: 0.0(MILES)


## SPECIAL COVENANTS OR REMARKS

1. A. This PROJECT will be administered in accordance with the applicable CTC STIP guidelines and the Active Transportation Program guidelines as adopted or amended, the Local Assistance Procedures Manual (LAPM), the Local Assistance Program Guidelines (LAPG), and this PROGRAM SUPPLEMENT.
B. This PROJECT is programmed to receive State funds from the Active Transportation Program (ATP). Funding may be provided under one or more components. A component(s) specific fund allocation is required, in addition to other requirements, before reimbursable work can occur for the component(s) identified. Each allocation will be assigned an effective date and identify the amount of funds allocated per component(s).

This PROGRAM SUPPLEMENT has been prepared to allow reimbursement of eligible PROJECT expenditures for the component(s) allocated. Unless otherwise determined, the effective date of the component specific allocation will constitute the start of reimbursable expenditures.
C. STATE and ADMINISTERING AGENCY agree that any additional funds made available by future allocations will be encumbered on this PROJECT by use of a STATE-approved Allocation Letter and STATE Finance Letter. ADMINISTERING AGENCY agrees that STATE funds available for reimbursement will be limited to the amount allocated by the California Transportation Commission (CTC) and/or the STATE.
D. Upon ADMINISTERING AGENCY request, the CTC and/or STATE may approve supplementary allocations, time extensions, and fund transfers between components. Funds transferred between allocated project components retain their original timely use of funds deadlines, but an approved time extension will revise the timely use of funds criteria for the component(s) and allocation(s) requested. Approved supplementary allocations, time extensions, and fund transfers between components made after the execution of this PROGRAM SUPPLEMENT will be documented and considered subject to the terms and conditions thereof.
Documentation will consist of a STATE approved Allocation Letter, Fund Transfer Letter, Time Extension Letter, and Finance Letter, as appropriate.
E. This PROJECT is subject to the timely use of funds provisions enacted by the Active Transportation Program guidelines, as adopted or amended, and by approved CTC and State procedures as outlined below.

Funds allocated for the environmental \& permits (E\&P), plan specifications \& estimate (PS\&E), and right-of-way components are available for expenditure until the end of the second fiscal year following the year in which the funds were allocated.

## SPECIAL COVENANTS OR REMARKS

Funds allocated for the construction component are subject to an award deadline and contract completion deadline. ADMINISTERING AGENCY agrees to award the contract within 6 months of the construction fund allocation and to complete and accept the construction within 36 months of award.
F. Award information shall be submitted by the ADMINISTERING AGENCY to the District Local Assistance Engineer immediately after project contract award and prior to the submittal of the ADMINISTERING AGENCY'S first invoice for the construction contract. Failure to do so will cause a delay in the State processing of invoices for the construction phase.
G. The ADMINISTERING AGENCY shall invoice STATE for environmental \& permits (E\&P), plans specifications \& estimate (PS\&E), and right-of-way costs no later than 180 days after the end of last eligible fiscal year of expenditure. For construction costs, the ADMINISTERING AGENCY has 180 days after project completion or contract acceptance to make the final payment to the contractor prepare the final Report of Expenditures and final invoice, and submit to STATE for verification and payment.
H. ADMINISTERING AGENCY agrees to submit the final report documents that collectively constitute a "Report of Expenditures" within one hundred eighty (180) days of PROJECT completion. Failure of ADMINISTERING AGENCY to submit a "Final Report of Expenditures" within 180 days of PROJECT completion will result in STATE imposing sanctions upon ADMINISTERING AGENCY in accordance with the current LAPM and the Active Transportation Program (ATP) Guidelines.
I. ADMINISTERING AGENCY indirect costs, as defined in 2 CFR, Part 200, Uniform Administrative Requirements, Cost Principles and Audit Requirement for Federal Awards, to be claimed must be allocated in accordance with an Indirect Cost Allocation Plan (ICAP), submitted, reviewed, and approved in accordance with Caltrans Audits and Investigations requirements which may be accessed at: www.dot.ca.gov/hq/audits/.

ADMINISTERING AGENCY agrees to comply with, and require all sub-recipients and project sponsors to comply with 2 CFR, Part 200, Uniform Administrative Requirements, Cost Principles and Audit Requirement for Federal Awards, and all applicable Federal and State laws and regulations.

ADMINISTERING AGENCY agrees, and will assure that its contractors and subcontractors will be obligated to agree, that Contract Cost Principles and Procedures, 48 CFR, Federal Acquisition Regulations System, Chapter 1, Part 31, et seq., and all applicable Federal and State laws and regulations, shall be used to determine the allowability of individual PROJECT cost items.

Any Fund expenditures for costs for which ADMINISTERING AGENCY has received

## SPECIAL COVENANTS OR REMARKS

payment or credit that are determined by subsequent audit to be unallowable under 2 CFR, Part 200, or 48 CFR, Chapter 1, Part 3, are subject to repayment by ADMINISTERING AGENCY to STATE. Should ADMINISTERING AGENCY fail to reimburse Funds due STATE within 30 days of demand, or within such other period as may be agreed in writing between the Parties hereto, STATE is authorized to intercept and withhold future payments due ADMINISTERING AGENCY from STATE or any third-party source, including, but not limited to, the State Treasurer, the State Controller, and the California Transportation Commission.
J. By executing this PROGRAM SUPPLEMENT, ADMINISTERING AGENCY agrees to comply with all reporting requirements in accordance with the Active Transportation Program guidelines, as adopted or amended.
K. This PROJECT has received funds from Active Transportation Program (ATP). The ADMINISTERING AGENCY agrees to administer the project in accordance with the CTC Adopted SB1 Accountability and Transparency Guidelines.
2. The ADMINISTERING AGENCY shall construct the PROJECT in accordance with the scope of work presented in the application and approved by the California Transportation Commission. Any changes to the approved PROJECT scope without the prior expressed approval of the California Transportation Commission are ineligible for reimbursement and may result in the entire PROJECT becoming ineligible for reimbursement.

## BASIC INFORMATION

This data form is to be completed by the local agency. Once the information has been provided, a Request for Funding Allocation/Extension will be generated automatically. The yellow highlighted fields and the fields with red boxes are required for the dynamic form to work properly. Contact DLAE for assistance with completing this form.

## CTC Meeting Date for Request of Action

12/06/2023
View CTC Meeting Schedule


## 1. FUNDING PROGRAM

This request is for (must check one)
$\square$ STIP - State Transportation Improvement Program
【 ATP - Active Transportation Program
Type of this ATP project (Check one)
$\boxtimes$ Infrastructure (IF) $\square$ Non-Infrastructure (NI) $\square$ Combined IF \& NI $\square$ Plan
LPP - Local Partnership ProgramSCCP - Solutions for Congested Corridors ProgramTCEP - Trade Corridor Enhancement ProgramTCIF - Trade Corridors Improvement Fund

## Choose Action Requested (must check one)

Allocation Request
$\square$ Time Extension Request

## STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

## ALLOCATION/TIME EXTENSION FORM

LAPG 25-A (REV 07/2022)
2. PROGRAMMED FUNDS

1) Enter the amounts of programmed funds by Fiscal Year

| Phase | Programmed Amount | Fiscal Year |
| :---: | ---: | :---: |
| PA\&ED* | $\$ 100,000$ | $2023 / 24$ |
| Plans, Specifications \& Estimate (PS\&E) | $\$ 170,000$ | $2024 / 25$ |
| Right of Way (RW) | $\$ 0$ |  |
| Construction (CON) | $\$ 1,253,000$ | $2025 / 26$ |
| Construction - Non-Infrastructure (CON-NI)** | $\$ 0$ |  |
| Total | $\$ 1,523,000$ |  |

*Project Approval \& Environmental Document (PA\&ED)
** Plan project types included in CON-NI phase
2) Total Project Funding Plan by Fiscal Year

List all OTHER funding sources not provided in the above table and their anticipated fund usage by year. If there are any funding conditions, describe type of conditions, i.e., proportional split of funds across all components, STIP/ATP/SB1 funds first, etc. (If attached Project Programming Request includes this detail and it is still current, it is not necessary to repeat the information here.)
$\square$
3) Does this project have ANY federal funds (from the program or any other funding sources)?

If yes, federal regulations, e.g. NEPA, etc., apply to all phases of this project.

## 3. FUND ALLOCATION REQUEST

1) Allocation phase(s): Only PS\&E and RW may be requested at the same time, otherwise, check only one box. For Combined projects, allocations for the CON-NI phase must be requested on a separate LAPG 25-A.

This allocation request is for (Corresponding cell(s) in Column "This Request" in the below table will be activated after selection):
【 PA\&EDPS\&ERWCONCON-NI
2) Amount(s) to Be Requested - Enter the amount(s) of funds of this request and of the previous allocations:

| Component | Previous | This Request | Total |
| :---: | :---: | :---: | :---: |
| PA\&ED* | $\$ 0$ | $\$ 100,000$ | $\$ 100,000$ |
| Plans, Specifications \& Estimate (PS\&E) | $\$ 0$ |  | $\$ 0$ |
| Right of Way (RW) | $\$ 0$ |  | $\$ 0$ |
| Construction (CON) | $\$ 0$ |  | $\$ 0$ |
| Construction - Non-Infrastructure (CON-NI) |  |  |  |
| Total | $\$ 0$ |  | $\$ 0$ |

*Project Approval \& Environmental Document (PA\&ED)
** Plan project types included in CON-NI phase

[^1]
## 3) Indicate type of funding to be requested (One must be checked):



| Request for Allocation Funds (CTC)/Required Documents for Submittal |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| \# | Documentation | PA\&ED | $\begin{aligned} & \text { PS\&E } \\ & \text { R/W } \end{aligned}$ | Construction (CON) | CON-NI |
| 1 | CTC Allocation Form (For MPO/RTPA awarded projects) | $X$ | $X$ | X | X |
| 2 | LAPG Exhibit 25-C: State-Only Finance Letter (State-Only Funded Projects) <br> LAPM 3-A: Project Authorization/Adjustment Request (Federal Funded Projects) | X | X | X | X |
| 3 | Copy of CTC Programming Action or CTIPS showing programming of funds | X | X | X | $X$ |
| 4* | CEQA and NEPA (federally funded) |  | X | X | X |
| 5 | R/W Certification |  |  | X |  |
| 6** | Plansheet Package (11X17 Plansheets, Crosssections and Engineer's Estimate) |  |  | X |  |
| 7 | Approved NI Workplan or Plan Scope of Work |  |  |  | X |

*Plan projects need an environmental consideration letter
**Applicable to all Enhanced Oversight SOF Projects, Fed, and Fed/State funded projects
Click to Generate Allocation Request

ATP Cycle 6: ADA Curb Ramps Remediation Project

| OBJECTID | Location Number | Intersection | \# of Ramps | Type of Intersection |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 1 | Heritage Way and Town Circle | 2 | 3-Way Stop |
| 2 | 2 | Dracaea Ave and Snowbell Land | 4 | 1-Stop |
| 3 | 3 | Dracaea Ave and Peashrub Ave | 2 | 1-Stop |
| 4 | 4 | Peashrub Ave. and Lilac Ct. | 2 | 1-Stop |
| 5 | 5 | Peashrub Ave. and Maidenhair St. | 2 | 1-Stop |
| 6 | 6 | Maidenhair St. and Snowbell Lane | 4 | 4-Stop |
| 7 | 7 | Elsworth St. and Larch St. | 2 | 1-Stop |
| 8 | 8 | Maidenhair St. and Sassafras St. | 2 | 1-Stop |
| 9 | 9 | Hawthorn Ave. and Snowbell Lane | 2 | 1-Stop |
| 10 | 10 | Arbor Park Lane and Hawthorn Ave. | 2 | 1-Stop |
| 11 | 11 | Arbor Park Lane and Witchhazel Ave. | 4 | 2-Way Stop |
| 12 | 12 | Witchhazel Ave. and Glorybower St. | 2 | 1-Way Stop |
| 13 | 13 | Glorybower St. and Black Gum St. | 4 | 2-Way Stop |
| 14 | 14 | Witchhazel Ave. and Black Gum St. | 2 | 1-Way Stop |
| 15 | 15 | Hickory Way and Witchhazel Ave. | 2 | 1-Way Stop |
| 16 | 16 | Witchhazel Ave. and Cherrylaurel Ave. | 2 | 1-Way Stop |
| 17 | 17 | Arbor Park Lane and Dracaea Ave | 2 | 1-Way Stop |
| 18 | 18 | Dracaea Ave. and Cherrylaurel Ave. | 2 | 1-Way Stop |
| 19 | 19 | Boeing St. and Adrienne Ave. | 2 | 1-Way Stop |
| 20 | 20 | Adrienne Ave. and McDonnell St. | 2 | 1-Way Stop |
| 21 | 21 | Pan Am Blvd and Adrienne Ave. | 2 | 1-Way Stop |
| 22 | 22 | Adrienne Ave and Courage St. | 4 | 4-Way Stop |
| 23 | 23 | Courage St. and Allies PI. | 2 | 1-Way Stop |
| 24 | 24 | Pan Am Blvd and Bay Ave | 4 | 4-Way Stop |
| 25 | 25 | Pan Am Blvd and Abington Pl | 2 | Free Flow |
| 26 | 26 | Pan Am Blvd and Berkshire Ln | 2 | Free Flow |
| 27 | 27 | Courage St and Bay Ave | 2 | 1-Way Stop |
|  |  | TOTAL | 66 |  |

Report to City Council

TO:
FROM:

## AGENDA DATE:

TITLE:

Mayor and City Council
Melissa Walker, Public Works Director/City Engineer Jason Niccoli, Electric Utility Division Manager

December 19, 2023
APPROVAL OF POWER PURCHASE AGREEMENT FOR RENEWABLE RESOURCES FROM GOLDEN FIELDS SOLAR IV, LLC

## RECOMMENDED ACTION

## Recommendation:

1. Approve the Power Purchase Agreement for Renewable Resources between City of Moreno Valley (as Buyer) and Golden Fields Solar IV, LLC (as Seller)
2. Authorize the City Manager to execute the Power Purchase Agreement and to approve and execute any subsequent amendments subject to the approval of the City Attorney and within the previously Council approved budget.

## SUMMARY

All publicly owned utilities must adopt a Renewables Portfolio Standard (RPS) program with mandated goals for purchasing energy generated through eligible renewable sources as required by state law, these programs must comply with the state's aggressive renewables adoption strategy. Common renewable resources include biomass, water (small hydro), geothermal, wind, and solar energy. This report recommends approval of an agreement for Moreno Valley Utility (MVU) to purchase renewable energy from the Golden Fields solar generating facility.

## DISCUSSION

On June 11, 2013, the City Council approved Resolution No. 2013-37 adopting a Renewable Energy Procurement Plan pursuant to Senate Bill 2-1X (SB 2X). SB 2X requires all publicly owned utilities to adopt an RPS program with prescribed goals for
procuring renewable energy resources and the criteria for achieving such goals. The goals for procuring renewable energy are as follows:

- Procurement targets are described as a percentage of retail sales -
- Compliance Period One: an average of $20 \%$ RPS eligible resource procurement
- Compliance Period Two: by December 31, 2016, 25\% RPS eligible resource procurement
- Compliance Period Three: by December 31, 2020, 33\% RPS eligible resource procurement
- Compliance Period Four: by December 31, 2024, 44\% RPS eligible resource procurement
- Compliance Period Five: by December 31, 2027, 52\% RPS eligible resource procurement
- Compliance Period Six: by December 31, 2030, 60\% RPS eligible resource procurement

Beginning January 1, 2021, at least $65 \%$ of the renewable resources acquired for each compliance period must come from contracts that are at least 10 years in duration. Senate Bill 100, signed into law in 2018, requires all retail electricity in the state to be carbon-free by 2045.

In January 2022, a Request for Proposals for cost-effective Long-Term Eligible Renewable Energy Resource was issues to 19 firms. 4 firms submitted proposals. The Golden Fields project submitted by Clearway Energy was selected after extensive review.

Clearway's Golden Fields project overall is a 10 MW photovoltaic power project in Kern County, California, with Moreno Valley's fraction of the project at $60 \%$, or 6 MW. The remaining share of the project will be 3 MW for Rancho Cucamonga, and 1 MW for Eastside Power Authority - two public agencies that Moreno Valley has shared renewable energy projects with previously. The expected commercial operation date of the Facility is June 1, 2025, which is when MVU will begin to receive energy from the project. To coordinate activities of the Golden Fields project buyers, each of the buyers has agreed to appoint Moreno Valley (which holds the largest project share) as the Buyers' Facility Agent. Moreno Valley will act on behalf of all Buyers regarding certain rights and activities related to the Golden Fields project. The Buyers' Facility Agent's duties will include only administrative functions, and will not include activities that have a financial impact to the Buyers.

The Buyers' Facility Agent Agreement also establishes a Material Actions Committee, whose purpose is to provide direction regarding activities that have a financial impact to each Buyer. The members of the Material Actions Committee will consist of one representative and one alternative from each Buyer. The voting share of each member will correspond to the Buyers' percentage of output from the Facility. Each Buyer will share in the costs incurred by the Buyers' Facility Agent based upon the Buyers' percentage of output from the Facility. The term of the Buyers' Facility Agent Agreement

Page 2
will run concurrent with the terms of the PPA.
The terms of the Power Purchase Agreement include a fixed price of \$46 per MWh over 20 years for the energy and renewable attributes. MVU's allocation in this project will count towards the renewable energy requirement as set forth in SB 350 and SB 100, and conforms to the policies established by the updated Integrated Resource Plan that the City Council approved on September 18, 2018.

## ALTERNATIVES

1. Approve the Power Purchase Agreement for Renewable Resources between the City of Moreno Valley (as Buyer) and Golden Fields Solar IV LLC (as Seller) and approve the Buyers' Facility Agent Agreement for the Golden Fields Solar Project authorize the City Manager to execute the Power Purchase. Staff recommends this alternative. The approval of this Agreement will help the City to comply with the State mandate for the purchase of renewable energy.
2. Do not approve the Power Purchase Agreement and do no authorize the City Manager to execute the Power Purchase Agreement. Staff does not recommend this alternative. The City could be found non-compliant with the State mandate for renewable energy.

## FISCAL IMPACT

This project required no contributions to construction costs, and therefore will have no fiscal impact for Fiscal Year 2023/24, or Fiscal Year 2024/25. MVU will only pay for the actual energy received beginning in approximately June of 2025. The projected average annual cost in approximately $\$ 938,400$ based on anticipated project output. This contract will be included in the Fiscal Year 2026/2027 budget.

## NOTIFICATION

Posting of the Agenda.

## PREPARATION OF STAFF REPORT

Prepared By:
Jason Niccoli
Electric Utility Division Manager
Concurred By:
Melissa Walker
Public Works Director

Department Head Approval: Michael Lloyd Assistant City Manager

## CITY COUNCIL GOALS

None

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. 20231203 Buyers Agent Agreement
2. WITHOUTSLD_Clearway-Small POU PPA (MVU) 4890-7055-6818 v. 7

## APPROVALS

Budget Officer Approval $\quad \checkmark$ Approved $\quad$ 12/10/23 6:38 PM
City Attorney Approval $\quad \checkmark$ Approved
City Manager Approval $\quad \checkmark$ Approved
12/11/23 11:21 AM

BUYERS' FACILITY AGENT AGREEMENT
(related to the Power Purchase Agreement for the Golden Fields Solar Facility)
AMONG
CITY OF MORENO VALLEY
(as "Buyers' Agent")
AND
CITY OF RANCHO CUCAMONGA
EASTSIDE POWER AUTHORITY
(together, as "Limited Buyers")
Dated as of $\overline{\text { ("Effective Date") }}$

## BUYERS' FACILITY AGENT AGREEMENT

This BUYERS' FACILITY AGENT AGREEMENT ("Agreement"), dated as of 202_, is being entered into by and among the CITY OF MORENO VALLEY, a California municipal corporation organized under the laws of the State of California ("Moreno Valley"), as "Buyers' Agent," and the CITY OF RANCHO CUCAMONGA, a California municipal corporation organized and existing under the laws of the State of California ("Rancho Cucamonga"), and the EASTSIDE POWER AUTHORITY, a joint powers authority and a public entity organized under the laws of the State of California ("Eastside"). Collectively, Rancho Cucamonga and Eastside shall be referred to herein as "Limited Buyers." This Agreement relates to the administration of duties with respect to the "Buyers' Facility Agent" in the certain POWER PURCHASE AGREEMENTS of the respective Parties, relating to the Golden Fields Solar IV Facility ("GF Agreement"). Each Buyer Agent and Buyer is referred to individually in this Agreement as a "Party" and together as the "Parties."

## RECITALS

A. Capitalized terms in this Agreement shall have the meanings given to such terms (i) in the GF Agreement or (ii) in the body of this Agreement (as first identified in parentheses and underscored font).
B. In connection with the development and acquisition of their respective long-term renewable energy generation resources, the Buyers have identified a 10 MW solar photovoltaic facility ("Facility") to be developed by Golden Fields Solar IV LLC, a subsidiary of Clearway Energy ("Seller").
C. The Buyers have participated in negotiations for and have entered into the GF Agreement with Seller for the development of the Facility and the sale of Products from the Facility.
D. The GF Agreement includes provisions for Moreno Valley to act as Buyers' Agent, on its own behalf and for and on behalf of Eastside and Rancho Cucamonga in certain circumstances, as expressly provided in the GF Agreement.
E. Each of the Buyers intends by this Agreement to provide the manner and means to coordinate the exercise of certain of the Buyers' rights and activities with respect to the GF Agreement and to authorize Moreno Valley, acting as the Buyers' Agent, to provide such approvals, determinations, responses and other actions under the GF Agreement on behalf of the Buyers in order to carry out the applicable terms thereof and realize the related benefits thereunder.

## AGREEMENT

NOW, THEREFORE, in consideration of the foregoing Recitals, which are incorporated herein, the mutual covenants and agreements herein set forth, and other good and valuable consideration, the sufficiency of which is hereby acknowledged, the Parties agree as follows:

ARTICLE 1
EFFECTIVE DATE; TERM
1.1 Effective Date, This Agreement shall be effective as of the date on which all Parties have executed this Agreement and the GF Agreement is effective ("Effective Date"). Buyers' Agent shall confirm its acknowledgement of the Effective Date by electronic mail to the Limited Buyers as soon as reasonably practicable following the Effective Date, providing as attachments to such electronic mail transmittal electronic copies of (i) the cover page of this Agreement and (ii) a conformed copy of this Agreement.
1.2 Term. The term of this Agreement shall commence on the Effective Date and continue coterminous with the GF Agreement.

## ARTICLE 2 <br> APPOINTMENT OF BUYERS' AGENT; RELATIONSHIPS

2.1 Appointment andAcceptance. Subject to the terms and conditions of this Agreement, the Limited Buyers hereby appoint and authorize Moreno Valley to act as the Buyers' Agent on behalf of Buyers. The Limited Buyers acknowledge and agree that, by this appointment, Buyers' Agent has the power and authority to take such actions, grant such consents, and bind Buyers with respect to the matters provided for in the GF Agreement, subject to the processes described in this Agreement. Moreno Valley hereby accepts the appointment as Buyers' Agent and agrees to act as Buyers' Agent for and on behalf of the Limited Buyers as well as on its own behalf, all as provided in this Agreement.
2.2 Limitation on Appointment. Notwithstanding any provision to the contrary in this Agreement, Buyers' Agent shall not have any authority, duties or responsibilities except those expressly set forth herein and in the GF Agreement, and those duties and responsibilities reasonably incidental thereto. No fiduciary function, responsibility, duty, obligation or liability shall be read into this Agreement or otherwise exist against Buyers' Agent. The duties of Buyers' Agent are and shall be ministerial and administrative in nature and Buyers' Agent shall not, by reason of this Agreement or actions taken under this Agreement, be a trustee or fiduciary for the Limited Buyers.
2.3 Reliance by Buvers'Agent. Buyers' Agent shall be entitled to rely upon, and shall be fully protected in relying upon, (a) any notice, consent, certificate, affidavit, letter, fax, statement, order or other document believed by it to be genuine and correct and to have been signed, sent or made by the proper person or persons and (b) advice and statements of legal counsel and other experts selected by Buyers' Agent. Buyers' Agent may seek the advice, concurrence or prior indemnification from the Limited Buyers concerning any matters of judgment or discretion. Buyers' Agent shall be justified in failing or refusing to take any action
unless Buyers' Agent shall first receive such advice, concurrence or assurance of the Limited Buyers (or an individual Limited Buyer, as the case may be), as Buyers' Agent shall reasonably determine to be necessary.
2.4 Non-Reliance on Buvers' Agent. The Limited Buyers each expressly acknowledge that Buyers' Agent has not made any representations or warranties to the Limited Buyers and that no action hereafter taken by Buyers' Agent shall be deemed to constitute a representation or warranty by Buyers' Agent. Each Limited Buyer represents to Buyers Agent and the other Limited Buyers that it has, independently and without reliance upon Buyers' Agent or any of the other Limited Buyers, and based on such documents and information as each Limited Buyer has deemed appropriate, made its own appraisal of and investigation into the GF Agreement and made its own decision to enter into this Agreement. Each Buyer also covenants that it will, independently and without reliance upon Buyers' Agent, continue to make its own decisions in taking or not taking action under this Agreement, and to make such investigation as it deems necessary to inform itself as to matters under the GF Agreement.

## ARTICLE 3 BUYERS' AGENT'S DUTIES

3.1 General. Under the GF Agreement. Buyers' Agent is specified as the Buyer that shall receive notices from Seller, provide responses to certain action by the Seller and issue various approvals and determinations. Buyers' Agent's duties shall be classified under two categories: (a) administrative, which principally relates to the distribution and processing of notices and information under the GF Agreement (as further described in Section 3.2) and (b) material, which principally relates to the exercise of Buyers' material rights and activities with respect to the GF Agreement (as further described in Section 3.3). Additionally, Buyers' Agent shall be responsible for taking certain additional action that may be necessary or convenient to matters related to the GF Agreement (as further described in Section 3.4).
3.2 Administrative Actions. Unless an action is considered a Material Action, as described in Section 3.3, Buyers' Agent shall perform the actions required of a Buyers' Agent in the GF Agreement in a manner that Buyers' Agent believes to be reasonable, and without advance input from or notice to the Limited Buyers. For all such administrative actions, Buyers' Agent shall provide reasonably prompt notice to the Limited Buyers of action taken by Buyers' Agent or information received from Seller, as the case may be.
3.3 MaterialActions. The following actions, and no other actions under the GF Agreement, shall constitute "Material Actions" and shall require direction from the Material Actions Committee, as defined and described in Article 4, in order for Buyers' Agent to perform such actions:
(a) Setting and approval of the Floor Price.
(b) Approval of Scheduled Maintenance schedules, and related actions.
(c) Approval of any lien on any portion of the Facility or any other property or assets that are related to the operation, maintenance and use of the Facility.
(d) Approval of the equation relating to Deemed Delivered Energy.
(e) Negotiation and agreement of the Facility Lender consent.
(f) Consent to any Change of Control.
(t) Determination as to whether Seller will defend Buyer Indemnified Parties from legal action.
(g) Approval of a different condition or use of the Facility following damage or destruction of the Facility.
(h) Consent to Seller's actions with respect to condemnation or other taking of the Facility.
(i) Notification to Seller as to whether to pursue or cancel their respective right of first offer.
3.4 Additional Actions. Buyers' Agent shall take the following actions that may be necessary or convenient to matters related to the GF Agreement:
(a) Buyers' Agent shall provide the MAC and MAC Representatives (as such terms are defined and described in Article 4) information that may be useful to the MAC's decision with respect to a Material Action, including studies, material or services.
(b) Buyers' Agent shall furnish any other reasonable assistance, service or information related to a matter under the GF Agreement, as reasonably requested by the MAC or a MAC Representative.
3.5 Delegation of Duties. Buyers' Agent may execute any of its duties under this Agreement by or through independent contractors, representatives, agents or attorneys-in-fact and shall be entitled to advice of counsel concerning all matters pertaining to such duties. Buyers' Agent shall not be responsible for the negligence or misconduct of any independent contractors, representatives, agents or attorneys-in-fact selected by it; provided, however, Buyers' Agent shall use commercially reasonable care to ensure that such third-party providers (a) maintain errors and omission and liability insurance in a form and amount reasonably appropriate for the services provided and (b) indemnify the Limited Buyers for liability or costs incurred by the Limited Buyers as a result of negligent action or inaction by the third-party provider. The Limited Buyers shall be subrogated to all claims of Buyers' Agent against such independent contractors, representatives, agents or attorneys-in-fact.
4.1 Establishment and Authorization of Material Actions Committee. The Material Actions Committee ("'MAC") is hereby established and authorized to act on behalf of each of the Buyers for the purposes of (a) providing coordination among the Buyers in carrying out certain collective actions related to Material Actions and (b) providing the manner and means for achieving agreement among the Buyers with respect to such collective actions.
4.2 MAC Representatives. The MAC shall consist of a single representative ("MAC Representative'") from each of the Buyers. Each of the Buyers shall, within thirty (30) days of the Effective Date of this Agreement, give notice to the other Buyers of its MAC Representative. An alternate MAC Representative may be appointed to act on behalf of any MAC Representative by similar written notice. An alternate MAC Representative may attend all meetings of the MAC but may vote only if the MAC Representative for whom the alternate serves is absent.
4.3 Voting Shares: Effective Vote. The voting share associated with each MAC Representative shall correspond to the Buyers' Percentage of Facility Output, as follows: Moreno Valley ( $60 \%$ ); Rancho Cucamonga (30\%); and Eastside (10\%). Unless all of the Buyers shall determine otherwise, actions of the MAC shall require the affirmative vote of MAC Representatives having a voting share equal to or greater than seventy percent (70\%). Each of the Buyers agrees that the vote of the MAC Committee with respect to a Material Action shall be determinative as to such matter and shall constitute the agreement of the Buyers as to such matter for purposes of the GF Agreement.
4.4 Chairperson: Ouorum. Unless all of the Buyers shall determine otherwise, the Chairperson of the MAC shall be Moreno Valley's MAC Representative, or the alternate thereto. The Chairperson shall be responsible for calling and presiding over meetings of the MAC. For the purpose of conducting meetings, a quorum shall exist so long as MAC Representatives having a voting share equal to or greater than seventy percent (70\%) are present. The conducting of MAC meetings, including voting at such meetings, may be by assembled meeting or by telephone or video conferencing, or by any combination thereof, to the extent permitted by law.
4.5 Use of Administrative Exhibits. Buyers' Agent may use exhibits to confirm or implement provisions of this Agreement or the GF Agreement. The Parties intend that such exhibits shall be ministerial or administrative in nature, and shall not affect a material right or obligation under this Agreement or the GF Agreement. Exhibits may be added to this Agreement, and modified or deleted, by an affirmative vote of MAC Representatives having a voting share equal to or greater than seventy percent (70\%). Upon such affirmative vote, the exhibit shall become an integrated part of this Agreement. Buyers' Agent shall provide notice to the Buyers of the addition, modification or deletion of any exhibit. The then-current list of exhibits shall be contained in Exhibit A to this Agreement, as may be modified from time to time. In the event of any conflict between this document and any exhibit, the terms and provisions of this document, as may be amended from time to time, shall control. In the event of any conflict between or among the exhibits, the exhibit of latest date shall control.
4.6 Floor Price. Buyers' Agent shall upon five days (5) notice to the Limited Buyers, adjust the Floor Price under the GF Agreement in its discretion. Any Limited Buyer may request that the floor price adjustment be subject to a vote of the MAC under Section 4.3.

## ARTICLE 5 <br> SUCCESSOR BUYERS' AGENT

Subject to the terms of this Article 5 and the GF Agreement, Buyers' Agent may resign as Buyers' Agent upon no less than ninety (90) days' advance written notice to the Limited Buyers. Upon receipt of Buyers' Agent's notice, the Buyers shall work cooperatively and in good faith to appoint a successor Buyers' Agent. The Buyers may appoint another Buyer to act as successor Buyers' Agent upon satisfaction of the following conditions: (a) the Buyer agrees to assume Buyers' Agent's responsibilities and (b) the Buyer has been approved by MAC Representatives having a voting share equal to or greater than seventy percent (70\%). Until such appointment is made, the Buyers shall act reasonably in appointing a new Buyers' Agent, and when necessary, the Buyers' Agent shall be the Buyer with the largest applicable MW share of the Facility.

## ARTICLE6 COSTS

6.1 General. All reasonable and customary expenses, including, without limitation, reasonable attorneys' fees and legal expenses, incurred by Buyers' Agent in the performance of its duties hereunder shall be allocated to and paid by the Buyers, including Moreno Valley, based on each Buyers' Percentage of Facility Output, which presently is as follows: Moreno Valley (60\%); Rancho Cucamonga (30\%); and Eastside (10\%). As requested by Limited Buyers from time to time, Buyers' Agent shall provide an estimate of future expenses.
6.2 Pavment and Audit. From time to time, and at such times as Buyers' Agent shall determine (not more frequently than monthly), Buyers' Agent shall submit to each Buyer a request and requisition for payment by such Buyer of its proportionate share of expenses under this Agreement. Each Buyer shall pay or cause to be paid the amount of such request and requisition within thirty (30) days after receipt thereof. If a Party fails to pay any such request or requisition when due, interest shall accrue, to the extent permitted by law, at a rate equal to the Interest Rate as defined in the GF Agreement until payment is made. At such reasonable times as shall be requested by a Buyer, the books and cost records of Buyers' Agent relevant to expenses under this Agreement shall be subject to audit by such Buyer, at such Buyer's sole cost and expense.

## ARTICLE 7 LIABILITY

7.1 Exculpatory Provision. Buyers' Agent shall not be (a) liable for any action lawfully taken or omitted to be taken by Buyers' Agent under or in connection with this Agreement, except for Buyers' Agent's gross negligence or willful misconduct or (b) responsible in any manner for (i) warranties made by Seller in the GF Agreement or in any certificate, report, statement or other document referred to or received by Buyers' Agent under or in connection with the GF Agreement ("Seller Statements"), (ii) the validity, effectiveness,
genuineness, enforceability, priority or sufficiency of the Seller Statements, or (iii) any failure of Seller to perform its obligations under the GF Agreement.

### 7.2 Modifying or Explanatory Provisions.

(a) The exculpatory provision set forth in Section 7.1 shall apply to all types of claims or actions including, but not limited to, claims or actions based on contract or tort.
(b) Except as expressly stated in the GF Agreement or this Agreement, Buyers' Agent shall not be under any obligation to ascertain or to inquire as to the observance or performance of Seller's obligations under the GF Agreement, or to inspect the books or records of Seller.
(c) For the avoidance of doubt, a Party may protect and enforce its rights under this Agreement by a suit or suits in equity for specific performance of any obligation or duty of any other Party and Buyers' Agent may enforce by any legal means its right to payment for costs incurred under this Agreement.
(d) The rights, obligations and liabilities of Moreno Valley, as Buyers' Agent under this Agreement and the GF Agreement shall not apply to or otherwise be affected by, and shall be deemed and interpreted to be legally separate from, the rights, obligations and liabilities of Moreno Valley as a Buyer under this Agreement and the GF Agreement.
7.3 Allocation of Liability Excluding liability or cost associated with the gross negligence or willful misconduct by Buyers' Agent, which shall be solely the responsibility of Buyers' Agent, all liability or cost under this Agreement, including liability or cost associated with Buyers' Agent performance of duties under this Agreement, shall be allocated in accordance with each Buyers' Percentage of Facility Output.

## ARTICLES DISPUTES

8.1 Dispute or Claim. Any action, claim or dispute that any Party may have against another Party or Parties arising out of this Agreement ("Dispute") shall be submitted in writing to the other Parties. The written submission of any Dispute shall include a concise statement of the question or issue in dispute together with a statement listing the relevant facts and documents that support the claim.
8.2 Good Faith Resolution: Informal Negotiation. The Parties agree to cooperate in good faith to attempt to achieve an expeditious resolution of such a Dispute. Pending resolution of such Dispute, unless otherwise provided for under this Agreement, the Parties shall proceed diligently with the performance of their respective obligations pursuant to the terms of this Agreement. Prior to initiating litigation, as described in Section 8.3, the Parties shall first attempt in good faith to resolve any Dispute through settlement discussions among the MAC Representatives.
8.3 Litigation Rights. Subject to Section 8.2, if the Parties are unable to satisfactorily resolve the Dispute within thirty (30) days from the receipt of notice of the Dispute, subject to any extensions of time as may be mutually agreed upon in writing, a Party may initiate litigation in a court of law with jurisdiction located in Riverside County, California, which shall be the exclusive venue to litigate disputes.
8.4 No Attornevs Fees. If any action is brought at law or in equity in any court or through any alternative mutually agreeable dispute resolution process to enforce any provision of this Agreement, or for damages by reason of any alleged breach of this Agreement, the Parties mutually agree that each Party to this Agreement shall bear its own attorneys fees and costs.

## ARTICLE 9 <br> MISCELANEOUS

9.1 Incorporation of the GF Agreement. By this reference, the GF Agreement is specifically incorporated herein and made a part hereof.
9.2 Entire Agreement. Subject to Section 4.5 and Section 9.1, this Agreement contains all representations and the entire understanding among the Parties with respect to the duties and functions of the Buyers' Agent. No other representations are intended or shall be implied. Any prior contemporaneous correspondence, memoranda, or agreements, whether oral or written, which are in conflict with this Agreement are intended to be replaced in total by this Agreement.
9.3 Governing_Law. This Agreement was made and entered into in the State of California and shall be governed by, interpreted and enforced in accordance with the laws of the State of California, without regard to conflict of law principles.
9.4 Representation. The Parties acknowledge that each Party was represented by counsel in the negotiation and execution of this Agreement, and any uncertainty or ambiguity in this Agreement shall not be interpreted against a Party on the basis that the Party drafted the language, but shall be interpreted according to the application of the rules on interpretation of contracts.
9.5 Notice. Notices provided under this Agreement, including administrative notices that relate to the distribution and processing of information under the GF Agreement (as further described in Section 3.2), shall be in writing and sent via electronic mail (return receipt requested, if necessary or advisable) to the persons specified below:

## Moreno Vallev

Attention: Jason Niccoli and Dean Ayer
Email: jasonn@moval.org and deana@moval.org

Eastside Power Authoritv<br>Attention: Cori Bradley<br>Email: cori@eastsidepa.org<br>\section*{Rancho Cucamonga}<br>Attention: Fred Lyn<br>Email: fred.lyn@cityofrc.us

By written notice given to the other Parties, a Party may change the name or electronic mail address of its representative, or may add additional recipients to whom notices under this Agreement should be provided.
9.6 Severability. In case any one or more of the provisions of this Agreement shall for any reason be held to be illegal or invalid by a court of competent jurisdiction, it is the intention of each of the Parties that such illegality or invalidity shall not affect any other provision, but rather that this Agreement shall be construed and enforced as if such illegal or invalid provision had not been contained, unless a court holds that the provisions are not separable from all other provisions of this Agreement.
9.7 Amendments. The Parties acknowledge and agree that any amendment to this Agreement shall be in writing and duly executed by the Parties.

## ARTICLE 10 <br> SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have duly caused this Agreement to be executed by their duly authorized representatives.

## CITY OF MORENO VALLEY

CITY OF RANCHO CUCAMONGA

EASTSIDE POWER AUTHORITY

By: $\qquad$
Name: $\qquad$
Title: $\qquad$

Date: $\qquad$

By: $\qquad$
Name: $\qquad$
Title: $\qquad$

Date: $\qquad$

By: $\qquad$

Name: $\qquad$

Title: $\qquad$
Date: $\qquad$

## POWER PURCHASE AGREEMENT

COVER SHEET
Seller: Golden Fields Solar IV, LLC, a Delaware limited liability company ("Seller")
Buyer: City of Moreno Valley ("Buyer")
Buyer's Fraction: 60\%
Description of Facility: A dedicated and separately metered 10 MW AC photovoltaic electric generating facility located in Kern County, California, which is adjacent to a larger solar photovoltaic and energy storage facility being developed at the same Site, all located in Kern County, in the State of California, as further described in Exhibit A.

Milestones:

| Milestone | Completion Date |
| :--- | :---: |
| Evidence of Site Control | Complete |
| CEC Pre-Certification Obtained | August 1, 2024 |
| Documentation of Conditional Use Permit if required: <br> [X] CEQA, [] Cat Ex, [] Neg Dec, [] Mitigated Neg Dec, <br> [X] EIR | Complete |
| Seller's Receipt of Phase I and Phase II Interconnection <br> study results for Seller's Interconnection Facilities | Complete |
| Executed Interconnection Agreement | Complete |
| Bridge Product Delivery Start Date | January 1, 2024 |
| Bridge Product Delivery End Date | December 31, 2024 |
| Expected Construction Start Date | November 1, 2024 |
| Initial Synchronization | March 15, 2025 |
| Network Upgrades Completed | March 1, 2025 |
| Expected Commercial Operation Date | June 1, 2025 |

Delivery Term: $\quad$ The period for Product delivery will be for fifteen (15) Contract Years.

## Expected Energy:

| Contract Year | Expected Energy (MWh) |
| :---: | :---: |
| 1 | 34,705 |
| 2 | 34,532 |
| 3 | 34,359 |
| 4 | 34,187 |
| 5 | 34,016 |
| 6 | 33,846 |
| 7 | 33,677 |
| 8 | 33,509 |
| 9 | 33,341 |
| 10 | 33,174 |
| 11 | 33,008 |
| 12 | 32,843 |
| 13 | 32,679 |
| 14 | 32,516 |
| 15 | 32,353 |

Guaranteed Capacity: 10 MW
Monthly Expected Energy:- ${ }^{-1}$

[^2]| Month | Expected Energy（MWh） |
| :---: | :---: |
| January | $2,099.8$ |
| February | $2,219.6$ |
| March | $2,901.6$ |
| April | $3,093.9$ |
| May | $3,575.4$ |
| June | $3,651.6$ |
| July | $3,625.0$ |
| August | $3,477.5$ |
| September | $3,061.6$ |
| October | $2,795.0$ |
| November | $2,258.3$ |
| December | $1,945.6$ |

## Contract Price：

| Contract Year | Contract Price（\＄／MWh） |
| :---: | :---: |
| $1-15$ | $\$ 46.00$ without escalation |

## Product：

区 Energy
凹 Green Attributes
凹 Portfolio Content Category 1
$\square$ Capacity Attributes

Scheduling Coordinator: Seller or Seller's designated Scheduling Coordinator
Development Security: Buyer's Fraction multiplied by $\$ 80,000$ per MW of Guaranteed Capacity (as of the Effective Date)

Performance Security: Buyer's Fraction multiplied by $\$ 80,000$ per MW of Installed Capacity
[Signatures on following page.]

IN WITNESS WHEREOF，the Parties have caused this Agreement to be duly executed as of the Effective Date．

SELLER
Golden Fields Solar IV，LLC

By： $\qquad$
Name： $\qquad$
Title： $\qquad$

## BUYER

City of Moreno Valley
By：
Name： $\qquad$

Title： $\qquad$

## RENEWABLE POWER PURCHASE AGREEMENT

This Renewable Power Purchase Agreement ("Agreement") is entered into as of [__], 2023 (the "Effective Date"), between Seller and Buyer. Buyer and Seller are sometimes referred to herein individually as a "Party" and jointly as the "Parties." All capitalized terms used in this Agreement are used with the meanings ascribed to them in Article 1 to this Agreement.

## RECITALS

WHEREAS, Seller intends to develop, design, construct, own, and operate the Facility; and

WHEREAS, Seller desires to sell, and Buyer desires to purchase, on the terms and conditions set forth in this Agreement, the Product in accordance with Buyer's Fraction;

NOW THEREFORE, in consideration of the mutual covenants and agreements herein contained, and for other good and valuable consideration, the sufficiency and adequacy of which are hereby acknowledged, the Parties agree to the following:

## ARTICLE 1 DEFINITIONS

1.1 Contract Definitions. The following terms, when used herein with initial capitalization, shall have the meanings set forth below:
" $\underline{\mathbf{A C}}$ " means alternating current.
"Accepted Compliance Costs" has the meaning set forth in Section 3.11.
"Adjusted Energy Production" has the meaning set forth in Exhibit G.
"Affiliate" means, with respect to any Person, each Person that directly or indirectly controls, is controlled by, or is under common control with such designated Person. For purposes of this definition and the definition of "Permitted Transferee", "control", "controlled by", and "under common control with", as used with respect to any Person, shall mean (a) the direct or indirect right to cast at least fifty percent (50\%) of the votes exercisable at an annual general meeting (or its equivalent) of such Person or, if there are no such rights, ownership of at least fifty percent $(50 \%)$ of the equity or other ownership interest in such Person, or (b) the right to direct the policies or operations of such Person. For purposes of this Agreement, Clearway Energy, Inc. shall be deemed to be an Affiliate of Seller.
"Agreement" has the meaning set forth in the Preamble and includes any exhibits, schedules and any written supplements hereto, the Cover Sheet, and any designated collateral, credit support or similar arrangement between the Parties.
"Ancillary Services" means all ancillary services, products and other attributes, if any, associated with the Facility.
"Availability Incentive Payment" has the meaning set forth in the CAISO Tariff.
"Approved Forecast Vendor" means (x) the CAISO or (y) any vendor reasonably acceptable to both Buyer and Seller for the purposes of providing and verifying the forecasts under Section 4.3.
"Automated Dispatch System" or "ADS" has the meaning set forth in the CAISO Tariff.
"Available Capacity" means the capacity from the Facility, expressed in whole MWs, that is available at a particular time to generate Energy.
"Bankrupt" means with respect to any entity, such entity that (a) files a petition or otherwise commences, authorizes or acquiesces in the commencement of a proceeding or cause of action under any bankruptcy, insolvency, reorganization or similar Law, (b) has any such petition filed or commenced against it which remains unstayed or undismissed for a period of ninety (90) days, (c) makes an assignment or any general arrangement for the benefit of creditors, (d) otherwise becomes bankrupt or insolvent (however evidenced), (e) has a liquidator, administrator, receiver, trustee, conservator or similar official appointed with respect to it or any substantial portion of its property or assets, or (f) is generally unable to pay its debts as they fall due.
"Bridge Product" has the meaning set forth in Section 3.15.
"Bridge Product Delivery Term" has the meaning set forth in Section 3.15(a).
"Bridge Product Offer" has the meaning set forth in Section 3.15(c).
"Business Day" means any day except a Saturday, Sunday, or a Federal Reserve Bank holiday in California. A Business Day begins at 8:00 a.m. and ends at 5:00 p.m. local time for the Party sending a Notice, or payment, or performing a specified action.
"Buyer" has the meaning set forth on the Cover Sheet.
"Buyer's Facility Agent" means an agent appointed by Buyer pursuant to a written agreement among buyers of the Facility output for the purpose of administering certain aspects of Facility operational issues and this Agreement which is detailed in the written agreement. The appointment may be changed from time to time with Notice thereof to Seller. As of the Effective Date, the Buyer's Facility Agent shall be the City of Moreno Valley. If at any point during the Term of this Agreement no Buyer's Facility Agent is appointed or such agent has resigned or is removed and is not replaced, then Buyer shall act as the Buyer's Facility Agent for purposes of this Agreement until a replacement agent is appointed, except with respect to the Floor Price, which shall remain set at the most recent Floor Price communicated by the last authorized Buyer's Facility Agent.
"Buyer's Default" means an Event of Default of the Buyer.
"Buyer's Fraction" has the meaning set forth on the Cover Sheet.
"Buyer's WREGIS Account" has the meaning set forth in Section 4.8(a).
"CAISO" means the California Independent System Operator Corporation or any successor entity performing similar functions.
"CAISO Approved Meter" means a CAISO approved revenue quality meter or meters, CAISO approved data processing gateway or remote intelligence gateway, telemetering equipment and data acquisition services sufficient for monitoring, recording and reporting, in real time, all Facility Energy delivered to the Delivery Point.
"CAISO Grid" has the same meaning as "CAISO Controlled Grid" as defined in the CAISO Tariff.
"CAISO Operating Order" means the "operating order" defined in the CAISO Tariff.
"CAISO Tariff" means the California Independent System Operator Corporation Agreement and Tariff, Business Practice Manuals (BPMs), and operating procedures, including the rules, protocols, procedures and standards attached thereto, as the same may be amended or modified from time-to-time and approved by FERC.
"California Renewables Portfolio Standard" or "RPS" means the renewable energy program and policies established by California State Senate Bills 1038 (2002), 1078 (2002), 107 (2008), X-1 2 (2011), 350 (2015), and 100 (2018), codified in, inter alia, California Public Utilities Code Sections 399.11 through 399.31 and California Public Resources Code Sections 25740 through 25751, as such provisions are amended or supplemented from time to time.
"Capacity Attribute" means any current or future defined characteristic, certificate, tag, credit, or accounting construct associated with the amount of Energy that the Facility can generate and deliver to the Delivery Point at a particular moment, that can be purchased and sold under CAISO market rules.
"Capacity Damages" has the meaning set forth in Exhibit B.
"CEC" means the California Energy Commission, or any successor agency performing similar statutory functions.
"CEC Certification and Verification" means that the CEC has certified (or, with respect to periods before the date that is up to one hundred eighty (180) days after the Commercial Operation Date, that the CEC has pre-certified) that the Facility is an Eligible Renewable Energy Resource for purposes of the California Renewables Portfolio Standard, meeting all applicable requirements for certified facilities set forth in the RPS Eligibility Guidebook, Ninth Edition (or its successor), and that all Energy generated by the Facility and delivered to the Delivery Point qualifies as generation from an Eligible Renewable Energy Resource.
"CEC Precertification" means that the CEC has issued a precertification for the Facility indicating that the planned operations of the Facility would comply with applicable CEC requirements for CEC Certification and Verification.
"CEQA" means the California Environmental Quality Act, California Public Resources Code $\S \S 21000$, et seq. and Chapter 3 of Division 6 of Title 14 of the California Code of Regulations.
"Change of Control" means any circumstance in which Ultimate Parent ceases to own, directly or indirectly through one or more intermediate entities, more than fifty $(50 \%)$ of the outstanding equity interests in Seller; provided that a Change of Control will not have occurred if Ultimate Parent remains the Managing Member of the entity that owns, directly or indirectly through one or more intermediate entities, more than fifty percent (50\%) of the outstanding equity interests in Seller; provided further that in calculating ownership percentages for all purposes of the foregoing:
(a) any ownership interest in Seller held by its Ultimate Parent indirectly through one or more intermediate entities shall not be counted toward the Ultimate Parent's ownership interest in Seller unless the Ultimate Parent directly or indirectly owns more than fifty percent ( $50 \%$ ) of the outstanding equity interests in each such intermediate entity; and
(b) ownership interests in Seller owned directly or indirectly by any Lender (including any tax equity provider) shall be excluded from the total outstanding equity interests in Seller.
"Claim" has the meaning set forth in Section 16.2(a).
"COD Certificate" has the meaning set forth in Exhibit B.
"Code" means the Internal Revenue Code of 1986, as amended from time to time, and any successor statute, including the rules or regulations promulgated thereunder, in each case as in effect from time to time. References to sections of the Code shall be construed to also refer to any successor sections.
"Collateral Assignment Agreement" has the meaning set forth in Section 14.2.
"Commercial Operation" has the meaning set forth in Exhibit B.
"Commercial Operation Date" has the meaning set forth in Exhibit B.
"Commercial Operation Delay Damages" means a daily amount equal to (a) the Development Security amount required hereunder, divided by (b) one hundred eighty (180).
"Compliance Actions" has the meaning set forth in Section 3.11.
"Compliance Expenditure Cap" has the meaning set forth in Section 3.11.
"Confidential Information" has the meaning set forth in Section 18.1.
"Construction Delay Damages" means a daily amount equal to (a) the Development Security amount required hereunder, divided by (b) one hundred eighty (180).
"Construction Start" has the meaning set forth in Exhibit B.
"Construction Start Date" has the meaning set forth in Exhibit B.
"Contract Price" has the meaning set forth in the Cover Sheet.
"Contract Price for Bridge Product" has the meaning set forth in Section 3.15(c).
"Contract Quantity of Bridge Product" has the meaning set forth in Section 3.15(b).
"Contract Term" has the meaning set forth in Section 2.1.
"Contract Year" means a period of twelve (12) consecutive months. The first Contract Year shall commence on the Commercial Operation Date, and each subsequent Contract Year shall commence on the anniversary of the Commercial Operation Date.
"Costs" means, with respect to the Non-Defaulting Party, brokerage fees, commissions and other similar third party transaction costs and expenses reasonably incurred by such Party either in terminating any arrangement pursuant to which it has hedged its obligations or entering into new arrangements which replace the Agreement; and all reasonable attorneys' fees and expenses incurred by the Non-Defaulting Party in connection with terminating the Agreement.
"Cover Sheet" means the cover sheet to this Agreement, which is incorporated into this Agreement.
"COVID-19" means the epidemic disease designated COVID-19 and the related virus designated SARS-CoV-2 and any mutations thereof, and the efforts of a Governmental Authority to combat such disease.
"CPUC" means the California Public Utilities Commission, or any successor agency performing similar statutory functions.
"Credit Rating" means, with respect to any entity, the rating then assigned to such entity's unsecured, senior long-term debt obligations (not supported by third party credit enhancements), or if such entity does not have a rating for its senior unsecured long-term debt, then the rating then assigned to such entity as an issuer rating by S\&P, Fitch, or Moody's, as applicable. If ratings by S\&P, Fitch, or Moody's are not equivalent, the lower rating shall apply.
"Curtailment Cap" is the yearly quantity per Contract Year, in MWh, equal to fifty (50) hours multiplied by the Installed PV Capacity.
"Curtailment Order" means any of the following:
(a) a curtailment ordered by CAISO, including through the ADS or a CAISO Operating Order, for the following reasons: (i) any System Emergency, or (ii) any warning of an anticipated System Emergency, or warning of an imminent condition or situation, which jeopardizes CAISO's electric system integrity or the integrity of other systems to which CAISO is connected;
(b) a curtailment ordered by the Participating Transmission Owner for reasons including, but not limited to, (i) any situation that affects normal function of the electric system including, but not limited to, any abnormal condition that requires action to prevent circumstances such as equipment damage, loss of load, or abnormal voltage conditions, or (ii) any warning, forecast or anticipation of conditions or situations that jeopardize the Participating Transmission Owner's electric system integrity or the integrity of other systems to which the Participating Transmission Owner is connected;
(c) a curtailment ordered by CAISO or the Participating Transmission Owner due to scheduled or unscheduled maintenance on the Participating Transmission Owner's transmission facilities that prevents (i) Buyer from receiving or (ii) Seller from delivering Facility Energy to the Delivery Point; or
(d) a curtailment in accordance with Seller's obligations, or due to physical or operational limitations on the transfer of electric power, under its Interconnection Agreement with the Participating Transmission Owner or CAISO.
"Curtailment Period" means the period of time, as measured using current Settlement Intervals, during which generation from the Facility is reduced pursuant to a Curtailment Order; provided that the Curtailment Period shall be inclusive of the time required for the Facility to ramp down and ramp up.
"Damage Payment" means the dollar amount that is equal to the Development Security amount required hereunder.
"Day-Ahead Forecast" has the meaning set forth in Section 4.3(c).
"Day-Ahead Market" has the meaning set forth in the CAISO Tariff.
"Day-Ahead Schedule" has the meaning set forth in the CAISO Tariff.
"Dedicated Interconnection Capacity" has the meaning set forth in Section 4.10.
"Deemed Delivered Energy" means Buyer's Fraction of the amount of Energy expressed in MWh that the Facility would have produced and delivered to the Delivery Point, but that is not produced by the Facility and delivered to the Delivery Point during a Market Curtailment Period which amount shall be equal to (a) the VER Forecast expressed in MWh, applicable to the Market Curtailment Period, or (b) if there is no VER Forecast available, an industry-standard methodology agreed to by Buyer and Seller that utilizes meteorological conditions and relevant Facility data on the Site as input for the period of time during such curtailments or unexcused failure to take delivery of the Product; provided that any lost Production Tax Credit (expressed as the PTC Rate multiplied by the Deemed Delivered Energy) is added to the total Deemed Delivered Energy cost; provided further that in either case the amount of Facility Energy delivered to the Delivery Point during the Market Curtailment Period is subtracted from the total.
"Defaulting Party" has the meaning set forth in Section 11.1(a).
"Deficient Month" has the meaning set forth in Section 4.8(e).
"Delivered Energy" shall mean Buyer's Fraction of all Energy produced from the Facility that is delivered to the Delivery Point as measured in MWh by the Project's CAISO meter.
"Delivery Point" has the meaning set forth in Exhibit A.
"Delivery Term" shall mean the period of Contract Years specified on the Cover Sheet, beginning on the Commercial Operation Date, unless terminated earlier in accordance with the terms and conditions of this Agreement.
"Development Cure Period" has the meaning set forth in Exhibit B.
"Development Security" means any of the following instruments, in the amount specified on the Cover Sheet and delivered and maintained in conformance with Section 8.7: (i) cash or (ii) a Letter of Credit.
"Disclosing Party" has the meaning set forth in Section 18.2.
"Early Termination Date" has the meaning set forth in Section 11.2.
"Economic Bid" has the meaning set forth in the CAISO Tariff.
"Effective Date" has the meaning set forth on the Preamble.
"Electrical Losses" means all transmission or transformation losses between the Facility and the Delivery Point.
"Eligible Renewable Energy Resource" has the meaning set forth in California Public Utilities Code Section 399.12(e) and California Public Resources Code Section 25741(a), as either code provision is amended or supplemented from time to time.
"Energy" means metered electrical energy, measured in MWh, that is generated by the Facility.
"Energy Only Deliverability Status" has the meaning set forth in the CAISO Tariff.
"Energy Supply Bid" has the meaning set forth in the CAISO Tariff.
"Event of Default" has the meaning set forth in Section 11.1.
"Excess MWh" has the meaning set forth in Section 3.14(c).
"Expected Commercial Operation Date" is the date set forth on the Cover Sheet by which Seller reasonably expects to achieve Commercial Operation.
"Expected Construction Start Date" is the date set forth on the Cover Sheet by which Seller reasonably expects to achieve Construction Start.
"Expected Energy" means the quantity of Energy that Seller reasonably expects to be able to deliver to Buyer during each Contract Year in the quantity specified on the Cover Sheet.
"Facility" means the solar photovoltaic generating facility described on the Cover Sheet and more fully in Exhibit A attached hereto, located at the Site and including mechanical equipment, associated facilities, and equipment required to deliver Energy to the Delivery Point; provided that Shared Facilities are not included.
"Facility Energy" means Buyer's Fraction of the Energy during any Settlement Interval or Settlement Period, net of Electrical Losses and Station Use, as measured by Facility Meters.
"Facility Meter" means the CAISO Approved Meter that will measure all Facility Energy. Without limiting Seller's obligation to deliver Facility Energy to the Delivery Point, each Facility Meter will be located, and Facility Energy will be measured, at the low voltage side of the main step-up transformer and will be subject to adjustment in accordance with CAISO meter requirements and Prudent Operating Practices to account for Electrical Losses and Station Use, as it impacts Delivered Energy.
"FERC" means the Federal Energy Regulatory Commission or any successor government agency.
"Floor Price" has the meaning set forth in Exhibit P.
"FMM" or "Fifteen-Minute Market" have the meaning set forth in the CAISO Tariff.
"FMM Schedule" has the meaning set forth in the CAISO Tariff.
"Force Majeure Event" has the meaning set forth in Section 10.1.
"Forced Facility Outage" means an unexpected failure of one or more components of the Facility or any outage on the Transmission System that prevents Seller from generating Energy or making Facility Energy available at the Delivery Point and that is not the result of a Force Majeure Event.
"Form of Average Expected Energy Report" has the meaning set forth in Section 4.3(a).
"Form of Monthly Delivery Forecast" has the meaning set forth in Section 4.3(b).
"Forward Certificate Transfers" has the meaning set forth in Section 4.8(a).
"Full Capacity Deliverability Status" has the meaning set forth in the CAISO Tariff.
"Future Environmental Attributes" shall mean any and all generation, emissions, air quality or other environmental attributes other than Green Attributes or Renewable Energy Incentives under the RPS regulations and/or under any and all other international, federal, regional, state or other law, rule, regulation, bylaw, treaty or other intergovernmental compact, decision, administrative decision, program (including any voluntary compliance or membership program), competitive market or business method (including all credits, certificates, benefits, and emission measurements, reductions, offsets and allowances related thereto) that are attributable, now, or in the future, to the generation of electrical energy by the Facility. Future Environmental Attributes do not include investment tax credits or production tax credits associated with the construction or
operation of the Facility and other financial incentives in the form of credits, reductions, or allowances associated with the Facility that are applicable to a state or federal income taxation obligation.
"Gains" means, with respect to the Non-Defaulting Party, an amount equal to the present value of the economic benefit to it, if any (exclusive of Costs), resulting from the termination of this Agreement for the remaining Contract Term, determined in a commercially reasonable manner, which economic benefit (if any) shall be deemed the gain (if any) to such Non-Defaulting Party represented by, (a) if Buyer is the Non-Defaulting Party, the positive difference between the present value of the payments required to be made during the remaining Contract Term of this Agreement and the present value of the payments that would be required to be made under any transaction(s) replacing this Agreement and (b) if Seller is the Non-Defaulting Party, the positive difference between the present value of the payments that would be required to be made under any transaction(s) replacing this Agreement and the present value of the payments required to be made during the remaining Contract Term of this Agreement. Factors used in determining the economic benefit to a Party may include, without limitation, reference to information supplied by one or more third parties, which shall exclude Affiliates of the Non-Defaulting Party, including without limitation, quotations (either firm or indicative) of relevant rates, prices, yields, yield curves, volatilities, spreads or other relevant market data in the relevant markets, comparable transactions, forward price curves based on economic analysis of the relevant markets, settlement prices for comparable transactions at liquid trading hubs (e.g., SP-15), all of which should be calculated for the remaining Contract Term, and includes the value of Green Attributes.
"Governmental Action" means any delay in the performance of Seller's obligations hereunder arising out of any of the following affecting the delivery of solar PV modules, inverters, and medium voltage transformers required for the Project, notwithstanding the foreseeability at any time: expropriation, requisition, confiscation, seizure, detention or nationalization; export or import restrictions by any Governmental Authority; embargoes or sanctions; rationing or allocation, at the request or insistence of any Governmental Authority.
"Governmental Authority" means any federal, state, provincial, local or municipal government, any political subdivision thereof or any other governmental, congressional or parliamentary, regulatory, or judicial instrumentality, authority, body, agency, department, bureau, or entity with authority to bind a Party at law, including CAISO; provided, however, that "Governmental Authority" shall not in any event include any Party.
"Green Attributes" means any and all credits, benefits, emissions reductions, offsets, and allowances, howsoever entitled, attributable to the generation from the Facility, and its displacement of conventional energy generation. Green Attributes include but are not limited to Renewable Energy Credits, as well as: (a) any avoided emissions of pollutants to the air, soil or water such as sulfur oxides (Sox), nitrogen oxides (Nox), carbon monoxide (CO) and other pollutants; (b) any avoided emissions of carbon dioxide (CO2), methane (CH4), nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride and other greenhouse gases (GHGs) that have been determined by the United Nations Intergovernmental Panel on Climate Change, or otherwise by Law or laws, to contribute to the actual or potential threat of altering the Earth's climate by trapping heat in the atmosphere; (c) the reporting rights to these avoided emissions, such as Green Tag Reporting Rights. Green Tags are accumulated on a MWh basis and one Green

Tag represents the Green Attributes associated with one (1) MWh of Energy. Green Attributes do not include (i) any energy, capacity, reliability or other power attributes from the Facility, (ii) any other production tax credits associated with the construction or operation of the Facility and other financial incentives in the form of credits, reductions, or allowances associated with the Facility that are applicable to a state or federal income taxation obligation, (iii) fuel-related subsidies or "tipping fees" that may be paid to Seller to accept certain fuels, or local subsidies received by the generator for the destruction of particular preexisting pollutants or the promotion of local environmental benefits, or (iv) emission reduction credits encumbered or used by the Facility for compliance with local, state, or federal operating and/or air quality permits.
"Green Tag Reporting Rights" means the right of a purchaser of renewable energy to report ownership of accumulated "green tags" in compliance with and to the extent permitted by applicable Law and include, without limitation, rights under Section 1605(b) of the Energy Policy Act of 1992, and any present or future federal, state or local certification program or emissions trading program, including pursuant to the WREGIS Operating Rules.
"Guaranteed Capacity" means the amount of generating capacity of the Facility, as measured in MW at the Delivery Point, set forth on the Cover Sheet, as the same may be adjusted pursuant to Exhibit B.
"Guaranteed Commercial Operation Date" means the Expected Commercial Operation Date, as such date may be extended by the Development Cure Period.
"Guaranteed Construction Start Date" means the Expected Construction Start Date, as such date may be extended by the Development Cure Period.
"Guaranteed Energy Production" means an amount of Energy, as measured in MWh, equal to eighty percent ( $80 \%$ ) of the sum of the Expected Energy for the two (2) Contract Years in the applicable Performance Measurement Period.
"Guarantor" means, with respect to Seller, any Person that (a) Buyer does not already have any material credit exposure to under any other agreements, guarantees, or other arrangements at the time its Guaranty is issued, (b) is an Affiliate of Seller, or other third party reasonably acceptable to Buyer, (c) has a Credit Rating of BBB- or better from S\&P or a Credit Rating of Baa3 or better from Moody's or has a tangible net worth of at least One Hundred Million Dollars $(\$ 100,000,000)$, (d) is incorporated or organized in a jurisdiction of the United States and is in good standing in such jurisdiction, and (e) executes and delivers a Guaranty for the benefit of Buyer.
"Guaranty" means a guaranty from a Guarantor provided for the benefit of Buyer substantially in the form attached as Exhibit Q or in such other form and substance reasonably acceptable to Buyer.
"Imbalance Energy" means the amount of Energy, in any given Settlement Period or Settlement Interval, by which the amount of Facility Energy deviates from the amount of Scheduled Energy.
"Indemnifiable Loss(es)" has the meaning set forth in Section 16.1.
"Indemnified Party" has the meaning set forth in Section 16.1.
"Indemnifying Party" has the meaning set forth in Section 16.1.
"Initial Synchronization" means the initial delivery of Facility Energy to the Delivery Point.
"Installed Capacity" means the actual generating capacity of the Facility, as measured in MW(ac) at the Delivery Point, that achieves Commercial Operation, adjusted for ambient conditions on the date of the performance test, not to exceed the Guaranteed Capacity, as evidenced by a certificate substantially in the form attached as Exhibit I hereto provided by Seller to Buyer.
"Interconnection Agreement" means the interconnection agreement entered into by Seller or an Affiliate pursuant to which the Facility will (a) be interconnected with the Transmission System and (b) will have capacity rights equal to or greater than the amount of the Guaranteed Capacity, and pursuant to which Seller's Interconnection Facilities and any other Interconnection Facilities will be constructed, operated and maintained during the Contract Term.
"Interconnection Facilities" means the interconnection facilities, control and protective devices and metering facilities required to connect the Facility with the Transmission System in accordance with the Interconnection Agreement.
"Interest Rate" has the meaning set forth in Section 8.2.
"Inter-SC Trade" or "IST" has the meaning set forth in the CAISO Tariff.
"ITC" means the investment tax credit established pursuant to Section 48 of the United States Internal Revenue Code.
"Law" means any applicable law, statute, rule, regulation, decision, writ, order, decree, judgment, permit, tariff, or any interpretation thereof, promulgated or issued by a Governmental Authority.
"Lender" means, collectively, any Person (i) providing senior or subordinated construction, interim, back leverage or long-term debt, equity or tax equity financing or refinancing for or in connection with the development, construction, purchase, installation or operation of the Facility, whether that financing or refinancing takes the form of private debt (including back-leverage debt), public debt, tax equity or any other form (including financing or refinancing provided to a member or other direct or indirect owner of Seller), including any equity or tax equity investor directly or indirectly providing financing or refinancing for the Facility or purchasing equity ownership interests of Seller or its Affiliates, and any trustee or agent acting on their behalf, (ii) providing interest rate or commodity protection under an agreement hedging or otherwise mitigating the cost of any of the foregoing obligations, or (iii) participating in a lease financing (including a sale leaseback or leveraged leasing structure) with respect to the Facility.
"Letter(s) of Credit" means one or more irrevocable, standby letters of credit issued by a U.S. commercial bank or a foreign bank with a U.S. branch with such bank having a Credit Rating of at least A- with an outlook designation of "stable" from S\&P or A3 with an outlook designation
of "stable" from Moody's, in a form substantially similar to the letter of credit set forth in Exhibit K.
"Licensed Professional Engineer" means an independent, professional engineer reasonably acceptable to Buyer, who is licensed in the State of California and has training and experience with facilities similar to the Facility.
"Locational Marginal Price" or "LMP" has the meaning set forth in the CAISO Tariff.
"Losses" means, with respect to the Non-Defaulting Party, an amount equal to the present value of the economic loss to it, if any (exclusive of Costs), resulting from termination of this Agreement for the remaining Contract Term, determined in a commercially reasonable manner. Factors used in determining economic loss to a Party may include, without limitation, reference to information supplied by one or more third parties, which shall exclude Affiliates of the NonDefaulting Party, including without limitation, quotations (either firm or indicative) of relevant rates, prices, yields, yield curves, volatilities, spreads or other relevant market data in the relevant markets, comparable transactions, forward price curves based on economic analysis of the relevant markets, settlement prices for comparable transactions at liquid trading hubs (e.g., SP-15), all of which should be calculated for the remaining Contract Term and must include the value of Green Attributes and Renewable Energy Incentives.
"Lost Output" has the meaning set forth in Section 4.7.
"Managing Member" means the managing member in any tax equity, yieldco drop down or similar financing structure, so long as such managing member is responsible for administration of project agreements including this Agreement.
"Market Curtailment Period" has the meaning set forth in Exhibit P.
"Market Price" means the Fifteen Minute Market Locational Marginal Price expressed in $\$ / \mathrm{MWh}$ at the Delivery Point for the specific interval. To the extent changes to the CAISO market rules eliminate a Fifteen Minute Market Locational Market Price at the Point of Delivery, then the Parties shall cooperate in good faith to select an alternate Market Price in order to preserve the mutually agreed-upon benefits, burdens, and obligations set forth in this Agreement as of the Effective Date.
"Milestones" means the development activities for significant permitting, interconnection, financing, and construction milestones set forth in the Cover Sheet.
"Monthly Delivery Forecast" means the monthly forecast delivered by Seller pursuant to Section 4.3(b).
"Moody's" means Moody's Investors Service, Inc.
"MW" means megawatts measured in alternating current, unless expressly stated in terms of direct current.
"MWh" means megawatt-hour measured in alternating current, unless expressly stated in terms of direct current.
"Negative LMP" means, in any Settlement Period or Settlement Interval, the Fifteen Minute Market Price at the Facility's PNode is less than zero dollars (\$0).
"Negative LMP Floor" means the Floor Price as defined in the Negative Pricing Bid Protocol given in Exhibit P.
"Negative Price Curtailment" is a curtailment of deliveries of Energy from the Facility to Buyer pursuant to the protocol for Negative Price Curtailment described in Exhibit P.
"NERC" means the North American Electric Reliability Corporation or any successor entity performing similar functions.
"Network Upgrades" has the meaning set forth in the CAISO Tariff.
"Non-Availability Charge" has the meaning set forth in the CAISO Tariff.
"Non-Defaulting Party" has the meaning set forth in Section 11.2.
"Notice" shall, unless otherwise specified in the Agreement, mean written communications by a Party to be delivered by hand delivery, United States mail, overnight courier service, facsimile or electronic messaging (e-mail).
"Notice of Claim" has the meaning set forth in Section 16.2(a).
"Pacific Prevailing Time" means the prevailing standard time or daylight savings time, as applicable, in the Pacific time zone.
"Participating Transmission Owner" or "PTO" means an entity that owns transmission lines and associated facilities and/or has entitlements to use certain transmission lines and associated facilities where the Facility is interconnected. For purposes of this Agreement, the Participating Transmission Owner is set forth in Exhibit A.
"Party" or "Parties" has the meaning set forth in the Preamble.
"Performance Measurement Period" means each two (2) consecutive Contract Year period during the Delivery Term.
"Performance Security" means any of the following instruments, in the amount specified on the Cover Sheet and delivered and maintained in conformance with Section 8.8: (i) cash, (ii) a Letter of Credit, or (iii) a Guaranty.
"Performance Security End Date" has the meaning set forth in Section 8.8.
"Permitted Transferee" means (i) any Affiliate of Seller or (ii) any entity that satisfies, or is controlled by another Person that satisfies, the following requirements:
(a) A tangible net worth of not less than one hundred fifty million dollars $(\$ 150,000,000)$ or a Credit Rating of at least BBB- from S\&P, BBB- from Fitch, or Baa3 from Moody's; and
(b) At least two (2) years of experience in the ownership and operations of power generation facilities similar to the Facility or has retained a third-party with such experience to operate the Facility.
"Person" means an individual, corporation, sole proprietorship, limited liability company, limited or general partnership, joint venture, association, joint-stock company, trust, incorporated organization, institution, public benefit corporation, unincorporated organization, governmental entity or other entity.
"Planned Outage" has the meaning set forth in Section 4.6(a).
"PNode" has the meaning set forth in the CAISO Tariff.
"Portfolio Content Category" means PCC1, PCC2 or PCC3, as applicable.
"Portfolio Content Category 1" or "PCC1" means any Renewable Energy Credit associated with the generation of electricity from an Eligible Renewable Energy Resource consisting of the portfolio content set forth in California Public Utilities Code Section $399.16(b)(1)$, as may be amended from time to time or as further defined or supplemented by Law.
"Portfolio Content Category 2" or "PCC2" means any Renewable Energy Credit associated with the generation of electricity from an Eligible Renewable Energy Resource consisting of the portfolio content set forth in California Public Utilities Code Section $399.16(b)(2)$, as may be amended from time to time or as further defined or supplemented by Law.
"Portfolio Content Category 3" or "PCC3" means any Renewable Energy Credit associated with the generation of electricity from an Eligible Renewable Energy Resource consisting of the portfolio content set forth in California Public Utilities Code Section 399.16(b)(3), as may be amended from time to time or as further defined or supplemented by Law.
"Product" the meaning set forth on the Cover Sheet, and for avoidance of doubt is in each of the following cases from and associated with the Facility Energy and includes (i) Energy, (ii) Green Attributes including PCC1 Green Attributes, (iii) Ancillary Services, and (iv) any Future Environmental Attributes as applicable in accordance with Section 3.5.
"Progress Report" means a progress report including the items set forth in Exhibit E.
"Prudent Operating Practice" means (a) the applicable practices, methods and acts required by or consistent with applicable Laws and reliability criteria, and otherwise engaged in or approved by a significant portion of the electric utility industry during the relevant time period with respect to grid-interconnected, utility-scale generating facilities with integrated storage in the Western United States, or (b) any of the practices, methods and acts which, in light of the facts
known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Prudent Operating Practice is not intended to be limited to the optimum practice, method or act to the exclusion of all others, but rather to acceptable practices, methods or acts generally accepted in the industry with respect to grid-interconnected, utility-scale generating facilities with integrated storage in the Western United States. Prudent Operating Practice includes compliance with applicable Laws, applicable reliability criteria, and the criteria, rules and standards promulgated in the National Electric Safety Code and the National Electrical Code, as they may be amended or superseded from time to time, including the criteria, rules and standards of any successor organizations.
"PTC" means the production tax credit established pursuant to Section 45 of the Code.
"PTC Rate" means the then-current rate for the PTCs ( $\$ / \mathrm{MWh}$ ) applicable to the Facility on an after-tax basis; provided that, the PTC Rate shall be $\$ 0 / \mathrm{MWh}$ to the extent the Facility is not then receiving any Production Tax Credits during the applicable period. Solely as an example, the current PTC Rate for solar projects that began construction as of the Effective Date, meet the prevailing wage test, and are not entitled to PTC adders is $\$ 27.50 / \mathrm{MWh}$.
"Qualified Buyer Assignee" means a third-party Person (a) whose long-term unsecured indebtedness is rated "BBB-" or higher by S\&P Global Ratings or "Baa3" or higher by Moody's Investors Service, Inc. and who is not on negative watch by S\&P Global Ratings or Moody's Investors Service, Inc., as applicable or (b) who is Eastside Power Authority or City of Rancho Cucamonga.
"Real-Time Forecast" means any Notice of any change to the Available Capacity or hourly expected Energy delivered by or on behalf of Seller pursuant to Section 4.4(d).
"Real-Time Market" has the meaning set forth in the CAISO Tariff.
"Real-Time Market Price" means the Resource-Specific Settlement Interval LMP defined in the CAISO Tariff. If there is more than one applicable Real-Time Price for the same period of time, Real-Time Price shall mean the price associated with the smallest time interval.
"Receiving Party" has the meaning set forth in Section 18.2.
"Remedial Action Plan" has the meaning in Section 2.4.
"Renewable Energy Credit" has the meaning set forth in California Public Utilities Code Section 399.12(h), as may be amended from time to time or as further defined or supplemented by Law.
"Renewable Energy Incentives" means: (a) all federal, state, or local Tax credits or other Tax benefits associated with the construction, ownership, or production of electricity from the Facility (including credits under Sections 38, 45, 46 and 48 of the Code); (b) any federal, state, or local grants, subsidies or other like benefits relating in any way to the Facility; and (c) any other form of incentive relating in any way to the Facility that are not a Green Attribute or a Future Environmental Attribute.
"Replacement Energy" has the meaning given in Exhibit G.
"Replacement Green Attributes" has the meaning given in Exhibit G.
"Replacement Product" has the meaning given in Exhibit G.
"Resource ID" has the meaning set forth in the CAISO Tariff.
" $\mathbf{S \& P}$ " means the Standard \& Poor's Financial Services, LLC (a subsidiary of The McGraw-Hill Companies, Inc.).
"Schedule" has the meaning set forth in the CAISO Tariff, and "Scheduled" and "Scheduling" have a corollary meaning.
"Scheduled Energy" means the Facility Energy that clears under the applicable CAISO market based on the final Day-Ahead Schedule, FMM Schedule (as defined in the CAISO Tariff), or any other financially binding Schedule, market instruction or dispatch for the Facility for a given period of time implemented in accordance with the CAISO Tariff.
"Scheduled Maintenance" means a planned interruption or reduction of the Facility's generation required for inspection, or preventive or corrective maintenance, in accordance with Prudent Operating Practice.
"Scheduling Coordinator" or "SC" means an entity certified by the CAISO as qualifying as a Scheduling Coordinator pursuant to the CAISO Tariff for the purposes of undertaking the functions specified in "Responsibilities of a Scheduling Coordinator," of the CAISO Tariff, as amended from time to time. The Seller or an agent of Seller will be the Scheduling Coordinator for the Facility as set forth in the Cover Sheet.
"Security Interest" has the meaning set forth in Section 8.9.
"Self-Schedule" has the meaning set forth in the CAISO Tariff.
"Seller" has the meaning set forth on the Cover Sheet.
"Seller Permitted Party" means any actual or potential: (i) Lender, (ii) direct or indirect purchaser of all or any part of Seller or the Facility, (iii) engineering, procurement, and construction contractor, and (iv) operation and maintenance provider.
"Seller's WREGIS Account" has the meaning set forth in Section 4.8(a).
"Settlement Amount" means the Non-Defaulting Party's Costs and Losses, on the one hand, netted against its Gains, on the other. If the Non-Defaulting Party's Costs and Losses exceed its Gains, then the Settlement Amount shall be an amount owing to the Non-Defaulting Party. If the Non-Defaulting Party's Gains exceed its Costs and Losses, then the Settlement Amount shall be zero dollars (\$0). The Settlement Amount does not include consequential, incidental, punitive, exemplary or indirect or business interruption damages.

## "Settlement Interval" has the meaning set forth in the CAISO Tariff.

"Settlement Period" has the meaning set forth in the CAISO Tariff.
"Shared Facilities" means the gen-tie lines, transformers, substations, switchyards, or other equipment, permits, contract rights, and other assets and property (real or personal), in each case, as necessary to enable delivery of Energy from the Facility (which is excluded from Shared Facilities) to the point of interconnection, including the Interconnection Agreement itself, that are used in common with third parties.
"Shared Facilities Agreement" has the meaning set forth in Section 6.3.
"Site" means the real property on which the Facility is or will be located, as further described in Exhibit A, and as shall be updated by Seller at the time Seller provides an executed Construction Start Date certificate in the form of Exhibit J to Buyer.
"Site Control" means that, for the Contract Term, Seller (or, prior to the Delivery Term, its Affiliate): (a) owns or has the option to purchase the Site; (b) is the lessee or has the option to lease the Site; or (c) is the holder of an easement or an option for an easement, right-of-way grant, or similar instrument with respect to the Site.
"SP-15" means the Existing Zone Generation Trading Hub for Existing Zone region SP 15 as set forth in the CAISO Tariff.

## "Station Use" means:

(a) The Energy produced by the Facility that is used within the Facility to power the lights, motors, control systems and other electrical loads that are necessary for operation of the Facility; and
(b) The Energy produced by the Facility that is consumed within the Facility's electric energy distribution system as losses.
"System Emergency" means any condition that requires, as determined and declared by CAISO or the PTO, automatic or immediate action to (i) prevent or limit harm to or loss of life or property, (ii) prevent loss of transmission facilities or generation supply in the immediate vicinity of the Facility, or (iii) to preserve Transmission System reliability.
"Tax" or "Taxes" means all U.S. federal, state and local and any foreign taxes, levies, assessments, surcharges, duties and other fees and charges of any nature imposed by a Governmental Authority, whether currently in effect or adopted during the Contract Term, including ad valorem, excise, franchise, gross receipts, import/export, license, property, sales and use, stamp, transfer, payroll, unemployment, income, and any and all items of withholding, deficiency, penalty, additions, interest or assessment related thereto.
"Tax Credits" means the PTC, ITC, and any other state, local, and/or federal tax credit, depreciation benefit, tax deduction or investment tax credit specific to the production of renewable energy or investments in renewable energy facilities.
"Terminated Transaction" has the meaning set forth in Section 11.2.
"Termination Payment" has the meaning set forth in Section 11.3.
"Test Energy" means the Facility Energy delivered (a) commencing on the later of (i) the first date that the CAISO informs Seller in writing that Seller may deliver Facility Energy to the CAISO, (ii) the first date that the PTO informs Seller in writing that Seller has conditional or temporary permission to parallel, and (iii) the end of the Bridge Product Delivery Term and (b) ending upon the occurrence of the Commercial Operation Date.
"Test Energy Rate" has the meaning set forth in Section 3.6.
"Transmission Provider" means any entity or entities transmitting or transporting the Facility Energy on behalf of Seller or Buyer to or from the Delivery Point.
"Transmission System" means the transmission facilities operated by the CAISO, now or hereafter in existence, which provide energy transmission service downstream from the Delivery Point.
"Ultimate Parent" means Clearway Energy Group LLC or Clearway Energy, Inc., or any successor ultimate parent of Seller that is approved by Buyer in accordance with Article 14.
"Variable Energy Resource" or "VER" has the meaning set forth in the CAISO Tariff.
"Variable Energy Resource Forecast" or "VER Forecast" means, for a given period, the final forecast of the Energy to be produced by the Facility prepared by the CAISO pursuant to the CAISO Tariff.
"WECC" means the Western Electricity Coordinating Council or its successor.
"WREGIS" means the Western Renewable Energy Generation Information System or any successor renewable energy tracking program.
"WREGIS Certificate Deficit" has the meaning set forth in Section 4.8(e).
"WREGIS Certificates" has the same meaning as "Certificate" as defined by WREGIS in the WREGIS Operating Rules and are designated as eligible for complying with the California Renewables Portfolio Standard.
"WREGIS Operating Rules" means those operating rules and requirements adopted by WREGIS as of January 4, 2021, as subsequently amended, supplemented or replaced (in whole or in part) from time to time.
1.2 Rules of Interpretation. In this Agreement, except as expressly stated otherwise or unless the context otherwise requires:
(a) headings and the rendering of text in bold and italics are for convenience and reference purposes only and do not affect the meaning or interpretation of this Agreement;
(b) words importing the singular include the plural and vice versa and the masculine, feminine and neuter genders include all genders;
(c) the words "hereof", "herein", and "hereunder" and words of similar import shall refer to this Agreement as a whole and not to any particular provision of this Agreement;
(d) a reference to an Article, Section, paragraph, clause, Party, or Exhibit is a reference to that Section, paragraph, clause of, or that Party or Exhibit to, this Agreement unless otherwise specified;
(e) a reference to a document or agreement, including this Agreement shall mean such document, agreement or this Agreement including any amendment or supplement to, or replacement, novation or modification of this Agreement, but disregarding any amendment, supplement, replacement, novation or modification made in breach of such document, agreement or this Agreement;
(f) a reference to a Person includes that Person's successors and permitted assigns;
(g) the term "including" means "including without limitation" and any list of examples following such term shall in no way restrict or limit the generality of the word or provision in respect of which such examples are provided;
(h) references to any statute, code or statutory provision are to be construed as a reference to the same as it may have been, or may from time to time be, amended, modified or reenacted, and include references to all bylaws, instruments, orders and regulations for the time being made thereunder or deriving validity therefrom unless the context otherwise requires;
(i) in the event of a conflict, a mathematical formula or other precise description of a concept or a term shall prevail over words providing a more general description of a concept or a term;
(j) references to any amount of money shall mean a reference to the amount in United States Dollars, and references to a LMP shall mean the LMP at the Delivery Point unless expressly provided otherwise;
(k) words, phrases or expressions not otherwise defined herein that (i) have a generally accepted meaning in Prudent Operating Practice shall have such meaning in this Agreement or (ii) do not have well known and generally accepted meaning in Prudent Operating Practice but that have well known and generally accepted technical or trade meanings, shall have such recognized meanings; and
(l) each Party acknowledges that it was represented by counsel in connection with this Agreement and that it or its counsel reviewed this Agreement and that any rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Agreement.

## ARTICLE 2 TERM; CONDITIONS PRECEDENT

### 2.1 Contract Term.

(a) The term of this Agreement shall commence on the Effective Date and shall remain in full force and effect until the conclusion of the Delivery Term, subject to any early termination provisions set forth herein ("Contract Term"); provided, however, that subject to Buyer's obligations in Section 3.6, Buyer's obligations to pay for or accept any Product are subject to Seller's completion of the conditions precedent pursuant to Section 2.2.
(b) Applicable provisions of this Agreement shall continue in effect after termination, including early termination, to the extent necessary to enforce or complete the duties, obligations or responsibilities of the Parties arising prior to termination. The confidentiality obligations of the Parties under Article 18 and all indemnity and audit rights shall remain in full force and effect for three (3) years following the termination of this Agreement.
2.2 Conditions Precedent. The Delivery Term shall not commence until Seller completes each of the following conditions:
(a) Seller shall have delivered to Buyer a completion certificate from a Licensed Professional Engineer substantially in the form of Exhibit I setting forth the Installed Capacity on the Commercial Operation Date;
(b) A Participating Generator Agreement and a Meter Service Agreement between Seller and CAISO shall have been executed and delivered and be in full force and effect, and a copy of each such agreement delivered to Buyer;
(c) An Interconnection Agreement between Seller and the PTO shall have been executed and delivered and be in full force and effect, and a copy of the Interconnection Agreement delivered to Buyer;
(d) All required regulatory authorizations, approvals and permits for the operation of the Facility have been obtained (or if not obtained, applied for and reasonably expected to be received within ninety (90) days) and all required conditions thereof that are capable of being satisfied on the Commercial Operation Date for commencement of operation of the Facility have been satisfied and shall be in full force and effect;
(e) Seller has received CEC Precertification of the Facility (and reasonably expects to receive final CEC Certification and Verification for the Facility in no more than one hundred eighty (180) days from the Commercial Operation Date);
(f) Seller (with the reasonable participation of Buyer) shall have completed (or, for items normally occurring after commercial operation of the Facility, expects to timely complete) all applicable WREGIS registration requirements, including the completion and submittal of all applicable registration forms and supporting documentation, which may include applicable interconnection agreements, informational surveys related to the Facility, QRE service agreements, and other appropriate documentation required to effect Facility registration with

WREGIS and to enable Renewable Energy Credit transfers related to the Facility within the WREGIS system;
(g) Seller has delivered the Performance Security to Buyer in accordance with Section 8.8; and
(h) Seller has paid Buyer or authorized Buyer to draw on the Development Security for all amounts owing under this Agreement, if any, including Construction Delay Damages and Commercial Operation Delay Damages.
2.3 Development; Construction; Progress Reports. Within fifteen (15) days after the close of (i) each calendar quarter from the first calendar quarter following the Effective Date until the Construction Start Date, and (ii) each calendar month from the first calendar month following the Construction Start Date until the Commercial Operation Date, Seller shall provide to Buyer a Progress Report and agree to regularly scheduled meetings between representatives of Buyer and Seller to review such monthly reports and discuss Seller's construction progress. The form of the Progress Report is set forth in Exhibit E. Seller shall also provide Buyer with any reasonable requested documentation (subject to confidentiality restrictions) directly related to the achievement of Milestones within ten (10) Business Days of receipt of such request by Seller. For the avoidance of doubt, as between Seller and Buyer, Seller is solely responsible for the design and construction of the Facility, including the location of the Site, obtaining all permits and approvals to build the Facility, the Facility layout, and the selection and procurement of equipment comprising the Facility.
2.4 Remedial Action Plan. If Seller misses three (3) or more Milestones, or misses any one (1) by more than ninety (90) days, except as the result of a Force Majeure Event or Buyer's Default, Seller shall submit to Buyer, within ten (10) Business Days of either the third such missed Milestone or the end of the ninety (90) day period for any single uncompleted Milestone, a remedial action plan ("Remedial Action Plan"), which will describe in detail any delays (actual or anticipated) beyond the scheduled Milestone dates, including the cause of the delay (e.g., governmental approvals, financing, property acquisition, design activities, equipment procurement, project construction, interconnection, or any other factor), Seller's detailed description of its proposed course of action to achieve the missed Milestones and all subsequent Milestones by the Guaranteed Commercial Operation Date; provided, that delivery of any Remedial Action Plan shall not relieve Seller of its obligation to provide Remedial Action Plans with respect to any subsequent Milestones and to achieve the Guaranteed Commercial Operation Date in accordance with the terms of this Agreement. Subject to the provisions of Exhibit B, so long as Seller complies with its obligations under this Section 2.4, Seller shall not be considered in default of its obligations under this Agreement solely as a result of missing any Milestone.
2.5 Termination Prior to the Commercial Operation Date. If Seller determines in its commercially reasonable discretion that either (a) it is no longer economically feasible for the Facility to achieve Commercial Operation or (b) the Facility will not be able to achieve Commercial Operation by the date that is one hundred and eighty (180) days after the Guaranteed Commercial Operation Date, the Seller will have the right, but not the obligation, to terminate this Agreement (the "Seller Termination Right"). Prior to exercising the Seller Termination Right, Seller shall provide Notice to Buyer of its intent to exercise such Seller Termination Right.

Following such Notice, Seller and Buyer shall discuss in good faith any amendments to this Agreement reasonably requested by Seller to address the events, circumstances, or causes giving rise to the Seller Termination Right. Prior to the exercise of the Seller Termination Right, Seller shall provide Notice to Buyer of a written proposal with the final material terms and conditions it seeks to include in any potential amendment to this Agreement in order to avoid exercising the Seller Termination Right (the "Seller Pre-Termination Offer Terms"). The Seller PreTermination Offer Terms may include, but are not limited to, adjustments to the Contract Price, the Milestones (except related to Bridge Product), and any other terms included in this Agreement, and may include additional benefits to Buyer, as determined by Seller in its commercially reasonable discretion. Seller shall not exercise the Seller Termination Right upon less than thirty (30) days' Notice after delivery of the Seller Pre-Termination Offer Terms, or so long as the Parties are continuing to negotiate a proposed amendment in good faith, not to exceed sixty (60) days. Seller shall satisfy its Bridge Product obligations under Section 3.15 prior to exercising the Seller Termination Right. Thereafter, if Seller exercises the Seller Termination Right, then Seller shall owe Buyer the Damage Payment plus any accrued and unpaid Construction Delay Damages and Commercial Operation Delay Damages, subject to Section 11.7, and payment of such amount shall constitute liquidated damages and, subject to Seller's obligations set forth in Section 2.6, Buyer's sole and exclusive remedy for the termination of this Agreement. Upon such termination and payment by Seller in accordance with this Section 2.5, neither Party will have any further liability to the other under this Agreement, save and except for those obligations set forth in Sections 2.1(b), 2.6 and 3.15, and Buyer shall promptly return to Seller any Development Security then held by Buyer.
2.6 Right of First Offer. If Seller exercises the Seller Termination Right, for a period of sixty (60) days following the effective date of Seller's termination of this Agreement, neither Seller nor Seller's Affiliates may agree, or enter into an agreement, to sell or deliver all of the Product to a party other than Buyer unless either (a) the terms and conditions of such sale are materially no more favorable to such party than the Seller Pre-Termination Offer Terms, as determined by Seller in its commercially reasonable discretion, or (b) (i) Seller or a Seller Affiliate has provided Buyer with a written offer to sell all of the Product to Buyer on terms and conditions that are materially no less favorable than what Seller or Seller's Affiliates intend to agree to with a party other than Buyer (the "Offer"), and (ii) either (1) Buyer rejects the Offer or Buyer has not provided within ten (10) Business Days of Buyer's receipt thereof a written acceptance of such Offer, or (2) Buyer delivers to Seller within ten (10) Business Days of Buyer's receipt of the Offer a written acceptance of such Offer, which acceptance shall be subject to finalization and execution of a binding agreement by both Parties incorporating the terms of the Offer and any other provisions or amendments that are mutually acceptable to the Parties, but the Parties have not executed a binding agreement incorporating the terms of the Offer within forty-five (45) days after Buyer's receipt of the Offer. Buyer's rights pursuant to this Section 2.6 are limited to offers by Seller and Seller's Affiliates to sell or deliver all of the Product under this Agreement. Seller and Seller's Affiliates may, in its commercially reasonable discretion, enter into transactions with third parties for a portion of the Product without violating the terms of this Section 2.6.

## ARTICLE 3 PURCHASE AND SALE

3.1 Purchase and Sale of Product. Subject to the terms and conditions of this Agreement, during the Delivery Term, Buyer will purchase Buyer's Fraction of the Product produced by the Facility at the Contract Price and in accordance with Section 3.14, Seller shall sell and deliver to Buyer the Buyer's Fraction of all such Product produced by the Facility (net of applicable losses). At its sole discretion, Buyer may during the Delivery Term re-sell or use for another purpose all or a portion of the Product, after title and risk of loss thereto has been transferred to Buyer, provided that no such resale or use shall relieve Buyer of any of obligations hereunder. During the Delivery Term, Buyer will have exclusive rights to offer, bid, or otherwise submit the Product, or any component thereof, from the Facility after the Delivery Point for resale in the market, and retain and receive any and all related revenues. In no event shall Seller have the right to procure any element of the Product from sources other than the Facility for sale or delivery to Buyer under this Agreement, except with respect to Replacement Product. Subject to Buyer's obligation to purchase Product in accordance with this Section 3.1 and Section 3.14, Buyer has no obligation to pay Seller for any Product that is not delivered to the Delivery Point as a result of any circumstance, is not associated with Buyer's Fraction of the Facility, or where the associated Facility Energy is not or cannot be delivered to the Delivery Point, including as a result of an outage of the Facility, a Force Majeure Event, or a Curtailment Order.
3.2 Sale of Green Attributes. During the Delivery Term, Seller shall sell and deliver to Buyer, and Buyer shall purchase and receive from Seller, Buyer's Fraction of Green Attributes attributable to the Facility Energy generated by the Facility. Seller shall also sell and deliver to Buyer, and Buyer shall purchase and receive from Seller, Buyer's Fraction of Green Attributes associated with Test Energy generated by the Facility.
3.3 Imbalance Energy. Buyer and Seller recognize that in any given Settlement Period there may be Imbalance Energy. To the extent there is any Imbalance Energy, whether positive or negative, any and all costs, liabilities, revenue and payments related to such Imbalance Energy shall be for the account of Seller.
3.4 Ownership of Renewable Energy Incentives. Seller shall have all right, title, and interest in and to all Renewable Energy Incentives. Buyer acknowledges that any Renewable Energy Incentives belong to Seller. If any Renewable Energy Incentives, or values representing the same, are initially credited or paid to Buyer, Buyer shall cause such Renewable Energy Incentives or values relating to the same to be assigned or transferred to Seller without delay. Buyer shall reasonably cooperate with Seller, at Seller's sole expense, in Seller's efforts to meet the requirements for any certification, registration, or reporting program relating to Renewable Energy Incentives.

### 3.5 Future Environmental Attributes.

(a) The Parties acknowledge and agree that as of the Effective Date, environmental attributes sold under this Agreement are restricted to Green Attributes; however, Future Environmental Attributes may be created by a Governmental Authority through Laws enacted after the Effective Date. Subject to the final sentence of this Section 3.5(a) and Sections
3.5(b) and 3.11, in such event, Buyer shall bear all costs associated with the transfer, qualification, verification, registration and ongoing compliance for Buyer's Fraction of such Future Environmental Attributes, but there shall be no increase in the Contract Price. Upon Seller's receipt of Notice from Buyer of Buyer's intent to claim such Future Environmental Attributes, the Parties shall determine the necessary actions and additional costs associated with such Future Environmental Attributes. Seller shall have no obligation to alter the Facility unless the Parties have agreed on all necessary terms and conditions relating to such alteration and Buyer has agreed to reimburse Seller for all costs, losses, and liabilities associated with such alteration.
(b) If Buyer elects to receive Future Environmental Attributes pursuant to Section 3.5(a), the Parties agree to negotiate in good faith with respect to the development of further agreements and documentation necessary to effectuate the transfer of Buyer's Fraction of such Future Environmental Attributes, including agreement with respect to (i) appropriate transfer, delivery and risk of loss mechanisms, and (ii) appropriate allocation of any additional costs to Buyer, as set forth above); provided, that the Parties acknowledge and agree that such terms are not intended to alter the other material terms of this Agreement.
3.6 Test Energy. No less than fourteen (14) days prior to the first day on which Test Energy is expected to be available from the Facility, Seller shall notify Buyer of the availability of the Test Energy. If and to the extent the Facility generates and delivers Test Energy, Seller shall sell and Buyer shall purchase from Seller Buyer's Fraction of all Test Energy and any associated Products on an as-available basis. As compensation for any such Test Energy and associated Product, Buyer shall remit to Seller an amount ("Test Energy Rate") for each MWh of Test Energy equal to: (a) for up to ninety (90) days from the first delivery of Test Energy, an amount calculated in accordance with Section 3.14(a)(i), provided that only seventy five percent (75\%) of the Contract Price shall apply; and (b) from the ninety-first (91st) day after the first delivery of Test Energy until the Commercial Operation Date, an amount calculated in accordance with Section 3.14(a)(i), provided that only fifty percent (50\%) of the Contract Price shall apply. For the avoidance of doubt, the conditions precedent in Section 2.2 are not applicable to the Parties' obligations under this Section 3.6.
3.7 Capacity Attributes. Seller may in its discretion elect to request Full Capacity Deliverability Status in the CAISO generator interconnection process. At a minimum, Seller will obtain and maintain Energy Only Deliverability Status for the Facility, or otherwise be equivalently authorized by the CAISO and Governmental Authorities to deliver Product to Buyer, throughout the Delivery Term. As between Buyer and Seller, (a) Seller shall be responsible for the cost and installation of any Network Upgrades associated with obtaining such Full Capacity Deliverability Status, and (b) Seller shall have sole claim and all right, title, and interest in and to Capacity Attributes and Seller may keep such Capacity Attributes for its own account or sell them to third parties, all in Seller's sole discretion.

## 3.8 [Reserved].

3.9 CEC Certification and Verification. Subject to Section 3.11, Seller shall take all necessary steps including, but not limited to, making or supporting timely filings with the CEC to obtain and maintain CEC Precertification and CEC Certification and Verification for the Facility, including compliance with all applicable requirements for certified facilities set forth in the current
version of the RPS Eligibility Guidebook (or its successor). Seller shall obtain CEC Precertification by the Commercial Operation Date. Within thirty (30) days after the Commercial Operation Date, Seller shall apply with the CEC for CEC Certification and Verification. Within one hundred eighty (180) days after the Commercial Operation Date, and subject to Section 3.11, Seller shall obtain and maintain throughout the remainder of the Delivery Term the CEC Certification and Verification. Seller must promptly notify Buyer and the CEC of any changes to the information included in Seller's application for CEC Precertification or CEC Certification and Verification for the Facility.

### 3.10 California Renewables Portfolio Standard.

(a) Eligibility. Seller, and, if applicable, its successors, represents and warrants that throughout the Delivery Term of this Agreement that: (i) the Facility qualifies and is certified by the CEC as an Eligible Renewable Energy Resource as such term is defined in Public Utilities Code Section 399.12 or Section 399.16; and (ii) the Facility's electric energy output delivered to Buyer qualifies under the requirements of the California Renewables Portfolio Standard. To the extent a change in Law occurs after execution of this Agreement that causes this representation and warranty to be materially false or misleading, it shall not be an Event of Default if Seller has used commercially reasonable efforts to comply with such change in Law. As used in this Section 3.10(a), "certified by the CEC" means the Facility has received CEC Certification and Verification.
(b) Transfer of Renewable Energy Credits. Seller and, if applicable, its successors, represents and warrants that throughout the Delivery Term of this Agreement the renewable energy credits transferred to Buyer conform to the definition and attributes required for compliance with the California Renewables Portfolio Standard, and as may be subsequently modified by any applicable Governmental Authority or by subsequent legislation. To the extent a change in law occurs after execution of this Agreement that causes this representation and warranty to be materially false or misleading, it shall not be an Event of Default if Seller has used commercially reasonable efforts to comply with such change in law.
(c) Tracking of RECs in WREGIS. Seller warrants that all necessary steps to allow the Renewable Energy Credits transferred to Buyer to be tracked in WREGIS will be taken prior to the first delivery under this Agreement.

### 3.11 Change in Law

(a) The Parties acknowledge that an essential purpose of this Agreement is to provide renewable generation that meets the requirements of the California Renewables Portfolio Standard, and that this Agreement is being used by Buyer to comply with mandatory procurement obligations of the CEC, and that Governmental Authorities, including the CEC, CPUC (if applicable to Buyer), CAISO and WREGIS, may undertake actions from time to time to implement a change in Law. Seller agrees to use commercially reasonable efforts to cooperate with Buyer with respect to any subsequently requested changes, modifications, or amendments to this Agreement needed to satisfy requirements of Governmental Authorities associated with changes in Law, including changes, modifications, or amendments to this Agreement to: (i) amend the Agreement to reflect any mandatory contractual language required by Governmental Authorities,
including changes to the definition of Green Attributes; (ii) require submission of any reports, data, or other information required by Governmental Authorities; (iii) provide additional documentation or information to respond to data requests from the Governmental Authorities; (iv) satisfy new compliance requirements of Governmental Authorities; or (v) take any other actions that may be requested by Buyer to assure that the Generating Facility is an Eligible Renewable Energy Resource under the California Renewables Portfolio Standard; provided that Seller shall have no obligation to modify this Agreement, or take other actions not required under this Agreement, if such modifications or actions would materially adversely affect, or could reasonably be expected to have or result in a material adverse effect on, any of Seller's rights, benefits, risks and/or obligations under this Agreement.
(b) If a change in Laws occurring after the Effective Date has increased Seller's known or reasonably expected costs and expenses to comply with Seller's obligations under this Agreement with respect to obtaining, maintaining, conveying or effectuating Buyer's use of (as applicable) any Product (any action required to be taken by Seller to comply with such change in Law, a "Compliance Action"), then the Parties agree that the maximum aggregate amount of costs and expenses Seller shall be required to bear during the Delivery Term to comply with all such Compliance Actions shall be capped at Buyer's Fraction multiplied by Twenty Five Thousand Dollars ( $\$ 25,000$ ) per MW of Guaranteed Capacity in aggregate over the Contract Term ("Compliance Expenditure Cap").
(c) If Seller reasonably anticipates the need to incur costs and expenses in excess of the Compliance Expenditure Cap in order to take any Compliance Action, Seller shall provide Notice to Buyer of such anticipated costs and expenses.
(d) Buyer will have sixty (60) days to evaluate such Notice (during which time period Seller is not obligated to take any Compliance Actions described in the Notice) and shall, within such time, either (1) agree to reimburse Seller for all of the costs that exceed the Compliance Expenditure Cap (such costs and expenses (including lost production, if any), the "Accepted Compliance Costs"), or (2) waive Seller's obligation to take such Compliance Actions.
(e) If Buyer agrees to reimburse Seller for the Accepted Compliance Costs, then Seller shall complete the Compliance Actions covered by such Accepted Compliance Costs as agreed upon by the Parties, provided that under no circumstances shall Seller be obligated to incur costs and expenses in excess of the Accepted Compliance Costs that have been agreed to be reimbursed by Buyer.
3.12 Project Configuration. In order to optimize the benefits of the Facility, Buyer and Seller each agree that if requested by the other Party, then Buyer and Seller will discuss in good faith potential reconfiguration of the Facility or Interconnection Facilities, including to facilitate the use of energy storage at the Site; provided that neither Party shall be obligated to agree to any changes under this Agreement, or to incur any unreimbursed expense in connection with such changes, except under terms mutually acceptable to both Parties as set forth in a written agreement. For clarity, subject to Section 6.3 regarding the use of Shared Facilities, this Agreement does not restrict the installation by Seller's Affiliates of energy storage not requiring reconfiguration of the Facility or any changes to this Agreement; so long as such installation does not impact the Expected Energy and Delivered Energy assurances provided under this Agreement, modify the
hours on which Delivered Energy is expected to be provided (as expressed in Exhibit D), or otherwise materially impact the performance of the Facility.

### 3.13 [Reserved].

3.14 Compensation. Buyer shall compensate Seller each month for the Product in each Settlement Interval in the month in accordance with this Section 3.14 (the "Monthly Energy Payment").
(a) Buyer shall pay Seller the Contract Price for each MWh of Product, as measured by the amount of Facility Energy plus Deemed Delivered Energy, if any, subject to payment calculations in this Section 3.14, up to one hundred fifteen percent (115\%) of the Expected Energy for such Contract Year.
(i) The amount payable for each Settlement Interval shall be calculated as follows: for each Settlement Interval, the Monthly Energy Payment will be calculated as the sum of (Delivered Energy * Market Price) (the "Market Payment") minus (Delivered Energy * Contract Price) (the "Contract Payment"):
(A) If the Monthly Energy Payment is greater than Zero Dollars (\$0), the Seller will pay the Buyer the Monthly Energy Payment;
(B) If the Monthly Energy Payment at the Delivery Point is less than Zero Dollars (\$0), the Buyer will pay the Seller the absolute value of the Monthly Energy Payment;
(C) The Parties agree to follow the written protocol for Negative Price Curtailment as set forth in Exhibit P attached hereto. The Seller will deliver Energy and related Products to the Buyer during negative pricing conditions so long as the negative LMP is not less than the Negative LMP Floor, and the Buyer will pay for such energy as described in Exhibit P. If the negative LMP is less than the Negative LMP Floor, the Seller will curtail delivery of energy during such period, such period will be a Market Curtailment Period (except to the extent such period is subject to a Planned Outage, Forced Facility Outage, Force Majeure Event and/or Curtailment Order), and during such Market Curtailment Period, subject to the Curtailment Cap Buyer shall pay Seller the sum of (a) the Contract Price and (b) PTC Rate multiplied by the amount of energy (in MWh) that Seller would have delivered to Buyer pursuant to the terms of this Agreement.
(D) During the Delivery Term, Seller shall receive no compensation from Buyer for Curtailed Energy or Facility Energy that is delivered in violation of a Curtailment Order.
(b) If during any Settlement Interval, Seller delivers Product in amounts, as measured by the amount of Facility Energy, in excess of the product of the Installed Capacity and the duration of the Settlement Interval, expressed in hours ("Excess MWh"), then the price applicable to all such Excess MWh in such Settlement Interval shall be zero dollars (\$0).
(c) Notwithstanding the foregoing, if, at any point in any Contract Year, the amount of Facility Energy, plus Deemed Delivered Energy, exceeds one hundred fifteen percent (115\%) of the Expected Energy for such Contract Year, the price to be paid for additional Facility Energy or Deemed Delivered Energy shall be zero dollars per MWh ( $\$ 0.00 / \mathrm{MWh}$ ).
(d) Test Energy is compensated in accordance with Section 3.6 and Bridge Product is compensated in accordance with Section 3.15.
(e) The Parties agree that neither the Contract Price nor the Test Energy Rate are subject to adjustment or amendment if Seller fails to receive any Tax Credits, or if any Tax Credits expire, are repealed or otherwise cease to apply to Seller or the Facility in whole or in part, or Seller or its investors are unable to benefit from any Tax Credits. Seller shall bear all risks, financial and otherwise, throughout the Contract Term, associated with Seller's or the Facility's eligibility to receive Tax Credits or to qualify for accelerated depreciation for Seller's accounting, reporting or Tax purposes. The obligations of the Parties hereunder, including those obligations set forth herein regarding the purchase and price for and Seller's obligation to deliver Energy and other Product, shall be effective regardless of whether the sale of Energy is eligible for, or receives Tax Credits during the Contract Term.
3.15 Bridge Product. In addition to the Parties' rights and obligations under this Agreement with respect to the Facility, Seller agrees to use commercially reasonable efforts to identify, source, and deliver in accordance with this Agreement and Buyer agrees to purchase the following qualifying bundled Portfolio Content Category 1 renewable energy product, including the energy, associated PCC1 green attributes, and the associated PCC1 Renewable Energy Credit (the PCC1 renewable energy product together, the "Bridge Product") in accordance with the following terms and conditions:
(a) The "Bridge Product Delivery Term" shall commence on January 1, 2024 ("Delivery Start Date") and end on December 31, 2024 (the "Delivery Cessation Date"); provided that the Bridge Product Delivery Term shall be extended solely for the purpose of transferring the WREGIS Certificates associated with the Bridge Product Delivered to Buyer prior to the Delivery Cessation Date.
(b) The "Contract Quantity of Bridge Product" for the Bridge Product Delivery Term is equal to Buyer's Fraction multiplied by $30,000 \mathrm{MWh}$. The Bridge Product shall be provided to Buyer through transfers of WREGIS Certificates on or before the Delivery Cessation Date.
(c) For any Bridge Product generated at the Facility, Buyer shall pay Seller for the Bridge Product at the Contract Price per delivered MWh of Bridge Product up to the Contract Quantity of Bridge Product, with compensation provided in accordance with Section 3.14, provided that Buyer's payment per delivered MWh of Bridge Product shall not exceed the Contract Price. For any Bridge Product generated from another facility, Buyer shall compensate Seller for the Bridge Product at a total of forty dollars (\$40) per MWh delivered to Buyer until Buyer's total Bridge Product received under this Agreement is at the Contract Quantity of Bridge Product. The Parties agree to update Exhibit C in a mutually agreeable manner to include any facilities used for the Bridge Product that are not the Facility.
(d) If Seller notifies Buyer on or before May 1, 2024 ("Delivery Confirmation Date") that Seller cannot provide all or any quantity of the Bridge Product despite commercially reasonable efforts, then, as of January 1, 2024, Buyer shall purchase all Bridge Product made available by Seller and is authorized by Seller to procure any remaining quantity of Bridge Product as replacement for Buyer's own account and at Buyer's own cost. For clarity, Seller shall not be responsible for any of Buyer's internal or third-party costs associated with Buyer's procurement of Bridge Product which Seller, despite the exercise of commercially reasonable efforts, is unable to deliver to Buyer.
(e) Other terms and conditions regarding the Bridge Product:
(i) The Bridge Product shall meet the RPS compliance requirements provided under California law, including the requirements for Portfolio Content Category 1 as set forth in California Public Utilities Code Section 399.16(b)(1)(A), as well the RPS laws, regulations, and requirements of applicable Governmental Authorities, including the Division 2, Chapter 13 of the California Code of Regulations.
(ii) This Bridge Product is intended to qualify as a long-term contract pursuant to California Public Utilities Code Section 399.13(b)(1) and Division 2, Chapter 13 of the California Code of Regulations.
(iii) Seller, or its designated scheduling coordinator, will perform all scheduling requirements applicable to the Bridge Product at Seller's cost. All scheduling shall be performed consistent with all applicable CAISO and WECC prevailing protocols.

## ARTICLE 4 OBLIGATIONS AND DELIVERIES

### 4.1 Delivery.

(a) Energy. Subject to the provisions of this Agreement, commencing on the Commercial Operation Date through the end of the Contract Term, Seller shall supply and deliver the Product to Buyer at the Delivery Point, and Buyer shall take delivery of the Product at the Delivery Point in accordance with the terms of this Agreement. Seller will be responsible for paying or satisfying when due any costs or charges imposed in connection with the delivery of Facility Energy to the Delivery Point, including without limitation, Station Use, Electrical Losses, and any operation and maintenance charges imposed by the Transmission Provider directly relating to the Facility's operations. Subject to the provisions of this Agreement, Buyer shall be responsible for costs, charges, and penalties, if any, imposed in connection with the delivery of Facility Energy at and after the Delivery Point, including without limitation transmission costs and transmission line losses and imbalance charges. The Facility Energy will be scheduled to the CAISO by Seller (or Seller's designated Scheduling Coordinator) in accordance with Section 4.5.
(b) Green Attributes. Buyer's Fraction of all Green Attributes associated with the Facility during the Delivery Term are exclusively dedicated to and vested in Buyer. Seller represents and warrants that Seller holds the rights to all Green Attributes from the Facility, and Seller agrees to convey and hereby conveys Buyer's Fraction of all such Green Attributes to Buyer as included in the delivery of the Product from the Facility.

### 4.2 Title and Risk of Loss.

(a) Energy. Title to and risk of loss related to the Facility Energy shall pass and transfer from Seller to Buyer at the Delivery Point. Seller warrants that all Product delivered to Buyer is free and clear of all liens, security interests, claims and encumbrances of any kind.
(b) Green Attributes. Title to and risk of loss related to the Green Attributes shall pass and transfer from Seller to Buyer upon the transfer of such Green Attributes in accordance with WREGIS.
4.3 Forecasting. Seller shall provide the forecasts described below at its sole expense and in a format reasonably acceptable to Buyer (or Buyer's designee). Seller shall use reasonable efforts to provide forecasts that are accurate and, to the extent not inconsistent with the requirements of this Agreement, shall prepare such forecasts, or cause such forecasts to be prepared, in accordance with Prudent Operating Practices.
(a) Annual Forecast of Expected Facility Energy. No less than forty-five (45) days before (i) the first day of the first Contract Year of the Delivery Term and (ii) the beginning of each calendar year for every subsequent Contract Year during the Delivery Term, Seller shall provide to Buyer or Buyer's designee (if applicable) a non-binding forecast of each month's average-day expected Facility Energy, by hour, for the following calendar year in a form reasonably acceptable to Buyer that is substantially similar to the table found in Exhibit F-1 ("Form of Average Expected Energy Report"), or as reasonably requested by Buyer.
(b) Monthly Forecast of Facility Energy. No less than thirty (30) days before the beginning of Commercial Operation, and thereafter ten (10) Business Days before the beginning of each month during the Delivery Term, Seller shall provide to Buyer or Buyer's designee (if applicable) a non-binding forecast of the hourly expected Facility Energy for each day of the following month in a form substantially similar to the table found in Exhibit F-2 ("Form of Monthly Delivery Forecast")
(c) Day-Ahead Forecast. If requested by Buyer, by 5:30 AM Pacific Prevailing Time on the Business Day immediately preceding the date of delivery, or as otherwise specified by Buyer consistent with Prudent Operating Practice, Seller shall provide Buyer or Buyer's designee (if applicable) with a non-binding forecast of the hourly expected Facility Energy for each hour of the immediately succeeding day ("Day-Ahead Forecast"). A Day-Ahead Forecast provided in a day prior to any non-Business Day(s) shall include non-binding forecasts for the immediate day, each succeeding non-Business Day, and the next Business Day. Each Day-Ahead Forecast shall clearly identify, for each hour, Seller's best estimate of the hourly expected Facility Energy.
(d) Real-Time Forecasts. During the Delivery Term, if requested by Buyer, Seller shall notify Buyer of any changes from the Day-Ahead Forecast of one (1) MW or more in Available Capacity or hourly expected Energy, in each case whether due to Forced Facility Outage, Force Majeure or other cause, as soon as reasonably possible, but no later than one (1) hour prior to the deadline for submitting Schedules to the CAISO in accordance with the rules for participation in the Real-Time Market. If the Available Capacity changes by at least one (1) MW
as of a time that is less than one (1) hour prior to the Real-Time Market deadline, but before such deadline, then Seller must notify Buyer as soon as reasonably possible. Such Real-Time Forecasts of Energy shall be provided by an Approved Forecast Vendor and shall contain information regarding the beginning date and time of the event resulting in the change in Available Capacity, the expected end date and time of such event, the expected Available Capacity in MW, and any other information required by the CAISO or reasonably requested by Buyer. With respect to any Forced Facility Outage, Seller shall use commercially reasonable efforts to notify Buyer of such outage within ten (10) minutes of the commencement of the Forced Facility Outage. Seller shall inform Buyer of any developments that will affect either the duration of such outage or the availability of the Facility during or after the end of such outage. These Real-Time Forecasts shall be communicated in a method acceptable to Buyer; provided that Buyer specifies the method no later than sixty (60) days prior to the effective date of such requirement. In the event Buyer fails to provide Notice of an acceptable method for communications under this Section 4.4(d), then Seller shall send such communications by telephone and e-mail to Buyer.
(e) Forced Facility Outages. Notwithstanding anything to the contrary herein, Seller shall promptly notify the on-duty Scheduling Coordinator of Forced Facility Outages and Seller shall keep Buyer informed of any developments that will affect either the duration of the outage or the availability of the Facility during or after the end of the outage.
(f) Forecasting Penalties. If Seller incurs a loss or penalty resulting from its scheduling activities with respect to the Facility, Seller will be responsible for such loss or penalty.
(g) CAISO Tariff Requirements. Subject to the limitations expressly set forth in Section 3.11, to the extent such obligations are applicable to the Facility, Seller will comply with all applicable obligations for Variable Energy Resources under the CAISO Tariff and the Eligible Intermittent Resource Protocol, including providing appropriate operational data and meteorological data, and will fully cooperate with Buyer and CAISO, in providing all data, information, and authorizations required thereunder.

### 4.4 Dispatch Down/Curtailment.

(a) General. Seller agrees to reduce the amount of Facility Energy produced by the Facility and delivered to the Delivery Point, by the amount and for the period set forth in any Curtailment Order.
(b) [Reserved].
(c) Failure to Comply. Subject to Section 4.4(a), if Seller fails to comply with a Curtailment Order, then, for each MWh of Facility Energy that is delivered by the Facility to the Delivery Point in contradiction to the Curtailment Order, Seller shall pay Buyer for each such MWh at an amount equal to the amount, if any, paid to Seller by Buyer for delivery of such excess MWh.
(d) Seller Equipment Required for Curtailment Instruction Communications. Subject to the last sentence of this Section 4.4.(d), Seller shall acquire, install, and maintain such facilities, communications links and other equipment, and implement such protocols and practices, as necessary to respond and follow instructions, including an electronic signal conveying real time
and intra-day instructions, to operate the Facility in accordance with this Agreement or a Governmental Authority, including to implement a Curtailment Order in accordance with the thencurrent methodology used to transmit such instructions as it may change from time to time. If at any time during the Delivery Term Seller's facilities, communications links or other equipment, protocols or practices are not in compliance with then-current methodologies, Seller shall take the steps necessary to become compliant as soon as reasonably possible. Seller shall be liable pursuant to Section 4.4(c) for failure to comply with a Curtailment Order, during the time that Seller's facilities, communications links or other equipment, protocols or practices are not in compliance with then-current methodologies. For the avoidance of doubt, a Curtailment Order communication via such systems and facilities shall have the same force and effect on Seller as any other form of communication. If Seller is directed by Buyer to install or implement facilities, communications links or other equipment, protocols or practices facilities pursuant to this Section 4.4(d) that are not otherwise required for the Facility pursuant to the CAISO Tariff or reasonably necessary for communication between Buyer and Seller, then the installation or implementation of such facilities, communications links or other equipment, protocols or practices facilities will be deemed Compliance Actions subject to the Compliance Expenditure Cap as set forth in Section 3.11 .

### 4.5 Scheduling Coordinator Responsibilities.

(a) Seller as Scheduling Coordinator for the Facility. Upon Initial Synchronization of the Facility to the CAISO Grid and during the Delivery Term, Seller shall be the Scheduling Coordinator or designate a qualified third party to provide Scheduling Coordinator services with the CAISO for the Facility for both the delivery and the receipt of the Test Energy, if any, and applicable Products at the Delivery Point. Seller shall schedule or cause to be scheduled the Product in accordance with, and shall at all times comply with, all applicable CAISO requirements and scheduling protocols, WECC scheduling practices, and Prudent Operating Practice. Seller shall submit economic offers to CAISO into the Day-Ahead Market or Real-Time Market consistent with CAISO rules on economic bidding. At least thirty (30) days prior to the Initial Synchronization of the Facility to the CAISO Grid and prior to the generation of Test Energy, (i) Buyer shall take all actions and execute and deliver to Seller all documents necessary to authorize or designate Seller's designated agent as the Scheduling Coordinator for the Facility effective as of the Initial Synchronization of the Facility to the CAISO Grid, and (ii) Seller shall, and shall cause its designee to, take all actions and execute and deliver to the CAISO all documents necessary to authorize or designate Seller or its designee as the Scheduling Coordinator for the Facility effective as of the Initial Synchronization of the Facility to the CAISO Grid. On and after Initial Synchronization of the Facility to the CAISO Grid, Seller shall not authorize or designate any other party to act as the Facility's Scheduling Coordinator unless agreed to by Buyer, or upon the expiration or earlier termination of the Delivery Term. Seller (as SC for the Facility) shall submit Schedules to the CAISO in accordance with this Agreement and the applicable CAISO Tariff, protocols and Scheduling practices for Test Energy and Product on a day-ahead, hourahead, fifteen-minute market or real time basis, as reasonably acceptable to Buyer. Seller shall cause its Scheduling Coordinator to reasonably cooperate with Buyer during the testing and commissioning of the Facility prior to the Commercial Operation Date.
(b) Notices. Seller (as the Facility's SC) shall provide Buyer with access to a web-based system through which Seller shall submit to Buyer and the CAISO all notices and
updates required under the CAISO Tariff regarding the Facility's status, including, but not limited to, all outage requests, Forced Facility Outages, Forced Facility Outage reports, clearance requests, or must offer waiver forms. Seller will cooperate with Buyer to provide such notices and updates. If the web-based system is not available, Seller shall promptly submit such information to Buyer and the CAISO (in order of preference) telephonically, by electronic mail, or facsimile transmission to the personnel designated to receive such information.
(c) CAISO Costs and Revenues. Except as otherwise set forth below, Seller (as Scheduling Coordinator for the Facility) shall be responsible for all CAISO costs (including penalties, Imbalance Energy costs, and other charges) and shall be entitled to all CAISO revenues (including credits, Imbalance Energy revenues, and other payments), including revenues associated with CAISO dispatches, bid cost recovery, Inter-SC Trade credits, or other credits in respect of the Product Scheduled or delivered from the Facility. Seller shall also be responsible for all CAISO penalties or fees resulting from any failure by Seller to abide by the CAISO Tariff or requirements set forth in this Agreement. The Parties agree that any Availability Incentive Payments are for the benefit of the Seller and for Seller's account and that any Non-Availability Charges are the responsibility of the Seller and for Seller's account. In addition, if during the Delivery Term, the CAISO implements or has implemented any sanction or penalty related to scheduling, forecasting, outage reporting, or generator operation, and any such sanctions or penalties are imposed upon the Facility or to Buyer due to any violation of CAISO rules or outage notification requirements set forth in this Agreement by Seller, the cost of the sanctions or penalties shall be the Seller's responsibility.
(d) CAISO Settlements. Seller (as the Facility's SC) shall be responsible for all settlement functions and payment functions with the CAISO related to the Facility, and shall conduct such activities in a timely manner.
(e) Dispute Costs. Seller (as the Facility's SC), shall dispute CAISO settlements in a commercially reasonable manner. Seller agrees to pay Buyer's costs and expenses (including reasonable attorneys' fees) associated with its involvement with any CAISO disputes to the extent they relate to CAISO charges payable by Seller with respect to the Facility.
(f) Master Data File and Resource Data Template. Seller shall provide the data to the CAISO (and to Buyer) that is required for the CAISO's Master Data File and Resource Data Template (or successor data systems) for the Facility consistent with this Agreement. Neither Party shall change such data without the other Party's prior written consent, not to be unreasonably withheld.
(g) NERC Reliability Standards. Seller (as Scheduling Coordinator) shall maintain compliance with NERC reliability standards, and shall cooperate with Buyer to ensure compliance with NERC reliability standards as reasonably requested by Buyer.
4.6 Reduction in Delivery Obligation. For the avoidance of doubt, and in no way limiting Section 3.1 or Exhibit G:
(a) Facility Maintenance. Seller will provide to Buyer written schedules for Scheduled Maintenance for the Facility for each Contract Year no later than thirty (30) days prior
to the first day of the applicable Contract Year. Buyer may provide comments no later than ten (10) days of receiving any such schedule, and Seller will in good faith take into account any such comments. Seller will deliver to Buyer the final updated schedule of Scheduled Maintenance no later than twenty (20) days after receiving Buyer's comments. Seller shall be permitted to reduce deliveries of Product during any period of Scheduled Maintenance on the Facility. Seller shall not schedule non-emergency maintenance between June 1 and September 30 that reduces the Energy generation of the Facility by more than ten percent (10\%) during daylight hours, unless (i) such outage is required to avoid damage to the Facility, (ii) such maintenance is necessary to maintain equipment warranties and cannot be scheduled outside the period of June 1st to September 30th, (iii) such outage is required in accordance with Prudent Operating Practices, or (iv) the Parties agree otherwise in writing (any of the scheduled maintenance permitted by this Section 4.6(a), where the Facility is either in whole or in part not capable of providing service due to planned maintenance that has been scheduled in advance in accordance with Section 4.6(a), a "Planned Outage").
(b) Forced Facility Outage. Seller shall be permitted to reduce deliveries of Product during any Forced Facility Outage. Seller shall provide Buyer with Notice and expected duration (if known) of any Forced Facility Outage.
(c) System Emergencies and other Interconnection Events. Seller shall be permitted to reduce deliveries of Product during any period of System Emergency or upon Notice of a Curtailment Order pursuant to the terms of this Agreement, the Interconnection Agreement or applicable tariff.
(d) Force Majeure Event. Seller shall be permitted to reduce deliveries of Product during any Force Majeure Event.
(e) Health and Safety. Seller shall be permitted to reduce deliveries of Product as necessary to maintain health and safety pursuant to Section 6.2.
4.7 Guaranteed Energy Production. Seller shall be required to deliver to Buyer no less than the Guaranteed Energy Production in each Performance Measurement Period. For purposes of determining whether Seller has achieved the Guaranteed Energy Production, Seller shall be deemed to have delivered to Buyer (1) any Deemed Delivered Energy and (2) Energy in the amount it could reasonably have delivered to Buyer but was prevented from delivering to Buyer by reason of any Force Majeure Events, System Emergency, Buyer's Default or other Buyer failure to perform, and Curtailment Periods ("Lost Output"). If Seller fails to achieve the Guaranteed Energy Production amount in any Performance Measurement Period, Seller shall pay Buyer damages calculated in accordance with Exhibit G; provided that Seller may, as an alternative, upon prior written consent of the Buyer and at the sole discretion of Buyer, provide Replacement Product (as defined in Exhibit G) that is (i) delivered to Buyer in manner acceptable to Buyer and (ii) does not impose any costs to Buyer that are not promptly reimbursed by Seller.
4.8 WREGIS. Seller shall, at its sole expense, take all actions and execute all documents or instruments necessary to ensure that all WREGIS Certificates associated with all Renewable Energy Credits corresponding to all Facility Energy are issued and tracked for purposes of satisfying the requirements of the California Renewables Portfolio Standard and transferred in
a timely manner for Buyer's sole benefit. Seller shall transfer the Renewable Energy Credits corresponding to all Facility Energy to Buyer. Seller shall comply with all Laws, including the WREGIS Operating Rules, regarding the certification, issuance, and transfer of such WREGIS Certificates to Buyer, and Buyer shall be given sole title to all such WREGIS Certificates. Seller shall be deemed to have satisfied the warranty in Section 3.10(c) provided that Seller fulfills its obligations under Sections 4.10(a) through (f) below. In addition:
(a) Prior to the Commercial Operation Date or as soon as reasonably practicable thereafter, Seller shall register the Facility with WREGIS and establish an account with WREGIS ("Seller's WREGIS Account"), which Seller shall maintain until the end of the Delivery Term. Seller shall transfer the WREGIS Certificates using "Forward Certificate Transfers" (as described in the WREGIS Operating Rules) from Seller's WREGIS Account to the WREGIS account(s) of Buyer or the accounts of a designee that Buyer identifies by Notice to Seller ("Buyer's WREGIS Account"). Seller shall be responsible for all expenses associated with registering the Facility with WREGIS, establishing and maintaining Seller's WREGIS Account, paying WREGIS Certificate issuance and transfer fees, and transferring WREGIS Certificates from Seller's WREGIS Account to Buyer's WREGIS Account.
(b) Seller shall cause Forward Certificate Transfers to occur on a monthly basis in accordance with the certification procedure established by the WREGIS Operating Rules. Because WREGIS Certificates will only be created for whole MWh amounts of Energy generated, any fractional MWh amounts (i.e., kWh ) will be carried forward until sufficient generation is accumulated for creation of a WREGIS Certificate.
(c) Seller shall, at its sole expense, ensure that the WREGIS Certificates for a given calendar month correspond with the Facility Energy for such calendar month as evidenced by the Facility's metered data.
(d) Due to the ninety (90) day delay in the creation of WREGIS Certificates relative to the timing of invoice payment under Section 8.2, Buyer shall make an invoice payment for a given month in accordance with Section 8.2 before the WREGIS Certificates for such month are formally transferred to Buyer in accordance with the WREGIS Operating Rules and this Section 4.8. Notwithstanding this delay, Buyer shall have all right and title to all such WREGIS Certificates upon payment to Seller in accordance with Section 8.2.
(e) A "WREGIS Certificate Deficit" means any deficit or shortfall in WREGIS Certificates issued to Buyer for a calendar month as compared to the Facility Energy for the same calendar month ("Deficient Month"). If any WREGIS Certificate Deficit is caused by Seller, or the result of any action or inaction by Seller, and remains uncured following the later of (i) thirty (30) days after Notice from Buyer thereof or (ii) ninety (90) days after the Deficient Month, then the amount of Facility Energy in the Deficient Month shall be reduced by the amount of the WREGIS Certificate Deficit for purposes of calculating Buyer's payment to Seller under Article 8 and the Guaranteed Energy Production for the applicable Performance Measurement Period; provided, however, that such adjustment shall not apply to Replacement Product (as defined in Exhibit G) that is (i) delivered to Buyer in manner acceptable to Buyer and (ii) does not impose any costs to Buyer that are not promptly reimbursed by Seller. Without limiting Seller's obligations under this Section 4.8, if a WREGIS Certificate Deficit is caused solely by an error or
omission of WREGIS, the Parties shall cooperate in good faith to cause WREGIS to correct its error or omission. Seller shall use commercially reasonable efforts to rectify any WREGIS Certificate Deficit as expeditiously as possible.
(f) If WREGIS changes the WREGIS Operating Rules after the Effective Date or applies the WREGIS Operating Rules in a manner inconsistent with this Section 4.8 after the Effective Date, the Parties promptly shall modify this Section 4.8 as reasonably required to cause and enable Seller to transfer to Buyer's WREGIS Account a quantity of WREGIS Certificates for each given calendar month that corresponds to the Facility Energy in the same calendar month.
4.9 Station Use. Seller will be solely responsible for any costs associated with the electricity required to operate the Facility.
4.10 Interconnection Capacity. Seller shall ensure during the Test Energy period and throughout the Delivery Term that (a) the Facility will have and maintain interconnection capacity available or allocable to the Facility under the Interconnection Agreement that is no less than the Guaranteed Capacity and (b) Seller shall have sufficient interconnection capacity and rights under the Interconnection Agreement to interconnect the Facility with the CAISO Grid and to fulfill Seller's obligations under this Agreement, and to allow operation of the Facility in accordance with the CAISO Tariff and as contemplated under this Agreement (collectively, the "Dedicated Interconnection Capacity").

## ARTICLE 5 TAXES

5.1 Allocation of Taxes and Charges. Seller shall pay or cause to be paid all Taxes on or with respect to the Facility or on or with respect to the sale and making available of Product to Buyer, that are imposed on Product prior to its delivery to Buyer at the time and place contemplated under this Agreement. Buyer shall pay or cause to be paid all Taxes on or with respect to the delivery to and purchase by Buyer of Product that are imposed on Product at and after its delivery to Buyer at the time and place contemplated under this Agreement (other than withholding or other Taxes imposed on Seller's income, revenue, receipts or employees), if any. If a Party is required to remit or pay Taxes that are the other Party's responsibility hereunder, such Party shall promptly pay the Taxes due and then seek and receive reimbursement from the other for such Taxes. In the event any sale of Product hereunder is exempt from or not subject to any particular Tax, Buyer shall provide Seller with all necessary documentation within thirty (30) days after the Effective Date to evidence such exemption or exclusion. If Buyer does not provide such documentation, then Buyer shall indemnify, defend, and hold Seller harmless from any liability with respect to Taxes from which Buyer claims it is exempt.
5.2 Cooperation. Each Party shall use reasonable efforts to implement the provisions of and administer this Agreement in accordance with the intent of the Parties to minimize all Taxes, so long as no Party is materially adversely affected by such efforts. The Parties shall cooperate to minimize Tax exposure; provided, however, that neither Party shall be obligated to incur any financial or operational burden to reduce Taxes for which the other Party is responsible hereunder without receiving due compensation therefor from the other Party. All Energy delivered by Seller to Buyer hereunder shall be a sale made at wholesale, with Buyer reselling such Energy.
5.3 Ownership. Seller shall be the owner of the Facility for federal income tax purposes and, as such, Seller (or its Affiliates or Lenders) shall be entitled to all depreciation deductions associated with the Facility and to any and all Tax Credits or other tax benefits associated with the Facility, including any such tax credits or tax benefits under the Code and all Renewable Energy Incentives. The Parties intend this Agreement to be a "service contract" within the meaning of Section 7701(e)(3) of the Code. The Parties will not take the position on any tax return or in any other filings suggesting that it is anything other than a purchase of the Product from the Seller or that this agreement is anything other than a "service contract" within the meaning of Section 7701(e)(3) of the Code.

## ARTICLE 6 <br> MAINTENANCE OF THE FACILITY

6.1 Maintenance of the Facility. Seller shall comply with applicable Law and Prudent Operating Practice relating to the operation and maintenance of the Facility and the generation and sale of Product.
6.2 Maintenance of Health and Safety. Seller shall take reasonable safety precautions with respect to the operation, maintenance, repair and replacement of the Facility. If Seller becomes aware of any circumstances relating to the Facility that create an imminent risk of damage or injury to any Person or any Person's property, Seller shall take prompt, reasonable action to prevent such damage or injury. Such action may include, to the extent reasonably necessary, disconnecting and removing all or a portion of the Facility, or suspending the supply of Facility Energy.
6.3 Shared Facilities. The Parties acknowledge and agree that certain of the Shared Facilities and Interconnection Facilities (including a transformer, substation and associated equipment and real property), and Seller's rights and obligations under the Interconnection Agreement, may be subject to certain shared facilities or co-tenancy agreements ("Shared Facilities Agreements") to be entered into among Seller, the Participating Transmission Owner, Seller's Affiliates, or third parties pursuant to which certain Interconnection Facilities may be subject to joint ownership and shared maintenance and operation arrangements; provided that such Shared Facilities Agreements (i) shall permit Seller to perform or satisfy, and shall not purport to limit, its obligations hereunder, including providing the Dedicated Interconnection Capacity, (ii) continue to provide for separate metering and a separate Resource ID for the Facility, (iii) shall not allow any Affiliate of Seller or third party to use the Dedicated Interconnection Capacity if such use would have an adverse impact on Buyer's rights related to the Facility, and (iv) shall allocate any instruction from the CAISO or the PTO to curtail energy deliveries on a pro rata basis based upon their respective energy delivery forecasts for the applicable period, except (A) when such pro rata allocation would be in violation of the applicable curtailment instruction, or (B) to the extent that the need for the curtailment can be attributed to the Facility. Without limiting the generality of the foregoing, Seller's Affiliates may install energy storage which uses the Interconnection Facilities so long as such energy storage has a separate Resource ID, does not impact the Expected Energy and Delivered Energy assurances provided under this Agreement, does not modify the hours on which Delivered Energy is expected to be provided (as expressed in Exhibit D), does not otherwise materially impact the performance of the Facility, and does not interfere with Seller's use of the Dedicated Interconnection Capacity to perform its obligations
under this Agreement.
6.4 Decommissioning Facility and Other Costs. Buyer shall not be responsible for any cost of decommissioning or demolition of the Facility or any environmental or other liability associated with the decommissioning or demolition of the Facility without regard to the timing or cause of the decommissioning or demolition.

## ARTICLE 7 METERING

7.1 Metering. Seller shall measure the amount of Facility Energy using the Facility Meters, which will be subject to adjustment in accordance applicable CAISO meter requirements and Prudent Operating Practices, including to account for Electrical Losses and Station Use. All meters will be installed and operated in accordance with the applicable Law and pursuant to applicable CAISO-approved calculation methodologies and maintained at Seller's cost. Subject to meeting any applicable CAISO requirements, the meters shall be programmed to adjust for all losses from the Facility to the Delivery Point in a manner subject to Buyer's prior written approval, not to be unreasonably withheld. Metering shall be consistent with the requirements set forth in this Agreement. Each meter shall be kept under seal, such seals to be broken only when the meters are to be tested, adjusted, modified or relocated. In the event that Seller breaks a seal outside of normal testing, Seller shall notify Buyer as soon as practicable. In addition, Seller hereby agrees to provide all meter data to Buyer in a form reasonably acceptable to Buyer, and consents to Buyer obtaining from CAISO the CAISO meter data directly relating to the Facility and all inspection, testing and calibration data and reports. Seller and Buyer shall cooperate to allow both Parties to retrieve the meter reads from the CAISO Operational Meter Analysis and Reporting (OMAR) web or directly from the CAISO meter(s) at the Facility. Seller shall obtain and maintain a single CAISO Resource ID dedicated exclusively to the Facility. Seller shall not obtain additional CAISO Resource IDs for the Facility without prior written consent of Buyer, which shall not be unreasonably withheld.
7.2 Meter Verification. If Seller has reason to believe there may be a meter malfunction, Seller shall test the meter. Seller shall also test the meter annually. The tests shall be conducted by independent third parties qualified to conduct such tests. Buyer shall be notified seven (7) days in advance of such tests and have a right to be present during such tests and/or review the results of such tests. If a meter is inaccurate it shall be promptly repaired or replaced by Seller. Seller shall be solely responsible for maintaining accurate meters and any costs arising from such inaccuracy.

## ARTICLE 8 <br> INVOICING AND PAYMENT; CREDIT

8.1 Invoicing. Seller shall deliver an invoice to Buyer for Product no later than fifteen (15) Business Days after the end of the prior monthly billing period. Each invoice shall provide Buyer (a) records of metered data, including CAISO metering and transaction data sufficient to document and verify the amount of Product delivered by the Facility for any Settlement Period during the preceding month, including the amount of Facility Energy in MWh produced by the Facility as read by the Facility Meter, the amount of Replacement Product delivered to Buyer, the
calculation of Facility Energy, Deemed Delivered Energy and Adjusted Energy Production, the Fifteen Minute Market Price at the Delivery Point for each Settlement Period, and the Contract Price applicable to such Product; and (b) access to any records, including invoices or settlement data from the CAISO, necessary to verify the accuracy of any amount; and (c) be in a format reasonably specified by Buyer, covering the services provided in the preceding month determined in accordance with the applicable provisions of this Agreement.
8.2 Payment. Buyer shall make payment to Seller for Product by wire transfer or ACH payment to the bank account provided on each monthly invoice. Buyer shall pay undisputed invoice amounts within twenty-five (25) days after receipt of the invoice, or the end of the prior monthly delivery period, whichever is later. If such due date falls on a weekend or legal holiday, such due date shall be the next Business Day. Payments made after the due date will be considered late and will bear interest on the unpaid balance. If the amount due is not paid on or before the due date or if any other payment that is due and owing from one Party to another is not paid on or before its applicable due date, a late payment charge shall be applied to the unpaid balance and shall be added to the next billing statement. Such late payment charge shall be calculated based on an annual interest rate equal to the prime rate published on the date of the invoice in The Wall Street Journal (or, if The Wall Street Journal is not published on that day, the next succeeding date of publication), plus two percent (2\%) (the "Interest Rate"). If the due date occurs on a day that is not a Business Day, the late payment charge shall begin to accrue on the next succeeding Business Day.
8.3 Books and Records. To facilitate payment and verification, each Party shall maintain all books and records necessary for billing and payments, including copies of all invoices under this Agreement and such records as may be required by Prudent Operating Practice, for a period of at least five (5) years or as otherwise required by Law. Either Party, upon five (5) Business Days' Notice to the other Party, shall be granted reasonable access to the accounting books and records within the possession or control of the other Party pertaining to all invoices generated pursuant to this Agreement. Seller acknowledges that in accordance with California Government Code Section 8546.7, Seller may be subject to audit by the California State Auditor with regard to Seller's performance of this Agreement because the compensation under this Agreement exceeds Ten Thousand Dollars ( $\$ 10,000$ ).
8.4 Payment Adjustments; Billing Errors. Payment adjustments shall be made if Buyer or Seller discovers there have been good faith inaccuracies in invoicing that are not otherwise disputed under Agreement, an adjustment to an amount previously invoiced or paid is required due to a correction of data by the CAISO, or there is determined to have been a meter inaccuracy sufficient to require a payment adjustment. If the required adjustment is in favor of Buyer, Buyer's next monthly payment shall be credited in an amount equal to the adjustment. If the required adjustment is in favor of Seller, Seller shall add the adjustment amount to Buyer's next monthly invoice. Adjustments in favor of either Buyer or Seller shall bear interest, until settled in full, in accordance with Section 8.2, accruing from the date on which the adjusted amount should have been due.
8.5 Billing Disputes. A Party may, in good faith, dispute the correctness of any invoice or any adjustment to an invoice rendered under this Agreement, or adjust any invoice for any arithmetic or computational error, within twelve (12) months of the date the invoice, or adjustment
to an invoice, was rendered. In the event an invoice or portion thereof, or any other claim or adjustment arising hereunder, is disputed, payment of the undisputed portion of the invoice shall be required to be made when due. Any invoice dispute or invoice adjustment shall be in writing and shall state the basis for the dispute or adjustment. Payment of the disputed amount shall not be required until the dispute is resolved. Upon resolution of the dispute, any required payment shall be made within five (5) Business Days of such resolution along with interest accrued at the Interest Rate from and including the original due date to but excluding the date paid. Inadvertent overpayments shall be returned via adjustments in accordance with Section 8.4. Any dispute with respect to an invoice is waived if the other Party is not notified in accordance with this Section 8.5 within twelve (12) months after the invoice is rendered or subsequently adjusted, except to the extent any misinformation was from a third party not affiliated with any Party seeking the adjustment and such party corrects its information after the twelve-month period. If an invoice is not rendered within twelve (12) months after the close of the month during which performance occurred, the right to payment for such performance is waived.
8.6 Netting of Payments. The Parties hereby agree that they shall discharge mutual debts and payment obligations due and owing to each other pursuant to this Agreement on the same date through netting, in which case all amounts owed by each Party to the other Party for the purchase and sale of Product and Deemed Delivered Energy during the monthly billing period under this Agreement or otherwise arising out of this Agreement, including any related damages calculated pursuant to Exhibits B and $\underline{G}$, interest, and payments or credits, shall be netted so that only the excess amount remaining due shall be paid by the Party who owes it.
8.7 Seller's Development Security. To secure Seller's obligations under this Agreement, Seller shall deliver Development Security to Buyer within thirty (30) days after the Effective Date. Seller shall maintain the Development Security in full force and effect, provided that Seller shall have no obligation to replenish the Development Security in the event Buyer collects or draws down any portion of the Development Security for any reason permitted under this Agreement. Upon the earlier of (i) Seller's delivery of the Performance Security, or (ii) sixty (60) days after termination of this Agreement, Buyer shall promptly return the Development Security to Seller, less the amounts drawn in accordance with this Agreement. Provided that no Event of Default has occurred and is continuing with respect to Seller, Seller may replace Development Security or change the form of Development Security to another form of Development Security from time to time upon reasonable prior written notice to Buyer. If the Development Security is a Letter of Credit and the issuer of such Letter of Credit (i) fails to maintain the minimum Credit Rating specified in the definition of Letter of Credit, (ii) indicates its intent not to renew such Letter of Credit and such Letter of Credit expires prior to the Commercial Operation Date, or (iii) fails to honor Buyer's properly documented request to draw on such Letter of Credit by such issuer, Seller shall have five (5) Business Days to either post cash or deliver a substitute Letter of Credit that meets the requirements set forth in the definition of Development Security.
8.8 Seller's Performance Security. To secure its obligations under this Agreement, Seller shall deliver Performance Security to Buyer on or before the Commercial Operation Date. Seller shall maintain the Performance Security in full force and effect until the date on which the following have occurred ("Performance Security End Date"): (A) the Delivery Term has expired or terminated early; and (B) all payment obligations of the Seller then due and payable
under this Agreement, including compensation for penalties, Termination Payment, indemnification payments or other damages are paid in full (whether directly or indirectly such as through set-off or netting). Following the occurrence of the Performance Security End Date, Buyer shall promptly return to Seller the unused portion of the Performance Security, less the amounts drawn in accordance with this Agreement. If the Performance Security is a Letter of Credit and the issuer of such Letter of Credit (i) fails to maintain the minimum Credit Rating set forth in the definition of Letter of Credit, (ii) indicates its intent not to renew such Letter of Credit and such Letter of Credit expires prior to the Performance Security End Date, or (iii) fails to honor Buyer's properly documented request to draw on such Letter of Credit by such issuer, Seller shall have five (5) Business Days to either post cash or deliver a substitute Letter of Credit that meets the requirements set forth in the definition of Performance Security. If the Performance Security is a Guarantee, and Seller receives notice that the Guarantor at any point no longer meets any of the conditions within the definition of Guarantor, Seller shall have five (5) Business Days to either post cash, provide a replacement Guarantee, or deliver a substitute Letter of Credit that meets the requirements set forth in the definition of Performance Security.
8.9 First Priority Security Interest in Cash or Cash Equivalent Collateral. To secure its obligations under this Agreement, and until released as provided herein, Seller hereby grants to Buyer a present and continuing first-priority security interest ("Security Interest") in, and lien on (and right to net against), and assignment of the Development Security, Performance Security, any other cash collateral and cash equivalent collateral posted pursuant to Sections 8.7 and 8.8 and any and all interest thereon or proceeds resulting therefrom or from the liquidation thereof, whether now or hereafter held by, on behalf of, or for the benefit of Buyer, and Seller agrees to take all action as Buyer reasonably requires in order to perfect Buyer's Security Interest in, and lien on (and right to net against), such collateral and any and all proceeds resulting therefrom or from the liquidation thereof.

Upon or any time after the occurrence of an Event of Default caused by Seller, an Early Termination Date resulting from an Event of Default caused by Seller, or an occasion provided for in this Agreement where Buyer is authorized to retain all or a portion of the Development Security or Performance Security, Buyer may do any one or more of the following (in each case subject to the final sentence of this Section 8.9):
(a) Exercise any of its rights and remedies with respect to the Development Security and Performance Security, including any such rights and remedies under Law then in effect;
(b) Draw on any outstanding Letter of Credit issued for its benefit and retain any cash held by Buyer as Development Security or Performance Security; and
(c) Liquidate all Development Security or Performance Security (as applicable) then held by or for the benefit of Buyer free from any claim or right of any nature whatsoever of Seller, including any equity or right of purchase or redemption by Seller.

Buyer shall apply the proceeds of the collateral realized upon the exercise of any such rights or remedies to reduce Seller's obligations under this Agreement (Seller remains liable for any amounts owing to Buyer after such application), subject to Buyer's obligation to return any surplus proceeds remaining after these obligations are satisfied in full.

## ARTICLE 9 NOTICES

9.1 Addresses for the Delivery of Notices. Any Notice required, permitted, or contemplated hereunder shall be in writing, shall be addressed to the Party to be notified at the address set forth on Exhibit N or at such other address or addresses as a Party may designate for itself from time to time by Notice hereunder.
9.2 Acceptable Means of Delivering Notice. Each Notice required, permitted, or contemplated hereunder shall be deemed to have been validly served, given or delivered as follows: (a) if sent by United States mail with proper first class postage prepaid, three (3) Business Days following the date of the postmark on the envelope in which such Notice was deposited in the United States mail; (b) if sent by a regularly scheduled overnight delivery carrier with delivery fees either prepaid or an arrangement with such carrier made for the payment of such fees, the next Business Day after the same is delivered by the sending Party to such carrier; (c) if sent by electronic communication (including electronic mail, facsimile, or other electronic means), at the time indicated by the time stamp upon delivery; or (d) if delivered in person, upon receipt by the receiving Party. Notwithstanding the foregoing, Notices of outages or other scheduling or dispatch information or requests, may be sent by electronic communication and shall be considered delivered upon successful completion of such transmission. In addition, for any Notice sent pursuant to (a), (b) or (d) above, the Party sending such Notice shall send a courtesy copy via email to the email address provided on Exhibit N.

## ARTICLE 10 FORCE MAJEURE

### 10.1 Definition.

(a) "Force Majeure Event" means any act or event that delays or prevents a Party from timely performing all or a portion of its obligations under this Agreement or from complying with all or a portion of the conditions under this Agreement if such act or event, despite the exercise of reasonable efforts, cannot be avoided by and is beyond the reasonable control (whether direct or indirect) of and without the fault or negligence of the Party relying thereon as justification for such delay, nonperformance, or noncompliance.
(b) Without limiting the generality of the foregoing, except as set forth below, so long as an event otherwise satisfies the definition of a Force Majeure Event, a Force Majeure Event may include an act of God or the elements, such as flooding, lightning, hurricanes, tornadoes, or ice storms; explosion; fire; volcanic eruption; flood; epidemic, including COVID19; landslide; mudslide; sabotage; terrorism; earthquake; or other cataclysmic events; an act of public enemy; war; blockade; civil insurrection; riot; civil disturbance; Governmental Action; or strikes or other labor difficulties caused or suffered by a Party or any third party.

Notwithstanding the foregoing, the term "Force Majeure Event" does not include (i) Seller's inability to obtain permits or approvals of any type for the construction, operation, or maintenance of the Facility, except to the extent such inability is caused by a Force Majeure Event; (ii) the inability of a Party to make payments when due under this Agreement, unless the cause of such
inability is an event that would otherwise constitute a Force Majeure Event as described above that disables physical or electronic facilities necessary to transfer funds to the payee Party; (iii) a Curtailment Order, except to the extent such Curtailment Order is caused by a Force Majeure Event; (iv) Seller's inability to obtain sufficient labor, equipment, materials, or other resources to build or operate the Facility except to the extent such inability is caused by a Force Majeure Event; (v) a strike, work stoppage or labor dispute limited only to any one or more of Seller, Seller's Affiliates, Seller's contractors, their subcontractors thereof or any other third party employed by Seller to work on the Facility; (vi) any equipment failure except if such equipment failure is caused by a Force Majeure Event; or (vii) economic conditions that render a Party's performance of this Agreement at the Contract Price unprofitable or otherwise uneconomic (including an increase in component costs for any reason, including foreign or domestic tariffs, Buyer's ability to buy the Product, or any component thereof at a lower price, or Seller's ability to sell the Product, or any component thereof, at a higher price, than under the Agreement).
10.2 No Liability If a Force Majeure Event Occurs. Neither Seller nor Buyer shall be liable to the other Party in the event it is prevented from performing its obligations hereunder in whole or in part due to a Force Majeure Event. The Party rendered unable to fulfill any obligation by reason of a Force Majeure Event shall take reasonable actions necessary to remove such inability. Nothing herein shall be construed as permitting that Party to continue to fail to perform after said cause has been removed. Neither Party shall be considered in breach or default of this Agreement if and to the extent that any failure or delay in the Party's performance of one or more of its obligations hereunder is caused by a Force Majeure Event. Notwithstanding the foregoing, the occurrence and continuation of a Force Majeure Event shall not (a) suspend or excuse the obligation of a Party to make any payments due hereunder, (b) suspend or excuse the obligation of Seller to achieve the Guaranteed Construction Start Date or the Guaranteed Commercial Operation Date beyond the extensions provided in Exhibit B, or (c) limit Buyer's right to declare an Event of Default pursuant to Section 11.1(b)(ii) or (iv) and receive a Damage Payment upon exercise of Buyer's remedies pursuant to Section 11.2.
10.3 Notice. In the event of any delay or nonperformance resulting from a Force Majeure Event, the Party suffering the Force Majeure Event shall (a) promptly notify the other Party in writing of the nature, cause, estimated date of commencement thereof, and the anticipated extent of any delay or interruption in performance, and (b) promptly notify the other Party in writing of the cessation or termination of such Force Majeure Event, all as known or estimated in good faith by the affected Party; provided, however, that a Party's failure to give timely Notice shall not affect such Party's ability to assert that a Force Majeure Event has occurred unless the delay in giving Notice materially prejudices the other Party. The Parties acknowledge and agree that the extent and impact of COVID-19 on the Parties' performance hereunder may not be immediately or readily ascertainable, but that each Party shall promptly notify the other in accordance with this Section 10.3 once any impacts of COVID-19 result in any delay or nonperformance hereunder.
10.4 Termination Following Force Majeure Event. If a Force Majeure Event has occurred after the Commercial Operation Date that has caused either Party to be wholly or partially unable to perform its obligations hereunder, and the impacted Party has claimed and received relief from performance of its obligations for a consecutive twelve (12) month period, then the nonclaiming Party may terminate this Agreement upon written Notice to the other Party experiencing
the Force Majeure Event; provided, however, that Seller shall be entitled to up to an additional six (6) months to remedy the Force Majeure Event if (a) Seller has been unable to remedy the Force Majeure Event within the original twelve (12) month period despite exercising diligent efforts and (b) Seller provides to Buyer prior to the expiration of the original twelve (12) month period (i) a detailed plan reasonably acceptable to an independent, professional engineer selected by Buyer, licensed in the State of California, that explains how Seller will restore the Facility, (ii) a certificate from a Licensed Professional Engineer attesting that the Facility could not reasonably have been restored to operational status within the original twelve (12) month period but is reasonably likely to be restored to operational status within the additional six (6) month period by Seller's execution of the plan described in Section 10.4(b)(i), (iii) detailed monthly reports (due no later than the 15th day of each month) describing the progress of Seller's efforts to remedy the Force Majeure Event during the prior month, and (iv) Seller continues to make reasonable progress in implementing the detailed plan provided to Buyer, or in otherwise resolving the Force Majeure Event. Upon any such termination, neither Party shall have any liability to the other, save and except for those obligations specified in Section 2.1(b), and Buyer shall promptly return to Seller any Performance Security then held by Buyer, less any amounts drawn in accordance with this Agreement.

## ARTICLE 11 <br> DEFAULTS; REMEDIES; TERMINATION

### 11.1 Events of Default. An "Event of Default" shall mean,

(a) with respect to a Party (the "Defaulting Party") that is subject to the Event of Default the occurrence of any of the following:
(i) the failure by such Party to make, when due, any payment required pursuant to this Agreement and such failure is not remedied within ten (10) Business Days after Notice thereof;
(ii) any representation or warranty made by such Party herein is false or misleading in any material respect when made or when deemed made or repeated, and such default is not remedied within thirty (30) days after Notice thereof (or such longer additional period, not to exceed an additional thirty (30) days, if the Defaulting Party is unable to remedy such default within such initial thirty (30) day period despite exercising commercially reasonable efforts);
(iii) the failure by such Party to perform any material covenant or obligation set forth in this Agreement (except to the extent constituting a separate Event of Default, set forth in this Section 11.1; and except for failures related to the Adjusted Energy Production that do not trigger the provisions of Section 11.1(b)(v), 11.1(b)(vii), and 11.1(b)(viii), the exclusive remedies for which are set forth in Section 4.7), and such failure is not remedied within thirty (30) days after Notice thereof (or such longer additional period, not to exceed an additional sixty (60) days, if the Defaulting Party is unable to remedy such failure within such initial thirty (30) day period despite exercising commercially reasonable efforts);
(iv) such Party becomes Bankrupt;
(v) such Party assigns this Agreement or any of its rights hereunder other than in compliance with Article 14; or
(vi) such Party consolidates or amalgamates with, or merges with or into, or transfers all or substantially all of its assets to, another entity and, at the time of such consolidation, amalgamation, merger or transfer, the resulting, surviving or transferee entity fails to assume all the obligations of such Party under this Agreement to which it or its predecessor was a party by operation of Law or pursuant to an agreement reasonably satisfactory to the other Party.
(b) with respect to Seller as the Defaulting Party, the occurrence of any of the following:
(i) if at any time, Seller delivers or attempts to deliver electric energy for sale under this Agreement that was not generated by the Facility, except for Replacement Product or Bridge Product;
(ii) the failure by Seller to achieve Commercial Operation within one hundred eighty (180) days after the Guaranteed Commercial Operation Date;
(iii) if not remedied within ten (10) days after Notice thereof, the failure by Seller to deliver a Remedial Action Plan required under Section 2.4;
(iv) the failure by Seller to achieve the Construction Start Date within one hundred eighty (180) days after the Guaranteed Construction Start Date;
(v) if, in any consecutive six (6) month period, the Adjusted Energy Production amount (calculated in accordance with Exhibit G) is not at least ten percent (10\%) of the Expected Energy amount for such period in the applicable Contract Year, and Seller fails to either (x) demonstrate to Buyer's reasonable satisfaction, within ten (10) Business Days after Notice from Buyer, a legitimate reason for the failure to meet the ten percent $(10 \%)$ minimum, or (y) deliver to Buyer within ten (10) Business Days after Notice from Buyer a plan or report developed by Seller that describes the cause of the failure to meet the ten percent ( $10 \%$ ) and the actions that Seller has taken, is taking, or proposes to take in an effort to cure such condition along with the written confirmation of a Licensed Professional Engineer that such plan or report is in accordance with Prudent Operating Practices and capable of cure within a reasonable period of time, not to exceed one hundred and eighty (180) days;
(vi) failure by Seller to satisfy the collateral requirements pursuant to Sections 8.7 or 8.8 after Notice and expiration of the cure periods set forth therein;
(vii) if beginning in the second Contract Year, the Adjusted Energy Production amount is not at least fifty percent (50\%) of the Expected Energy amount in any Contract Year;
(viii) if, in any two (2) consecutive Contract Years during the Delivery Term, the Adjusted Energy Production amount is not at least sixty-five percent (65\%) of the Expected Energy amount in each Contract Year;
(ix) with respect to any outstanding Letter of Credit provided for the benefit of Buyer that is not then required under this Agreement to be canceled or returned, the failure by Seller to provide for the benefit of Buyer substitute Development or Performance

Security, as applicable, in each case, in the amount required hereunder within ten (10) Business Days after Seller receives Notice of the occurrence of any of the following events:
(A) the issuer of the outstanding Letter of Credit shall fail to maintain a Credit Rating of at least "A-" by S\&P or "A3" by Moody's;
(B) the issuer of such Letter of Credit becomes Bankrupt;
(C) the issuer of the outstanding Letter of Credit shall fail to comply with or perform its obligations under such Letter of Credit and such failure shall be continuing after the lapse of any applicable grace period permitted under such Letter of Credit;
(D) the issuer of the outstanding Letter of Credit shall fail to honor a properly documented request to draw on such Letter of Credit;
(E) the issuer of the outstanding Letter of Credit shall disaffirm, disclaim, repudiate or reject, in whole or in part, or challenge the validity of, such Letter of Credit;
(F) such Letter of Credit fails or ceases to be in full force and effect at any time; or
(G) Seller shall fail to renew or cause the renewal of each outstanding Letter of Credit on a timely basis as provided in the relevant Letter of Credit and as provided in accordance with this Agreement, and in no event less than forty-five (45) days prior to the expiration of the outstanding Letter of Credit.
(x) with respect to any Guaranty provided for the benefit of Buyer, the failure by Seller to provide for the benefit of Buyer (1) cash, (2) a replacement Guaranty from a different Guarantor meeting the criteria set forth in the definition of Guarantor, or (3) a replacement Letter of Credit from an issuer meeting the criteria set forth in the definition of Letter of Credit, in each case, in the amount required hereunder within ten (10) Business Days after Seller receives Notice of the occurrence of any of the following events:
(A) if any representation or warranty made by the Guarantor in connection with this Agreement is false or misleading in any material respect when made or when deemed made or repeated, and such default is not remedied within thirty (30) days after Notice thereof;
(B) the failure of Guarantor to make any payment required or to perform any other material covenant or obligation in any Guaranty;
(C) the Guarantor becomes Bankrupt;
(D) the Guarantor shall fail to meet the criteria for an acceptable Guarantor as set forth in the definition of Guarantor;
(E) the failure of the Guaranty to be in full force and effect (other than in accordance with its terms) prior to the indefeasible satisfaction of all obligations of Seller hereunder; or
(F) the Guarantor shall repudiate, disaffirm, disclaim, or reject, in whole or in part, or challenge the validity of any Guaranty.
11.2 Remedies; Declaration of Early Termination Date. If an Event of Default with respect to a Defaulting Party shall have occurred and be continuing, the other Party ("NonDefaulting Party") shall have the following rights:
(a) to send Notice, designating a day, no earlier than the day such Notice is deemed to be received and no later than twenty (20) days after such Notice is deemed to be received, as an early termination date of this Agreement ("Early Termination Date") that terminates this Agreement (the "Terminated Transaction") and ends the Delivery Term effective as of the Early Termination Date;
(b) to accelerate all amounts owing between the Parties, and to collect as liquidated damages (i) the Damage Payment (in the case of an Event of Default by Seller occurring before the Commercial Operation Date, including an Event of Default under Section 11.1(b)(ii) or 11.1(b)(iv)) or (ii) the Termination Payment calculated in accordance with Section 11.3 below (in the case of any other Event of Default by either Party);
(c) to withhold any payments due to the Defaulting Party under this Agreement;
(d) to suspend performance; or
(e) to exercise any other right or remedy available at law or in equity, including specific performance or injunctive relief, except to the extent such remedies are expressly limited under this Agreement;
provided, that payment by the Defaulting Party of the Damage Payment or Termination Payment, as applicable, shall constitute liquidated damages and the Non-Defaulting Party's sole and exclusive remedy for any Terminated Transaction and the Event of Default related thereto.
11.3 Termination Payment. The Termination Payment ("Termination Payment") for a Terminated Transaction shall be the aggregate of all Settlement Amounts plus any or all other amounts due to the Non-Defaulting Party (as of the Early Termination Date) minus any and all other amounts due from the Non-Defaulting Party (as of the Early Termination Date) netted into a single amount. If the resulting value is negative, the Termination Payment shall be zero. The NonDefaulting Party shall calculate, in a commercially reasonable manner, a Settlement Amount for the Terminated Transaction as of the Early Termination Date. Third parties supplying information
for purposes of the calculation of Gains or Losses may include, without limitation, dealers in the relevant markets, end-users of the relevant product, information vendors and other sources of market information. The Settlement Amount shall not include consequential, incidental, punitive, exemplary, indirect or business interruption damages. Without prejudice to the Non-Defaulting Party's duty to mitigate, the Non-Defaulting Party shall not have to enter into replacement transactions to establish a Settlement Amount. Each Party agrees and acknowledges that (a) the actual damages that the Non-Defaulting Party would incur in connection with a Terminated Transaction would be difficult or impossible to predict with certainty, (b) the Damage Payment or Termination Payment described in this Section 11.2 or this Section 11.3 (as applicable) is a reasonable and appropriate approximation of such damages, and (c) the Damage Payment or Termination Payment described in this Section 11.2 or this Section 11.3 (as applicable) is the exclusive remedy of the Non-Defaulting Party in connection with a Terminated Transaction but shall not otherwise act to limit any of the Non-Defaulting Party's rights or remedies if the NonDefaulting Party does not elect a Terminated Transaction as its remedy for an Event of Default by the Defaulting Party.
11.4 Notice of Payment of Termination Payment. As soon as practicable after a Terminated Transaction, Notice shall be given by the Non-Defaulting Party to the Defaulting Party of the amount of the Damage Payment or Termination Payment and whether the Termination Payment is due to or from the Non-Defaulting Party. The Notice shall include a written statement explaining in reasonable detail the calculation of such amount and the sources for such calculation. The Termination Payment shall be made to or from the Non-Defaulting Party, as applicable, within ten (10) Business Days after such Notice is effective.
11.5 Disputes with Respect to Termination Payment. If the Defaulting Party disputes the Non-Defaulting Party's calculation of the Termination Payment, in whole or in part, the Defaulting Party shall, within five (5) Business Days of receipt of the Non-Defaulting Party's calculation of the Termination Payment, provide to the Non-Defaulting Party a detailed written explanation of the basis for such dispute. Disputes regarding the Termination Payment shall be determined in accordance with Article 15.
11.6 Rights and Remedies are Cumulative. Except where an express and exclusive remedy or measure of damages is provided, the rights and remedies of a Party pursuant to this Article 11 shall be cumulative and in addition to the rights of the Parties otherwise provided in this Agreement.
11.7 Seller Pre-Commercial Operation Liability Limitations. Notwithstanding any other provision of this Agreement, if this Agreement is terminated in accordance with the terms and conditions of this Agreement prior to the Commercial Operation Date, Seller's aggregate liability under this Agreement, including for any previously paid or accrued and unpaid Construction Delay Damages and Commercial Operation Delay Damages, shall be limited to an aggregate amount equal to the sum of (a) the Damage Payment plus (b) any previously paid or accrued and unpaid Construction Delay Damages and Commercial Operation Delay Damages (provided, that the total amount of previously paid or accrued and unpaid Construction Delay Damages and Commercial Operation Delay Damages shall be capped at an amount equal to the Damage Payment for purposes of calculating Seller's limitation of liability hereunder).
11.8 Mitigation. Any Non-Defaulting Party shall be obligated to mitigate its Costs, Losses and damages resulting from any Event of Default of the other Party under this Agreement.

## ARTICLE 12 <br> LIMITATION OF LIABILITY AND EXCLUSION OF WARRANTIES.

12.1 No Consequential Damages. EXCEPT TO THE EXTENT PART OF AN EXPRESS REMEDY OR MEASURE OF DAMAGES HEREIN, OR PART OF AN ARTICLE 16 INDEMNITY CLAIM, OR INCLUDED IN A LIQUIDATED DAMAGES CALCULATION, OR ARISING FROM FRAUD OR INTENTIONAL MISREPRESENTATION, NEITHER PARTY SHALL BE LIABLE TO THE OTHER OR ITS INDEMNIFIED PERSONS FOR ANY SPECIAL, PUNITIVE, EXEMPLARY, INDIRECT, OR CONSEQUENTIAL DAMAGES, OR LOSSES OR DAMAGES FOR LOST REVENUE OR LOST PROFITS, WHETHER FORESEEABLE OR NOT, ARISING OUT OF, OR IN CONNECTION WITH THIS AGREEMENT. IF NO REMEDY OR MEASURE OF DAMAGES IS EXPRESSLY PROVIDED HEREIN, THE OBLIGOR'S LIABILITY SHALL BE LIMITED TO DIRECT DAMAGES ONLY. ON OR BEFORE THE SIXTH ANNIVERSARY OF THE COMMERCIAL OPERATION DATE, THE VALUE OF ANY TAX BENEFITS, DETERMINED ON AN AFTER-TAX BASIS, LOST DUE TO BUYER'S DEFAULT (WHICH SELLER HAS NOT BEEN ABLE TO MITIGATE AFTER USE OF REASONABLE EFFORTS) AND AMOUNTS DUE IN CONNECTION WITH THE RECAPTURE OF ANY RENEWABLE ENERGY INCENTIVES, IF ANY, SHALL BE DEEMED TO BE DIRECT DAMAGES.
12.2 Waiver and Exclusion of Other Damages. EXCEPT AS EXPRESSLY SET FORTH HEREIN, THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ANY AND ALL IMPLIED WARRANTIES ARE DISCLAIMED. THE PARTIES CONFIRM THAT THE EXPRESS REMEDIES AND MEASURES OF DAMAGES PROVIDED IN THIS AGREEMENT SATISFY THE ESSENTIAL PURPOSES HEREOF. ALL LIMITATIONS OF LIABILITY CONTAINED IN THIS AGREEMENT, INCLUDING, WITHOUT LIMITATION, THOSE PERTAINING TO SELLER'S LIMITATION OF LIABILITY AND THE PARTIES' WAIVER OF CONSEQUENTIAL DAMAGES, SHALL APPLY EVEN IF THE REMEDIES FOR BREACH OF WARRANTY PROVIDED IN THIS AGREEMENT ARE DEEMED TO "FAIL OF THEIR ESSENTIAL PURPOSE" OR ARE OTHERWISE HELD TO BE INVALID OR UNENFORCEABLE.

FOR BREACH OF ANY PROVISION FOR WHICH AN EXPRESS AND EXCLUSIVE REMEDY OR MEASURE OF DAMAGES IS PROVIDED, SUCH EXPRESS REMEDY OR MEASURE OF DAMAGES SHALL BE THE SOLE AND EXCLUSIVE REMEDY, THE OBLIGOR'S LIABILITY SHALL BE LIMITED AS SET FORTH IN SUCH PROVISION, AND ALL OTHER REMEDIES OR DAMAGES AT LAW OR IN EQUITY ARE WAIVED.

TO THE EXTENT ANY DAMAGES REQUIRED TO BE PAID HEREUNDER ARE LIQUIDATED, INCLUDING THE DAMAGE PAYMENT UNDER SECTIONS 4.7, 11.2 AND 11.3, AND AS PROVIDED IN EXHIBIT B AND EXHIBIT G, THE PARTIES ACKNOWLEDGE THAT THE DAMAGES ARE DIFFICULT OR IMPOSSIBLE TO DETERMINE, THAT OTHERWISE OBTAINING AN ADEQUATE REMEDY IS


#### Abstract

INCONVENIENT, AND THAT THE LIQUIDATED DAMAGES CONSTITUTE A REASONABLE APPROXIMATION OF THE ANTICIPATED HARM OR LOSS. IT IS THE INTENT OF THE PARTIES THAT THE LIMITATIONS HEREIN IMPOSED ON REMEDIES and the measure of damages be without regard to the cause or CAUSES RELATED THERETO, INCLUDING THE NEGLIGENCE OF ANY PARTY, WHETHER SUCH NEGLIGENCE BE SOLE, JOINT OR CONCURRENT, OR ACTIVE OR PASSIVE. THE PARTIES HEREBY WAIVE ANY RIGHT TO CONTEST SUCH PAYMENTS AS AN UNREASONABLE PENALTY.

THE PARTIES ACKNOWLEDGE AND AGREE THAT MONEY DAMAGES AND THE EXPRESS REMEDIES PROVIDED FOR HEREIN ARE AN ADEQUATE REMEDY FOR THE BREACH BY THE OTHER OF THE TERMS OF THIS AGREEMENT, AND EACH PARTY WAIVES ANY RIGHT IT MAY HAVE TO SPECIFIC PERFORMANCE WITH RESPECT TO ANY OBLIGATION OF THE OTHER PARTY UNDER THIS AGREEMENT.


## ARTICLE 13 REPRESENTATIONS AND WARRANTIES; AUTHORITY

13.1 Seller's Representations and Warranties. As of the Effective Date, Seller represents and warrants as follows:
(a) Seller is a limited liability company, duly organized, validly existing and in good standing under the laws of the jurisdiction of its formation, and is qualified to conduct business in the state of California and each jurisdiction where the failure to so qualify would have a material adverse effect on the business or financial condition of Seller.
(b) Seller has the power and authority to enter into and perform this Agreement and is not prohibited from entering into this Agreement or discharging and performing all covenants and obligations on its part to be performed under and pursuant to this Agreement, except where such failure does not have a material adverse effect on Seller's performance under this Agreement. The execution, delivery and performance of this Agreement by Seller has been duly authorized by all necessary limited liability company action on the part of Seller and does not and will not require the consent of any trustee or holder of any indebtedness or other obligation of Seller or any other party to any other agreement with Seller.
(c) The execution and delivery of this Agreement, consummation of the transactions contemplated herein, and fulfillment of and compliance by Seller with the provisions of this Agreement will not conflict with or constitute a breach of or a default under any Law presently in effect having applicability to Seller, subject to any permits that have not yet been obtained by Seller, the documents of formation of Seller or any outstanding trust indenture, deed of trust, mortgage, loan agreement or other evidence of indebtedness or any other agreement or instrument to which Seller is a party or by which any of its property is bound.
(d) This Agreement has been duly executed and delivered by Seller. This Agreement is a legal, valid and binding obligation of Seller enforceable in accordance with its terms, except as limited by laws of general applicability limiting the enforcement of creditors' rights or by the exercise of judicial discretion in accordance with general principles of equity.
(e) The Facility is located in the State of California, and will be designed to contain the capabilities provided in Exhibit A.
(f) Seller will be responsible for obtaining all permits necessary to construct and operate the Facility and Seller or an Affiliate will be the applicant on any CEQA documents.
(g) Seller represents and warrants that it has not and will not knowingly utilize equipment or resources for the construction, operation or maintenance of the Facility that rely on work or services exacted from any person under the threat of a penalty and for which the person has not offered himself or herself voluntarily ("Forced Labor"). The Parties acknowledge that pursuant to the business advisory jointly issued by the U.S. Departments of State, Treasury, Commerce and Homeland Security on July 1, 2020, equipment or resources sourced from the Xinjiang region of China are presumed to involve Forced Labor.
13.2 Buyer's Representations and Warranties. As of the Effective Date, Buyer represents and warrants as follows:
(a) Buyer is a public entity organized under the laws of the State of California.
(b) Buyer has the power and authority to enter into and perform this Agreement and is not prohibited from entering into this Agreement or discharging and performing all covenants and obligations on its part to be performed under and pursuant to this Agreement, except where such failure does not have a material adverse effect on Buyer's performance under this Agreement. The execution, delivery and performance of this Agreement by Buyer has been duly authorized by all necessary action on the part of Buyer and does not and will not require the consent of any trustee or holder of any indebtedness or other obligation of Buyer or any other party to any other agreement with Buyer.
(c) The execution and delivery of this Agreement, consummation of the transactions contemplated herein, and fulfillment of and compliance by Buyer with the provisions of this Agreement will not conflict with or constitute a breach of or a default under any Law presently in effect having applicability to Buyer, the documents of formation of Buyer or any outstanding trust indenture, deed of trust, mortgage, loan agreement or other evidence of indebtedness or any other agreement or instrument to which Buyer is a party or by which any of its property is bound.
(d) This Agreement has been duly executed and delivered by Buyer. This Agreement is a legal, valid and binding obligation of Buyer enforceable in accordance with its terms, except as limited by laws of general applicability limiting the enforcement of creditors' rights or by the exercise of judicial discretion in accordance with general principles of equity.
(e) Buyer warrants and covenants that with respect to its contractual obligations under this Agreement, it will not claim and affirmatively waives immunity on the grounds of sovereignty or similar grounds with respect to itself or its revenues or assets from (1) suit, (2) jurisdiction of court (provided that such court is located within a venue permitted in law and under the Agreement), (3) relief by way of injunction, order for specific performance or recovery of property, (4) attachment of assets, or (5) execution or enforcement of any judgment; provided,
however that nothing in this Agreement shall waive the obligations or rights set forth in the California Tort Claims Act (Government Code Section 810 et seq.).
(f) Buyer is a "local public entity" as defined in Section 900.4 of the Government Code of the State of California.
13.3 General Covenants. Each Party covenants that commencing on the Effective Date and continuing throughout the Contract Term:
(a) It shall continue to be duly organized, validly existing and in good standing under the Laws of the jurisdiction of its formation and to be qualified to conduct business in each jurisdiction where the failure to so qualify would have a material adverse effect on its business or financial condition;
(b) It shall maintain (or obtain from time to time as required) all regulatory authorizations necessary for it to legally perform its obligations under this Agreement; and
(c) It shall perform its obligations under this Agreement in compliance with all terms and conditions in its governing documents and in material compliance with any Law.

ARTICLE 14
ASSIGNMENT
14.1 General Prohibition on Assignments. Except as provided in this Article 14, neither Party may voluntarily assign this Agreement or its rights or obligations under this Agreement, or any part of such rights or obligations, without the written consent of the other Party, which consent shall not be unreasonably withheld. Except as provided in this Article 14, any Change of Control of Seller or direct or indirect change of control of Buyer (whether voluntary or by operation of Law) will be deemed an assignment under this Article 14 and will require the prior written consent of the other Party, which consent shall not be unreasonably withheld. Any assignment made in violation of the conditions to assignment set out in this Article 14 shall be null and void. Seller shall be responsible for Buyer's reasonable costs associated with the preparation, review, execution and delivery of documents in connection with any assignment of this Agreement, including without limitation reasonable attorneys' fees.
14.2 Collateral Assignment. Subject to the provisions of this Section 14.2, Seller has the right to assign this Agreement as collateral for any financing or refinancing of the Facility. In connection with any financing or refinancing of the Facility by Seller, Buyer shall in good faith work with Seller and Lenders to agree upon a consent to collateral assignment of this Agreement ("Collateral Assignment Agreement"). Each Collateral Assignment Agreement must be in form and substance agreed to by Buyer, Seller and the applicable Lender, such agreement not to be unreasonably withheld. Buyer will not be subject to obligations under more than one Collateral Assignment Agreement at any time. Each Collateral Assignment Agreement must include, among others, the following provisions unless otherwise agreed to by Buyer, Seller and the applicable Lender:
(a) Buyer shall give notice of an Event of Default by Seller to the Person(s) to be specified by Lender in the Collateral Assignment Agreement before exercising its right to
terminate this Agreement as a result of such Event of Default; provided that such notice shall be provided to Lender at the time such notice is provided to Seller and any additional cure period of Lender agreed to in the Collateral Assignment Agreement shall not commence until Lender has received notice of such Event of Default;
(b) Lender will have the right to cure an Event of Default on behalf of Seller if Lender sends a written notice to Buyer before the later of (i) the expiration of any cure period, and (ii) five (5) Business Days after Lender's receipt of notice of such Event of Default from Buyer, indicating Lender's intention to cure. Lender must remedy or cure such Event of Default within the cure period under this Agreement and any additional cure periods agreed in the Collateral Assignment Agreement up to a maximum of ninety (90) days (or, in the event of a bankruptcy of Seller or any foreclosure or similar proceeding if required by Lender to cure any Event of Default, an additional reasonable period of time to complete such proceedings and effect such cure not to exceed one hundred eighty (180) days without the written consent of Buyer, which consent shall not be unreasonably withheld), provided that if Lender is prohibited by any court order or bankruptcy or insolvency proceedings from curing the Event of Default or from commencing or prosecuting foreclosure proceedings, the foregoing time periods shall be extended by the period of such prohibition;
(c) Following an Event of Default by Seller under this Agreement, Buyer may require Seller (or Lender, if Lender has provided the notice set forth in subsection (b) above) to provide to Buyer a report concerning:
(i) The status of efforts by Seller or Lender to develop a plan to cure the Event of Default;
(ii) Impediments to the cure plan or its development;
(iii) If a cure plan has been adopted, the status of the cure plan's implementation (including any modifications to the plan as well as the expected timeframe within which any cure is expected to be implemented); and
(iv) Any other information which Buyer may reasonably require related to the development, implementation and timetable of the cure plan.

Seller or Lender must provide the report to Buyer within ten (10) Business Days after Notice from Buyer requesting the report. Buyer will have no further right to require the report with respect to a particular Event of Default after that Event of Default has been cured;
(d) Lender will have the right to consent before any termination of this Agreement which does not arise out of an Event of Default, which consent will not be unreasonably withheld, delayed or conditioned;
(e) Lender will receive prior notice of and the right to approve material amendments to this Agreement, which approval will not be unreasonably withheld, delayed or conditioned;
(f) If this Agreement is transferred to Lender pursuant to subsection (b) above,

Lender must assume all of Seller's obligations arising under this Agreement on and after the date of such assumption; provided, before such assumption, if Buyer advises Lender that Buyer will require that Lender cure (or cause to be cured) any Event of Default existing as of the transfer date in order to avoid the exercise by Buyer (in its sole discretion) of Buyer's right to terminate this Agreement with respect to such Event of Default, then Lender at its option, and in its sole discretion, may elect to either:
(i) Cause such Event of Default to be cured (other than any Events of Default which relate to Seller's bankruptcy or similar insolvency proceedings, to representations and warranties made by Seller or to Seller's failure to perform obligations under other agreements, or which are otherwise personal to Seller), or
(ii) Not assume this Agreement.
(g) If Lender elects to transfer this Agreement, then Lender must cause the transferee to assume all of Seller's obligations arising under this Agreement arising after the date of such assumption as a condition of the sale or transfer. Such sale or transfer may be made only to an entity that meets the definition of Permitted Transferee;
(h) Subject to Lender's cure of any Events of Defaults under the Agreement in accordance with Section 14.2(f), if (i) this Agreement is rejected in Seller's Bankruptcy or otherwise terminated in connection therewith Lender or its designee shall have the right to elect within ninety (90) days after such rejection or termination, to enter into a replacement agreement with Buyer having substantially the same terms as this Agreement for the remaining term thereof, and, promptly after Lender's written request, Buyer must enter into such replacement agreement with Lender or Lender's designee, or (ii) if Lender or its designee, directly or indirectly, takes possession of, or title to, the Facility after any such rejection or termination of this Agreement, promptly after Buyer's written request, Lender must itself or must cause its designee to promptly enter into a new agreement with Buyer having substantially the same terms as this Agreement for the remaining term thereof, provided that in the event a designee of Lender, directly or indirectly, takes possession of, or title to, the Facility (including possession by a receiver or title by foreclosure or deed in lieu of foreclosure), if such designee is not an entity that meets the definition of Permitted Transferee then such designee shall be subject to the prior written approval of Buyer, such approval not to be unreasonably withheld; and
(i) The Parties shall negotiate any Collateral Assignment Agreement in good faith, including variations to the provisions set forth in this Section 14.2, and to the extent the Collateral Assignment Agreement executed by Buyer and Lender varies from such provisions, the terms of such Collateral Assignment Agreement shall be controlling. In addition, Buyer shall cooperate with Seller or any Lender to execute or arrange for delivery of estoppels reasonably requested by Seller or Lender.
14.3 Permitted Assignment by Seller. Seller may, upon prior written notice to, but without the prior written consent of, Buyer, transfer or assign this Agreement, including through a Change of Control, (x) to an Affiliate of Seller or (y) on or after the Construction Start Date, if:
(a) the transfer or assignment is to a Permitted Transferee;
(b) Seller has given Buyer Notice at least fifteen (15) Business Days before the date of such proposed assignment, transfer, or Change of Control;
(c) Except in the case of a Change of Control where all of Seller's obligations and liabilities are directly or indirectly assumed, Seller has provided Buyer a written agreement or certificate signed by the Person to which Seller wishes to assign its interests that provides that such Person will assume all of Seller's obligations and liabilities under this Agreement upon such transfer or assignment;
(d) Seller has provided Buyer with a certificate signed by the Person to which Seller wishes to assign its interests certifying that such Person meets the definition of a Permitted Transferee; and
(e) Such transfer or assignment is not in violation of applicable Law.

Any assignment by Seller, its successors or assigns under this Section 14.3 shall be of no force and effect unless and until the Notice under clause (b) and the agreements and certificates required under clauses (c) and (d), if applicable, by the assignee have been received by Buyer. For clarity, neither the transfer or assignment of this Agreement through foreclosure by any Lender on the assets of Seller or on the direct or indirect ownership interests in Seller nor the transfer or assignment of this Agreement or such ownership interests in Seller to any Lender in lieu of such foreclosure (including any transfer or assignment of this Agreement or such ownership interests in Seller subsequent to such foreclosure or transfer or assignment in lieu of foreclosure to a Permitted Transferee) shall require Buyer's consent provided that clauses (a) through (e) are followed and completed.
14.4 Permitted Assignment by Buyer. Buyer may assign its interests in this Agreement without prior written consent of Seller to a Qualified Buyer Assignee. Notwithstanding the foregoing, in connection with any such assignment, such Qualified Buyer Assignee shall execute a written assumption agreement in favor of Seller pursuant to which any such Qualified Buyer Assignee shall assume all the obligations of such Buyer under this Agreement and agree to be bound by all the terms and conditions of this Agreement, thereby relieving the assignor Buyer from its duties and obligations hereunder and thereunder. Any modifications or amendments to this Agreement to accommodate the technical requirements of such Qualified Buyer Assignee (including as they relate to transmission and scheduling) shall require the consent of Seller, which consent shall not be unreasonably withheld, conditioned or delayed.

## ARTICLE 15 DISPUTE RESOLUTION

15.1 Governing Law. This Agreement and the rights and duties of the Parties hereunder shall be governed by and construed, enforced and performed in accordance with the laws of the state of California, without regard to principles of conflicts of Law. To the extent enforceable at such time, each Party waives its respective right to any jury trial with respect to any litigation arising under or in connection with this Agreement. The Parties agree that any suit, action, or other legal proceeding by or against any party (or its Affiliates or designees) with respect to or
arising out of this Agreement shall be brought in federal courts of the United States or the courts of the State of California sitting in the County of Riverside, California.
15.2 Dispute Resolution. In the event of any dispute arising under this Agreement, within ten (10) days following the receipt of a written Notice from either Party identifying such dispute, the Parties shall meet, negotiate and attempt, in good faith, to resolve the dispute quickly, informally and inexpensively. If the Parties are unable to resolve a dispute arising hereunder within the earlier of either thirty (30) days of initiating such discussions, or within forty (40) days after Notice of the dispute, either Party may seek any and all remedies available to it at Law or in equity, subject to the limitations set forth in this Agreement. The Parties may agree to submit the dispute to mediation prior to seeking any and all remedies available to it at Law in or equity. In the event of such an agreement to mediation, the Parties will cooperate in selecting a qualified neutral mediator selected from a panel of neutrals and in scheduling the time and place of the mediation as soon as reasonably possible, but in no event later than thirty (30) days after the request for mediation is made. The Parties agree to participate in the mediation in good faith and to share the costs of the mediation, including the mediator's fee, equally, but such shared costs shall not include each Party's own attorneys' fees and costs, which shall be borne solely by such Party. If the mediation is unsuccessful, then either Party may seek any and all remedies available to it at law or in equity, subject to the limitations set forth in this Agreement.

## ARTICLE 16 INDEMNIFICATION

16.1 Indemnification. Each Party (the "Indemnifying Party") agrees to indemnify, defend and hold harmless the other Party and its Affiliates, directors, officers, employees and agents (collectively, the "Indemnified Party") from and against all third-party claims, demands, losses, liabilities, penalties, and expenses (including reasonable attorneys' fees and expert witness fees), howsoever described, to the extent arising out of, resulting from, or caused by (i) a violation of applicable Laws, (ii) negligent or tortious acts, errors, or omissions or (iii) intentional acts or willful misconduct in each case by or of the Indemnifying Party, its Affiliates, directors, officers, employees, or agents, excepting only such claims, demands, losses, liabilities, penalties and expenses to the extent solely caused by the willful misconduct or gross negligence of a member of the Indemnified Party (collectively, "Indemnifiable Losses"). Nothing in this Section 16.1 shall enlarge or relieve Seller or Buyer of any liability to the other for any breach of this Agreement. These indemnity provisions shall not be construed to relieve any insurer of its obligation to pay claims consistent with the provisions of a valid insurance policy.

### 16.2 Claim Notice.

(a) Notice of Claim. Subject to the terms of this Agreement and upon obtaining knowledge of an Indemnifiable Loss for which it is entitled to indemnity under this Article 16, the Indemnified Party will promptly provide Notice to the Indemnifying Party in writing of any damage, claim, loss, liability or expense which Indemnified Party has determined has given or could give rise to an Indemnifiable Loss under Section 16.1 ("Claim"). The Notice is referred to as a "Notice of Claim." A Notice of Claim will specify, in reasonable detail, the facts known to the Indemnified Party regarding the Indemnifiable Loss.
(b) Failure to Provide Notice. A failure to give timely Notice or to include any specified information in any Notice as provided in this Section 16.2 will not affect the rights or obligations of any Party hereunder except and only to the extent that, as a result of such failure, any Party which was entitled to receive such Notice was deprived of its right to recover any payment under its applicable insurance coverage or was otherwise materially damaged as a direct result of such failure and, provided further, the Indemnifying Party is not obligated to indemnify the Indemnified Party for the increased amount of any Indemnifiable Loss which would otherwise have been payable to the extent that the increase resulted from the failure to deliver timely a Notice of Claim.
16.3 Defense of Claims. If, within ten (10) days after giving a Notice of Claim regarding a Claim to the Indemnifying Party pursuant to Section 16.2(a), the Indemnified Party receives Notice from such Indemnifying Party that the Indemnifying Party has elected to assume the defense of such Claim, the Indemnifying Party will not be liable for any legal expenses subsequently incurred by the Indemnified Party in connection with the defense thereof; provided, however, that if the Indemnifying Party fails to take reasonable steps necessary to defend diligently such Claim within ten (10) days after receiving Notice from the Indemnified Party that the Indemnified Party believes the Indemnifying Party has failed to take such steps, or if the Indemnifying Party has not undertaken fully to indemnify the Indemnified Party in respect of all Indemnifiable Losses relating to the matter, the Indemnified Party may assume its own defense, and the Indemnifying Party will be liable for all reasonable costs or expenses, including attorneys’ fees, paid or incurred in connection therewith. Without the prior written consent of the Indemnified Party, the Indemnifying Party will not enter into any settlement of any Claim which would lead to liability or create any financial or other obligation on the part of the Indemnified Party for which the Indemnified Party is not entitled to indemnification hereunder; provided, however, that the Indemnifying Party may accept any settlement without the consent of the Indemnified Party if such settlement provides a full release to the Indemnified Party and no requirement that the Indemnified Party acknowledge fault or culpability. If a firm offer is made to settle a Claim without leading to liability or the creation of a financial or other obligation on the part of the Indemnified Party for which the Indemnified Party is not entitled to indemnification hereunder and the Indemnifying Party desires to accept and agrees to such offer, the Indemnifying Party will give Notice to the Indemnified Party to that effect. If the Indemnified Party fails to consent to such firm offer within ten (10) calendar days after its receipt of such Notice, the Indemnified Party may continue to contest or defend such Claim and, in such event, the maximum liability of the Indemnifying Party to such Claim will be the amount of such settlement offer, plus reasonable costs and expenses paid or incurred by the Indemnified Party up to the date of such Notice.
16.4 Rights and Remedies are Cumulative. Except for express remedies already provided in this Agreement, the rights and remedies of a Party pursuant to this Article 16 are cumulative and in addition to the rights of the Parties otherwise provided in this Agreement.

> ARTICLE 17
> INSURANCE

### 17.1 Insurance.

(a) General Liability. Seller shall maintain, or cause to be maintained at its sole expense, (i) commercial general liability insurance, including products and completed operations and personal injury insurance, in a minimum amount of Two Million Dollars ( $\$ 2,000,000$ ) per occurrence, and an annual aggregate of not less than Four Million Dollars ( $\$ 4,000,000$ ), and include Buyer as an additional insured; and (ii) an umbrella and/or excess liability insurance policy in a minimum limit of liability of Five Million Dollars ( $\$ 5,000,000$ ). Defense costs shall be provided as an additional benefit and not included within the limits of liability. Such insurance shall contain standard contractual liability, cross-liability and severability of interest provisions.
(b) Employer's Liability Insurance. Employers' Liability insurance shall not be less than One Million Dollars ( $\$ 1,000,000.00$ ) for injury or death occurring as a result of each accident. With regard to bodily injury by disease, the One Million Dollar $(\$ 1,000,000)$ policy limit will apply to each employee.
(c) Workers Compensation Insurance. Seller, if it has employees, shall also maintain at all times during the Contract Term workers' compensation and employers' liability insurance coverage in accordance with applicable requirements of California Law.
(d) Business Auto Insurance. Seller shall maintain at all times during the Contract Term business auto insurance for bodily injury and property damage with limits of One Million Dollars $(\$ 1,000,000)$ per occurrence. Such insurance shall cover liability arising out of Seller's use of all owned (if any), non-owned and hired vehicles, including trailers or semi-trailers in the performance of the Agreement.
(e) Construction All-Risk Insurance. Seller shall maintain or cause to be maintained during the construction or re-powering of the Facility prior to the Commercial Operation Date, construction all-risk form property insurance covering the Facility during such construction periods, and naming the Seller (and Lender if any) as the loss payee.
(f) Contractor's Pollution Liability. Seller shall maintain or cause to be maintained during the construction of the Facility prior to the Commercial Operation Date, Pollution Legal Liability Insurance in the amount of Two Million Dollars ( $\$ 2,000,000$ ) per occurrence and in the aggregate, naming Seller (and Lender if any) as additional insured.
(g) Contractor Insurance. Seller shall require the contractor under its engineering, procurement, and construction contract for the Facility to carry: (i) commercial general liability insurance with a combined single limit not less than Two Million Dollars ( $\$ 2,000,000$ ); (ii) workers’ compensation insurance and employers' liability coverage in accordance with applicable requirements of Law; and (iii) business auto insurance for bodily injury and property damage, in each case, with limits of One Million Dollars $(\$ 1,000,000)$ per occurrence. The contractor shall name Seller as an additional insured to insurance carried pursuant to clauses (g)(i) and (g)(iii). The contractor shall provide a primary endorsement and a waiver of subrogation to Seller for the required coverage pursuant to this Section 17.1(g).
(h) Evidence of Insurance. Within thirty (30) days after execution of the Agreement and upon annual renewal thereafter, Seller shall deliver to Buyer certificates of insurance evidencing such coverage. These certificates shall specify that Buyer shall be given at
least thirty (30) days prior Notice by Seller in the event of cancellation or termination of coverage. Such insurance shall be primary coverage without right of contribution from any insurance of Buyer.
(i) Failure to Comply with Insurance Requirements. If Seller fails to comply with any of the provisions of this Article 17, Seller, among other things and without restricting Buyer's remedies under the Law or otherwise, shall, at its own cost and expense, act as an insurer and provide insurance in accordance with the terms and conditions above. With respect to the required general liability, umbrella liability and commercial automobile liability insurance, Seller shall provide a current, full and complete defense to Buyer, its subsidiaries and Affiliates, and their respective officers, directors, shareholders, agents, employees, assigns, and successors in interest, in response to a third-party claim in the same manner that an insurer would have, had the insurance been maintained in accordance with the terms and conditions set forth above. In addition, alleged violations of the provisions of this Article 17 means that Seller has the initial burden of proof regarding any legal justification for refusing or withholding coverage and Seller shall face the same liability and damages as an insurer for wrongfully refusing or withholding coverage in accordance with the laws of California.

## ARTICLE 18 CONFIDENTIAL INFORMATION

18.1 Definition of Confidential Information. "Confidential Information," means information, whether oral or written, that is delivered by Seller to Buyer or by Buyer to Seller including: (a) commercially-sensitive or proprietary information provided to Buyer in connection with the terms and conditions of, or proposals and negotiations related to, this Agreement; and (b) information that either Seller or Buyer stamps or otherwise identifies as "confidential" or "proprietary" or words of similar import before disclosing it to the other. Confidential Information does not include (i) information that was publicly available at the time of the disclosure, other than as a result of a disclosure in breach of this Agreement; (ii) information that becomes publicly available through no fault of the recipient after the time of delivery; (iii) information that was rightfully in the possession of the recipient (without confidential or proprietary restriction) at the time of delivery or that becomes available to the recipient from a source not subject to any restriction against disclosing such information to the recipient; and (iv) information that the recipient independently developed without a violation of this Agreement.
18.2 Duty to Maintain Confidentiality. Confidential Information may be disclosed by the recipient (the "Receiving Party") if and to the extent such disclosure is required (a) to be made by any requirements of Law, (b) pursuant to an order of a court or (c) in order to enforce this Agreement. If the Receiving Party becomes legally compelled (by interrogatories, requests for information or documents, subpoenas, summons, civil investigative demands, or similar processes or otherwise in connection with any litigation or to comply with any applicable Law, order, regulation, ruling, regulatory request, accounting disclosure rule or standard or any exchange, control area or independent system operator request or rule) to disclose any Confidential Information of the disclosing Party (the "Disclosing Party"), Receiving Party shall provide Disclosing Party with prompt notice so that Disclosing Party, at its sole expense, may seek an appropriate protective order or other appropriate remedy. If the Disclosing Party takes no such action after receiving the foregoing notice from the Receiving Party, the Receiving Party is not
required to defend against such request and shall be permitted to disclose such Confidential Information of the Disclosing Party, with no liability for any damages that arise from such disclosure. Notwithstanding anything in this Agreement, Seller acknowledges and agrees that Buyer is required to make this Agreement available to the public in connection with the process of seeking approval from its governing body for execution of this Agreement. Buyer will use reasonable efforts to redact certain financial terms of this Agreement as part of any such public disclosure, to the extent permissible under Buyer's policies and California law. Each Party hereto acknowledges and agrees that information and documentation provided in connection with this Agreement may be subject to the California Public Records Act (Government Code Section 6250 et seq.). Buyer shall, to the extent permissible, notify Seller in writing in advance of any disclosure that a request or demand has been made; provided that, upon the advice of its counsel that disclosure is required, Buyer may disclose this Agreement or any other requested Confidential Information, whether or not advance written notice to Seller has been provided. Seller shall be solely responsible for taking whatever steps it deems necessary to protect Confidential Information that is the subject of any California Public Records Act request submitted by a third person to Buyer. The provisions of this Article 18 shall survive and shall continue to be binding upon the Parties for period of one (1) year following the date of termination of this Agreement.
18.3 Irreparable Injury; Remedies. Receiving Party acknowledges that its obligations hereunder are necessary and reasonable in order to protect Disclosing Party and the business of Disclosing Party, and expressly acknowledges that monetary damages would be inadequate to compensate Disclosing Party for any breach or threatened breach by Receiving Party of any covenants and agreements set forth herein. Accordingly, Receiving Party acknowledges that any such breach or threatened breach will cause irreparable injury to Disclosing Party and that, in addition to any other remedies that may be available, in law, in equity or otherwise, Disclosing Party will be entitled to obtain injunctive relief against the threatened breach of this Agreement or the continuation of any such breach, without the necessity of proving actual damages.
18.4 Disclosure to Seller Permitted Party. Notwithstanding anything to the contrary in this Article 19, Confidential Information may be disclosed by Seller to any Seller Permitted Party or any of its agents, consultants or trustees, or by Buyer to any potential Buyer Qualified Assignee, so long as the Person to whom Confidential Information is bound by similarly restrictive confidentiality obligations as those contained in this Agreement, or agrees in writing to be bound by the confidentiality provisions of this Article 18 to the same extent as if it were a Party. Notwithstanding anything to the contrary in this Article 18, Confidential Information may be disclosed by either Party to any nationally recognized credit rating agency (e.g., Moody's Investors Service, Standard \& Poor's, or Fitch Ratings) in connection with the issuance of a credit rating for that Party or its affiliates, provided that any such credit rating agency agrees in writing to maintain the confidentiality of such Confidential Information in accordance with this Article 18.
18.5 Press Releases. Neither Party shall issue (or cause its Affiliates to issue) a press release regarding the transactions contemplated by this Agreement unless both Parties have consented upon the contents of any such public statement. A Party's consent shall not be unreasonably withheld, conditioned or delayed.

## ARTICLE 19 MISCELLANEOUS

19.1 Entire Agreement; Integration; Exhibits. This Agreement, together with the Cover Sheet and Exhibits attached hereto constitutes the entire agreement and understanding between Seller and Buyer with respect to the subject matter hereof and supersedes all prior agreements relating to the subject matter hereof, which are of no further force or effect. The Exhibits attached hereto are integral parts hereof and are made a part of this Agreement by reference. The headings used herein are for convenience and reference purposes only. In the event of a conflict between the provisions of this Agreement and those of the Cover Sheet or any Exhibit, the provisions of first the Cover Sheet, and then this Agreement shall prevail, and such Exhibit shall be corrected accordingly. This Agreement shall be considered for all purposes as prepared through the joint efforts of the Parties and shall not be construed against one Party or the other as a result of the preparation, substitution, submission or other event of negotiation, drafting or execution hereof.
19.2 Amendments. This Agreement may only be amended, modified or supplemented by an instrument in writing executed by duly authorized representatives of Seller and Buyer; provided, that, for the avoidance of doubt, this Agreement may not be amended by electronic mail communications.
19.3 No Waiver. Waiver by a Party of any default by the other Party shall not be construed as a waiver of any other default.
19.4 No Agency, Partnership, Joint Venture or Lease. Seller and the agents and employees of Seller shall, in the performance of this Agreement, act in an independent capacity and not as officers or employees or agents of Buyer. Under this Agreement, Seller and Buyer intend to act as energy seller and energy purchaser, respectively, and do not intend to be treated as, and shall not act as, partners in, co-venturers in or lessor/lessee with respect to the Facility or any business related to the Facility. This Agreement shall not impart any rights enforceable by any third party (other than a permitted successor or assignee bound to this Agreement) or, to the extent set forth therein, any Lender.
19.5 Severability. In the event that any provision of this Agreement is unenforceable or held to be unenforceable, the Parties agree that all other provisions of this Agreement have force and effect and shall not be affected thereby. The Parties shall, however, use their best endeavors to agree on the replacement of the void, illegal or unenforceable provision(s) with legally acceptable clauses which correspond as closely as possible to the sense and purpose of the affected provision and this Agreement as a whole.
19.6 Mobile-Sierra. Notwithstanding any other provision of this Agreement, neither Party shall seek, nor shall they support any third party seeking, to prospectively or retroactively revise the rates, terms or conditions of service of this Agreement through application or complaint to FERC pursuant to the provisions of Section 205, 206 or 306 of the Federal Power Act, or any other provisions of the Federal Power Act, absent prior written agreement of the Parties. Further, absent the prior written agreement in writing by both Parties, the standard of review for changes to the rates, terms or conditions of service of this Agreement proposed by a Party shall be the
"public interest" standard of review set forth in United Gas Pipe Line Co. v. Mobile Gas Service Corp., 350 U.S. 332 (1956) and Federal Power Commission v. Sierra Pacific Power Co., 350 U.S. 348 (1956). Changes proposed by a non-Party or FERC acting sua sponte shall be subject to the most stringent standard permissible under applicable Law.
19.7 Counterparts. This Agreement may be executed in one or more counterparts, all of which taken together shall constitute one and the same instrument and each of which shall be deemed an original.
19.8 Electronic Delivery. This Agreement may be duly executed and delivered by a Party by execution and electronic format (including portable document format (.pdf)) delivery of the signature page of a counterpart to the other Party, and, if delivery is made by electronic format, the executing Party shall promptly deliver, via overnight delivery, a complete original counterpart that it has executed to the other Party, but this Agreement shall be binding on and enforceable against the executing Party whether or not it delivers such original counterpart.
19.9 Binding Effect. This Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and permitted assigns.

### 19.10 【Intentionally Omitted]

19.11 Forward Contract. The Parties acknowledge and agree that this Agreement constitutes a "forward contract" within the meaning of the U.S. Bankruptcy Code, and Buyer and Seller are "forward contract merchants" within the meaning of the U.S. Bankruptcy Code. Each Party further agrees that, for all purposes of this Agreement, to the extent permissible by Law at the time, such Party waives and agrees not to assert the applicability of the provisions of 11 U.S.C. § 366 in any bankruptcy proceeding wherein such Party is a debtor. In any such proceeding, each Party, to the extent permissible by Law at the time, further waives the right to assert that the other Party is a provider of last resort to the extent such term relates to 11 U.S.C. $\S 366$ or another provision of 11 U.S.C. § 101-1532.
19.12 Further Assurances. Each of the Parties hereto agree to provide such information, execute and deliver any instruments and documents and to take such other actions as may be necessary or reasonably requested by the other Party which are not inconsistent with the provisions of this Agreement and which do not involve the assumptions of obligations other than those provided for in this Agreement, to give full effect to this Agreement and to carry out the intent of this Agreement.

## EXHIBIT A

## FACILITY DESCRIPTION

Site Name: Rosamond South Project
Site includes all or some of the following APNs:

| $359-331-16$ | $359-332-06$ | $359-100-05$ | $359-332-24$ |
| :---: | :---: | :---: | :---: |
| $359-331-22$ | $374-020-16$ | $359-020-49$ | $359-402-11$ |
| $359-332-10$ | $374-450-01$ | $359-403-09$ | $359-332-12$ |
| $359-332-03$ | $359-402-13$ | $359-403-08$ | $359-332-13$ |
| $359-332-09$ | $359-402-19$ | $359-350-21$ | $359-332-14$ |
| $359-331-21$ | $359-331-20$ | $359-020-07$ | $359-041-20-00-2$ |
| $359-332-04$ | $359-401-20$ | $359-121-54$ | $359-041-11-00-6$ |
| $359-332-30$ | $359-401-21$ | $359-350-21-00-8$ | $359-041-07-00-5$ |
| $359-331-23$ | $359-401-22$ | $261-196-09-00-8$ | $261-260-20-00-7$ |
| $359-331-06$ | $359-401-23$ | $359-041-01-00-7$ | $261-260-22-00-3$ |
| $359-331-07$ | $374-020-02$ | $359-402-20$ | $261-260-23-00-6$ |
| $359-331-12$ | $374-020-15$ | $359-402-21$ | $261-120-01-00-1$ |
| $359-331-13$ | $374-460-12$ | $359-402-22$ | $261-120-09-00-5$ |
| $359-331-15$ | $359-332-35$ | $359-402-15$ | $261-120-05-00-3$ |
| $359-332-11$ | $359-331-18$ | $359-402-16$ | $261-120-06-00-6$ |
| $359-332-31-00-5$ | $359-332-05$ | $359-402-17$ | $261-120-07-00-9$ |
| $359-332-02$ | $359-332-01$ | $359-402-18$ | $261-120-08-00-2$ |
| $359-175-05$ | $359-332-07$ | $359-402-14$ |  |

This Agreement is specific to the Site and Seller may not materially change the location of the Site without Buyer's prior written consent, which consent is in Buyer's sole discretion; provided that Buyer's consent is not required for changes to the Site size and shape so long as the Facility remains at the Facility Interconnection Point. Seller shall maintain Site Control throughout the Contract Term and shall provide Buyer with prompt Notice of any change in the status of Seller's Site Control.

GPS Coordinates: $\quad 34.843101,-118.378120$

## County:

Kern County
CEQA Lead Agency: Kern County
Type of Generating Facility: Solar photovoltaic electricity generating facility

Exhibit A

Operating Characteristics of Generating Facility: MW as-available solar photovoltaic
Guaranteed Capacity: 10 MW AC (net, at the Delivery Point)]
Interconnection Capacity: 56.87 MW AC
Facility Interconnection Point: SCE Whirlwind 230 kV
Delivery Point: the Facility PNode on the CAISO Grid
PNode: $\quad$ The PNode designated by CAISO for the Facility at the Whirlwind 230 kV substation.

CAISO Queue Number: Q1327
Participating Transmission Owner: Southern California Edison Company
One-Line Diagram: Included on the following page.

## EXHIBIT B

## FACILITY CONSTRUCTION AND COMMERCIAL OPERATION

1. Construction of the Facility.
a. "Construction Start" will occur upon satisfaction of the following: (i) Seller has acquired the applicable regulatory authorizations, approvals and permits required for the commencement of construction of the Facility, (ii) Seller has engaged all contractors and ordered all essential equipment and supplies as, in each case, can reasonably be considered necessary so that physical construction of the Facility may begin and proceed to completion without foreseeable interruption of material duration, and (iii) Seller has executed an engineering, procurement, and construction contract and issued thereunder a full notice to proceed that authorizes the contractor to mobilize to Site and begin physical construction at the Site. The date of Construction Start will be evidenced by and subject to Seller's delivery to Buyer of a certificate substantially in the form attached as Exhibit J hereto, and the date certified therein shall be the "Construction Start Date." The Seller shall cause Construction Start to occur no later than the Guaranteed Construction Start Date.
b. If Construction Start is not achieved by the Guaranteed Construction Start Date, Seller shall pay Construction Delay Damages to Buyer for each day for which Construction Start has not begun after the Guaranteed Construction Start Date. Construction Delay Damages shall be payable to Buyer by Seller until Seller reaches Construction Start of the Facility. On or before the tenth (10th) day of each month, Buyer shall invoice Seller for Construction Delay Damages, if any, accrued during the prior month and, within ten (10) days following Seller's receipt of such invoice, Seller shall pay Buyer the amount of the Construction Delay Damages set forth in the invoice. Construction Delay Damages shall be refundable to Seller pursuant to Section 2(b) of this Exhibit B. The Parties agree that Buyer's receipt of Construction Delay Damages shall be Buyer's sole and exclusive remedy for Seller's unexcused delay in achieving the Construction Start Date on or before the Guaranteed Construction Start Date, but shall (x) not be construed as Buyer's declaration that an Event of Default has occurred under any provision of Section 11.1 and (y) not limit Buyer's right to declare an Event of Default pursuant to Section 11.1(b)(ii) or 11.1(b)(iv) and receive a Damage Payment upon exercise of Buyer's rights pursuant to Section 11.2.
2. Commercial Operation of the Facility. "Commercial Operation" means the condition existing when (i) Seller has fulfilled all of the conditions precedent in Section 2.2 of the Agreement and provided Notice from a Licensed Professional Engineer to Buyer substantially in the form of Exhibit H (the "COD Certificate") and (ii) Seller has notified Buyer in writing that is has provided the required documentation to Buyer and met the conditions for achieving Commercial Operation. The "Commercial Operation Date" shall be the later of ( x ) sixty (60) days prior to the Expected Commercial Operation Date or (y) the date on which Commercial Operation is achieved.
a. Seller shall use commercially reasonable efforts to cause Commercial Operation for the Facility to occur by the Guaranteed Commercial Operation Date. Seller shall notify Buyer that it intends to achieve Commercial Operation at least sixty (60) days before the anticipated Commercial Operation Date.
b. If Seller achieves Commercial Operation for the Facility by the Guaranteed Commercial Operation Date, all Construction Delay Damages paid by Seller shall be refunded to Seller. Seller shall include the request for refund of the Construction Delay Damages with the first invoice to Buyer after the Commercial Operation Date.
c. If Seller does not achieve Commercial Operation by the Guaranteed Commercial Operation Date, Buyer shall retain Construction Delay Damages and Seller shall pay Commercial Operation Delay Damages to Buyer for each day after the Guaranteed Commercial Operation Date until the Commercial Operation Date. On or before the tenth (10th) day of each month, Buyer shall invoice Seller for Commercial Operation Delay Damages, if any, accrued during the prior month and within ten (10) days following Seller's receipt of such invoice, Seller shall pay Buyer the amount of the Commercial Operation Delay Damages set forth in such invoice. If Seller fails to timely pay any Construction Delay Damages or Commercial Operation Delay Damages, Buyer may draw upon the Development Security to satisfy Seller's payment obligation thereof. The Parties agree that Buyer's receipt of Commercial Operation Delay Damages shall be Buyer's sole and exclusive remedy for Seller's unexcused delay in achieving the Commercial Operation Date on or before the date that is one hundred and eighty (180) days after the Expected Commercial Operation Date, but shall (x) not be construed as Buyer's declaration that an Event of Default has occurred under any provision of Section 11.1 and (y) not limit Buyer's right to receive a Damage Payment upon exercise of Buyer's remedies pursuant to Section 11.2.
3. Termination for Failure to Timely Achieve Commercial Operation. If the Facility has not achieved Commercial Operation within one hundred eighty (180) days after the Expected Commercial Operation Date, Buyer may elect to terminate this Agreement pursuant to Sections 11.1(b)(ii) and 11.2.
4. Extension of the Guaranteed Dates. The Guaranteed Construction Start Date and the Guaranteed Commercial Operation Date shall, subject to notice and documentation requirements set forth below, be automatically extended on a day-for-day basis (the "Development Cure Period") for the duration of any delay arising out of any of the following circumstances:
a. a Force Majeure Event occurs, including a Force Majeure Event that delays Seller from acquiring all material permits consents, licenses, approvals or authorizations from any Governmental Authority required for Seller to own, construct, interconnect, operate or maintain the Facility; or
b. the Interconnection Facilities or Network Upgrades are not complete and ready for the Facility to connect and sell Product at the Delivery Point by the Guaranteed Commercial Operation Date, despite the exercise of best efforts by Seller.

Notwithstanding anything in this Agreement to the contrary, the cumulative extensions granted under Section 4(a) and 4(b) of this Exhibit B under the Development Cure Period shall not exceed one hundred eighty (180) days, for any reason, including a Force Majeure Event. No extension shall be given if (i) the delay was the result of Seller's failure to take all commercially reasonable actions to meet its requirements and deadlines, (ii) Seller failed to provide the requested documentation as provided below, or (iii) Seller failed to provide the written Notice to Buyer as required in the next sentence. Seller shall provide prompt written Notice to Buyer of a delay, but in no case more than thirty (30) days after Seller became aware of an actual delay affecting the Facility, except that in the case of a delay occurring within sixty (60) days of the Expected Commercial Operation Date, or after such date, Seller must provide written Notice within seven (7) Business Days of Seller becoming aware of such delay. As used in the preceding sentence, "actual delay" does not include Seller's receipt of generic notices of potential delays. Upon request from Buyer, Seller shall provide documentation demonstrating to Buyer's reasonable satisfaction that the delays described above did not result from Seller's actions or failure to take commercially reasonable actions.
5. Failure to Reach Guaranteed Capacity. If, at Commercial Operation, the Installed Capacity is less than one hundred percent ( $100 \%$ ) of Guaranteed Capacity, Seller shall have one hundred twenty (120) days after the Commercial Operation Date to install additional capacity such that the Installed Capacity is equal to (but not greater than) the Guaranteed Capacity, and Seller shall provide to Buyer a new certificate substantially in the form attached as Exhibit I hereto specifying the new Installed Capacity. In the event that the Installed Capacity is still less than the Guaranteed Capacity as of such date, Seller shall pay "Capacity Damages" to Buyer, in an amount equal to Buyer's Fraction multiplied by Two Hundred Fifty Thousand Dollars $(\$ 250,000)$ for each MW that the Guaranteed Capacity exceeds the Installed Capacity, and the Guaranteed Capacity and other applicable portions of the Agreement shall be adjusted accordingly.

## EXHIBIT C BRIDGE PRODUCT FACILITIES

Bridge Product Facilities List:

1. The Facility (listed in Exhibit A).

Form for Additional Facilities (if any)
Unit Name:
RPS ID:
CAISO Resource ID:
WREGIS ID:
Facility Location: County
Facility Location: State
Facility Location: Country
Facility Location: Longitude
Facility Location: Latitude
Balancing Authority Interconnection:
Facility Fuel Type:

Hour
Ending Jan Feb Mar April May June July Aug Sep Oct Nov Dec


Exhibit D

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Exhibit D

## EXHIBIT E

## PROGRESS REPORTING FORM

Each Progress Report must include the following items:

1. Executive Summary.
2. Facility description.
3. Site plan of the Facility.
4. Description of any material planned changes to the Facility or the Site.
5. Gantt chart schedule showing progress on achieving each of the Milestones.
6. Summary of activities during the previous calendar quarter or month, as applicable, including any OSHA labor hour reports.
7. Forecast of activities scheduled for the current calendar quarter.
8. Written description about the progress relative to Seller's Milestones, including whether Seller has met or is on target to meet the Milestones.
9. List of issues that are likely to potentially affect Seller's Milestones.
10. A status report of start-up activities including a forecast of activities ongoing and after start-up, a report on Facility performance including performance projections for the next twelve (12) months.
11. Prevailing wage reports as required by Law.
12. Progress and schedule of all major agreements, contracts, permits, approvals, technical studies, financing agreements and major equipment purchase orders showing the start dates, completion dates, and completion percentages.
13. Pictures, in sufficient quantity and of appropriate detail, in order to document construction and startup progress of the Facility, the interconnection into the Transmission System and all other interconnection utility services.
14. Any other documentation reasonably requested by Buyer.

Exhibit E

EXHIBIT F-1
FORM OF AVERAGE EXPECTED ENERGY REPORT
Average Expected Energy, MWh Per Hour

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The foregoing table is provided for informational purposes only, and it shall not constitute, or be deemed to constitute, an obligation of any of the Parties to this Agreement.

EXHIBIT F-2
FORM OF MONTHLY DELIVERY FORECAST

|  | Day |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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Exhibit F-2


## EXHIBIT G

## GUARANTEED ENERGY PRODUCTION DAMAGES CALCULATION

In accordance with Section 4.7, if Seller fails to achieve the Guaranteed Energy Production during any Performance Measurement Period, a liquidated damages payment shall be due from Seller to Buyer, calculated as follows:

$$
[(\mathrm{A}-\mathrm{B}) *(\mathrm{C}-\mathrm{D})]
$$

where:
$\underline{\mathrm{A}}=$ the Guaranteed Energy Production amount for the Performance Measurement Period, in MWh
$\underline{B}=\quad$ the Adjusted Energy Production amount for the Performance Measurement Period, in MWh
$\underline{\mathrm{C}}=$ Replacement price for the Contract Year, in $\$ / \mathrm{MWh}$, which is the sum of (a) the weighted average of the Integrated Forward Market hourly price for all the Reference Hours in the Performance Measurement Period, as published by the CAISO, for the Existing Zone Generation Trading Hub (as defined in the CAISO Tariff) for the Delivery Point weighted by hourly and monthly volumes in most recently delivered Average Expected Energy Report, plus (b) the lesser of (x) $\$ 50 / \mathrm{MWh}$ and (y) the market value of Replacement Green Attributes, as reasonably determined by Buyer.
$\underline{\mathrm{D}}=$ the Contract Price
"Adjusted Energy Production" shall mean the sum of the following: Facility Energy + Deemed Delivered Energy + Lost Output + Replacement Product - Excess MWh.
"Lost Output" has the meaning given in Section 4.7 of the Agreement.
"Reference Hour" means any hour from hour-ending 0700 to hour-ending 2200 (i.e., 7:00 AM to 9:59 PM) on Monday through Sunday, Pacific Prevailing Time, excluding North American Reliability Council (NERC) holidays.
"Replacement Green Attributes" means Renewable Energy Credits of the same Portfolio Content Category (e.g., PCC1) as the Product and of the same timeframe for retirement as the Renewable Energy Credits that would have been generated by the Facility during the Performance Measurement Period for which the Replacement Green Attributes are being provided.
"Replacement Energy" means energy and associated Green Attributes produced by a facility other than the Facility that, at the time delivered to Buyer, qualifies under Public Utilities Code 399.16(b)(1), and has Green Attributes that have the same or comparable value, including with respect to the timeframe for retirement of such Green Attributes, if any, as the Green

Attributes that would have been generated by the Facility during the Contract Year for which the Replacement Energy is being provided.
"Replacement Product" means (a) Replacement Energy, and (b) all Replacement Green Attributes.

No payment shall be due if the calculation of $(\mathrm{A}-\mathrm{B})$ or $(\mathrm{C}-\mathrm{D})$ yields a negative number. Buyer will send Seller Notice of the amount of damages owing, if any, which amount shall be payable to Buyer within thirty (30) days from the date of such Notice.

## EXHIBIT H

## FORM OF COMMERCIAL OPERATION DATE CERTIFICATE

This certification ("Certification") of Commercial Operation is delivered by $\qquad$ [licensed professional engineer] ("Engineer") to the [Buyer] ("Buyer") in accordance with the terms of that certain Power Purchase Agreement dated $\qquad$ ("Agreement") by and between [Seller] and Buyer. All capitalized terms used in this Certification but not otherwise defined herein shall have the respective meanings assigned to such terms in the Agreement.

As of [Date], Engineer hereby certifies and represents to Buyer the following:
(1) The Facility is fully operational, reliable and interconnected, fully integrated and synchronized with the Transmission System.
(2) Seller has installed equipment for the Facility with a nameplate capacity of no less than ninety-five percent (95\%) of the Guaranteed Capacity.
(3) Seller has commissioned all equipment in accordance with its respective manufacturer's specifications.
(4) The Facility's testing included a performance test demonstrating peak electrical output of no less than ninety-five percent ( $95 \%$ ) of the Guaranteed Capacity for the Facility at the Delivery Point, as adjusted for ambient conditions on the date of the Facility testing, and such peak electrical output, as adjusted, was [peak output in MW].
(5) Authorization to parallel the Facility was obtained by the PTO, [Name of PTO as appropriate] on $\qquad$ .
(6) The PTO has provided documentation supporting full unrestricted release for Commercial Operation by [Name of PTO as appropriate] on $\qquad$ [DATE] $\qquad$ .
(7) The CAISO has provided notification supporting Commercial Operation, in accordance with the CAISO tariff on $\qquad$ [DATE] $\qquad$ .

EXECUTED by [LICENSED PROFESSIONAL ENGINEER]
this $\qquad$ day of $\qquad$ , 20__ .
[LICENSED PROFESSIONAL ENGINEER]
By: $\qquad$
Its: $\qquad$
Date: $\qquad$

## EXHIBIT I

## FORM OF INSTALLED CAPACITY CERTIFICATE

This certification ("Certification") of Installed Capacity is delivered by ___ [licensed professional engineer] ("Engineer") to the [Buyer] ("Buyer") in accordance with the terms of that certain Power Purchase Agreement dated $\qquad$ ("Agreement") by and between [Seller] and [Buyer]. All capitalized terms used in this Certification but not otherwise defined herein shall have the respective meanings assigned to such terms in the Agreement.

I hereby certify the performance test for the Facility demonstrated peak electrical output of $\qquad$ MW
AC at the Delivery Point, as adjusted for ambient conditions on the date of the performance test ("Installed Capacity").

EXECUTED by [LICENSED PROFESSIONAL ENGINEER]
this $\qquad$ day of $\qquad$ , 20 _.

By: $\qquad$
Its: $\qquad$
Date: $\qquad$

## EXHIBIT J

## FORM OF CONSTRUCTION START DATE CERTIFICATE

This certification ("Certification") of the Construction Start Date is delivered by [SELLER ENTITY] ("Seller") to the [Buyer] ("Buyer") in accordance with the terms of that certain Power Purchase Agreement dated $\qquad$ ("Agreement") by and between Seller and Buyer. All capitalized terms used in this Certification but not otherwise defined herein shall have the respective meanings assigned to such terms in the Agreement.

Seller hereby certifies and represents to Buyer of the following:

1. Construction Start (as defined in Exhibit B of the Agreement) has occurred, and a copy of the notice to proceed that Seller issued to its contractor as part of the Construction Start is attached hereto;
2. the precise Site on which the Facility is located is, which must include some or all of the previously identified APNs (such description shall amend the description of the Site in Exhibit A):

IN WITNESS WHEREOF, the undersigned has executed this Certification on behalf of Seller as of the $\qquad$ day of $\qquad$ -.
[SELLER ENTITY]

By: $\qquad$
Its: $\qquad$
Date: $\qquad$

Exhibit J

## EXHIBIT K

## FORM OF LETTER OF CREDIT

[Issuing Bank Letterhead and Address]

IRREVOCABLE STANDBY LETTER OF CREDIT NO. [XXXXXXX]
Date:
Bank Ref.:
Amount: US\$[XXXXXXXX]
Expiry Date:

## APPLICANT DETAILS TO BE PROVIDED

Beneficiary: [Buyer]
Ladies and Gentlemen:
By the order of $\qquad$ ("Applicant"), we, [insert bank name and address] ("Issuer") hereby issue our Irrevocable Standby Letter of Credit No. [XXXXXXX] (the "Letter of Credit") in favor of [Buyer] ("Beneficiary"), for an amount not to exceed the aggregate sum of U.S. \$[XXXXXX] (United States Dollars [XXXXX] and 00/100), pursuant to that certain Renewable Power Purchase Agreement dated as of [Date of Contract / Agreement should be in the past or on the date of issuance. In case of future contract date the Letter of Credit text will be adjusted to reflect this change] and as amended (the "Agreement") between Applicant and Beneficiary. This Letter of Credit shall become effective immediately and shall expire on [XXXXXX] which is one year after the issue date of this Letter of Credit, or any expiration date extended in accordance with the terms hereof (the "Expiration Date").

Funds under this Letter of Credit are available to Beneficiary by presentation on or before the Expiration Date of a dated statement purportedly signed by your duly authorized representative, in the form attached hereto as Exhibit A, containing one of the two alternative paragraphs set forth in paragraph 2 therein, referencing our Letter of Credit No. [XXXXXXX] ("Drawing Certificate").

The Drawing Certificate may be presented by (a) physical delivery, or (b) facsimile to [bank fax number [XXX-XXX-XXXX]] confirmed by [email to [bank email address]] (if presented by fax it must be followed up by a phone call to us at [XXXXXX] or [XXXXXX] to confirm receipt) with the originals to follow via courier. The drawing will be effective upon our receipt of the original documents at the above noted address.

The original of this Letter of Credit (and all amendments, if any) is not required to be presented in connection with any presentment of a Drawing Certificate by Beneficiary hereunder in order to receive payment.

We hereby agree with the Beneficiary that documents presented under and in compliance with the terms of this Letter of Credit will be duly honored upon presentation to the Issuer on or before the Expiration Date. All payments made under this Letter of Credit shall be made with Issuer's own immediately available funds by means of wire transfer in immediately available United States dollars to Beneficiary's account as indicated by Beneficiary in its Drawing Certificate or in a communication accompanying its Drawing Certificate.

Partial draws are permitted under this Letter of Credit, and this Letter of Credit shall remain in full force and effect with respect to any continuing balance.

It is a condition of this Letter of Credit that the Expiration Date shall be deemed automatically extended without an amendment for a one year period beginning on the present Expiration Date hereof and upon each anniversary for such date, unless at least one hundred twenty (120) days prior to any such Expiration Date we have sent to you written notice by registered mail or overnight courier service that we elect not to extend this Letter of Credit, in which case it will expire on the date specified in such notice. No presentation made under this Letter of Credit after such Expiration Date will be honored.

Notwithstanding any reference in this Letter of Credit to any other documents, instruments or agreements, this Letter of Credit contains the entire agreement between Beneficiary and Issuer relating to the obligations of Issuer hereunder.

This Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits (2007 Revision) International Chamber of Commerce Publication No. 600 (the "UCP"), except to the extent that the terms hereof are inconsistent with the provisions of the UCP, including but not limited to Articles 14(b) and 36 of the UCP, in which case the terms of this Letter of Credit shall govern. In the event of an act of God, riot, civil commotion, insurrection, war or any other cause beyond Issuer's control (as defined in Article 36 of the UCP) that interrupts Issuer's business and causes the place for presentation of the Letter of Credit to be closed for business on the last day for presentation, the Expiration Date of the Letter of Credit will be automatically extended without amendment to a date thirty (30) calendar days after the place for presentation reopens for business. Please address all correspondence regarding this Letter of Credit to the attention of the Letter of Credit Department at [insert bank address information], referring specifically to Issuer's Letter of Credit No. [XXXXXXX]. For telephone assistance, please contact Issuer's Standby Letter of Credit Department at [XXX-XXX-XXXX] and have this Letter of Credit available.

All notices to Beneficiary shall be in writing and are required to be sent by certified letter, overnight courier, or delivered in person to: [Address]. Only notices to Beneficiary meeting the requirements of this paragraph shall be considered valid. Any notice to Beneficiary which is not in accordance with this paragraph shall be void and of no force or effect.
[Bank Name]
[Insert officer title]
[Insert officer name]

## Exhibit K

## Exhibit A: (DRAW REQUEST SHOULD BE ON BENEFICIARY'S LETTERHEAD) Drawing

 Certificate[Insert Bank Name and Address]
Ladies and Gentlemen:
The undersigned, a duly authorized representative of [Buyer], as beneficiary (the "Beneficiary") of the Irrevocable Letter of Credit No. [XXXXXXX] (the "Letter of Credit") issued by [insert bank name] (the "Bank") by order of $\qquad$ (the "Applicant"), hereby certifies to the Bank as follows:

1. Applicant and Beneficiary are party to that certain Renewable Power Purchase Agreement dated as of $\qquad$ , 20 (the "Agreement").
2. Beneficiary is making a drawing under this Letter of Credit in the amount of U.S.
$\qquad$ because a Seller Event of Default (as such term is defined in the Agreement) or other occasion provided for in the Agreement where Beneficiary is authorized to draw on the letter of credit has occurred.

OR
Beneficiary is making a drawing under this Letter of Credit in the amount of U.S.
\$ $\qquad$ , which equals the full available amount under the Letter of Credit, because Applicant is required to maintain the Letter of Credit in force and effect beyond the expiration date of the Letter of Credit but has failed to provide Beneficiary with a replacement Letter of Credit or other acceptable instrument within forty-five (45) days prior to such expiration date.
3. The undersigned is a duly authorized representative of [Buyer] and is authorized to execute and deliver this Drawing Certificate on behalf of Beneficiary.

You are hereby directed to make payment of the requested amount to [Buyer] by wire transfer in immediately available funds to the following account:
[Specify account information]

Name and Title of Authorized Representative
Date

## EXHIBIT L

## INTENTIONALLY OMITTED

Exhibit L

## EXHIBIT M

## INTENTIONALLY OMITTED

## EXHIBIT N

## NOTICES

| GOLDEN FIELDS SOLAR IV, LLC, a <br> Delaware limited liability company <br> ("Seller") | CITY OF MORENO VALLEY <br> ("Buyer") |
| :--- | :--- |
| All Notices: | All Notices: |
| Street: 4900 Scottsdale Road, Suite 5000 |  |
| c/o Solar Asset Management LLC |  |
| City: Scottsdale, AZ 85251 | Street: 14331 Frederick Street |
| Attn: Asset Management | City: Moreno Valley, CA 92553 <br> Phone: 480-424-1300 Jason Niccoli and Dean Ayer <br> Email: am@clearwayenergy.com <br> Phone: 951-413-3502 |
| With a copy to: |  |
| deana@moval.org |  |
| 5780 Fleet Street, Suite 130 | With a copy to: |
| Carlsbad, CA 9200 |  |
| Attn: Legal Department | Cameron-Daniel, P.C. |
| Phone: 760-710-3837 |  |
| Email: legal@clearwayenergy.com | 101 Morris Street, Suite 201 |
|  | Sebastopol, CA 95472 |
| Attn: Dan Griffiths |  |
| Phone: 916-471-9518 |  |
| dg@cameron-daniel.com |  |

Exhibit N

| GOLDEN FIELDS SOLAR IV, LLC, a Delaware limited liability company ("Seller") | CITY OF MORENO VALLEY ("Buyer") |
| :---: | :---: |
| Confirmations: <br> Attn: Asset Management <br> Phone: 480-424-1300 <br> E-mail: am@clearwayenergy.com | Confirmations: <br> Attn: Jason Niccoli and Dean Ayer <br> Phone: 951-413-3502 <br> E-mail: jasonn@moval.org \& deana@moval.org |
| Payments: <br> Attn: Accounts Payable <br> Phone: 480-424-1300 <br> E-mail: <br> AccountsPayable@clearwayenergy.com | Payments: <br> Attn: Jason Niccoli and Dean Ayer <br> Phone: 951-413-3502 <br> E-mail: jasonn@moval.org \& deana@moval.org |
| Wire Transfer: BNK: CitiBank ABA: 031100209 ACCT: 38891478 | Wire Transfer: <br> BNK: Wells Fargo Bank <br> ABA: 121000248 <br> ACCT: 4159282847 |
| With additional Notices of an Event of <br> Default to: <br> Attn: Asset Management <br> Phone: 480-424-1300 <br> E-mail: am@clearwayenergy.com <br> With a copy to: <br> 5780 Fleet Street, Suite 130 <br> Carlsbad, CA 9200 <br> Attn: Legal Department <br> Phone: 760-710-3837 <br> Email: legal@clearwayenergy.com | With additional Notices of an Event of <br> Default to: <br> Attn: Jason Niccoli <br> Phone: 951-413-3502 <br> Email: jasonn@moval.org <br> With a copy to: <br> Cameron-Daniel, P.C. <br> 101 Morris Street, Suite 201 <br> Sebastopol, CA 95472 <br> Attn: Dan Griffiths <br> Phone: 916-471-9518 <br> dg@cameron-daniel.com |
| Emergency Contact: <br> Attn: Asset Management <br> Phone: 480-424-1300 <br> E-mail: am@clearwayenergy.com | Emergency Contact: <br> Attn: Jason Niccoli and Dean Ayer <br> Phone: 951-413-3502 <br> E-mail: jasonn@moval.org \& deana@moval.org |

Exhibit N

## EXHIBIT O

## SAMPLE CALCULATION OF COMPENSATION

## Example A - Positive Market Price less than Contract Price

If the applicable Market Price is $\$ 25 / \mathrm{MWh}$, Delivered Energy for the Settlement Interval is 7 MWh, and Contract Price is $\$ 46 / \mathrm{MWh}$;

Then, the amount payable to Seller for purposes of determining the compensation for the Settlement Interval pursuant to Section 3.14 (a) (i) (B) is $\$ 147$, which is equal to the absolute value of ( $7 \mathrm{MWh} * \$ 25 / \mathrm{MWh}$ ) - ( $7 \mathrm{MWh} * \$ 46 / \mathrm{MWh})$.

Example B - Positive Market Price greater than Contract Price
If the Market Price is $\$ 50.00 / \mathrm{MWh}$, Delivered Energy for the Settlement Interval is 7 MWh , and Contract Price is $\$ 46 / \mathrm{MWh}$;

Then, the amount payable to Buyer for purposes of determining the compensation for the Settlement Interval pursuant to Section 3.14 (a) (i) (A) is $\$ 28$, which is equal to ( 7 MWh * \$50/MWh) - (7/MWh * \$46/MWh).

## Example C - Negative Market Price greater than Negative LMP Floor

If the applicable Market Price is negative $\$ 10 / \mathrm{MWh}$, the applicable Negative LMP Floor is negative $\$ 13 / \mathrm{MWh}$, Delivered Energy for the Settlement Interval is 7 MWh , and Contract Price is $\$ 46 / \mathrm{MWh}$;

Then, the amount payable to Seller for purposes of determining the compensation pursuant to Section 3.14 (a) (i) (B) is $\$ 392$, which is equal to the absolute value of $(7 \mathrm{MWh} *-\$ 10 / \mathrm{MWh})$ (7/MWh * \$46/MWh).

## Example D - Market Curtailment Period

If the Market Price is negative $\$ 15 / \mathrm{MWh}$, the applicable Negative LMP Floor is negative $\$ 13 / \mathrm{MWh}$, Deemed Delivered Energy for the Settlement Interval is 7 MWh , and Contract Price is $\$ 46 / \mathrm{MWh}$;

Then the amount payable to Seller for purposes of determining the compensation pursuant to Exhibit P shall equal to 7 MWh * ( $\$ 46 / \mathrm{MWh}+\mathrm{PTC}$ Rate $)$.

## Example E - Deemed Delivered Energy within Curtailment Cap

If the Market Price is negative $\$ 46 / \mathrm{MWh}$, Deemed Delivered Energy for the current Settlement Interval within the Curtailment Cap is 7 MWh , and Contract Price $=\$ 46 / \mathrm{MWh}$;

Then the amount payable to Seller for purposes of determining the compensation pursuant to Section 4.4(b) and Exhibit P is $\$ 0$.

## EXHIBIT P

## NEGATIVE PRICE CURTAILMENT PROTOCOL

## Principal Concept:

Pursuant to Section 3.14 of the Agreement, the Parties establish this mutually agreed written protocol for negative price curtailment (the "Protocol"). The Parties agree that there is value in developing a process to facilitate a negative pricing bid strategy Protocol to capture Renewable Energy Credits. This Protocol may be revised by a subsequent written agreement among the Parties. Capitalized terms not defined in this Exhibit P have the meanings given to them in the Agreement.

## Details:

- The Protocol will be in effect each Contract Year starting at Commercial Operations Date.
- Buyer's Facility Agent will establish and may from time to time revise a negative price for the Economic Bid ("Floor Price") and will communicate it in writing to the Scheduling Coordinator and Seller no later than five (5) Business Days in advance of each month of the Contract Year. In no event shall the Floor Price exceed \$0/MWh. The initial Floor Price shall be $-\$ 38 / \mathrm{MWh}$ until revised by Buyer's Facility Agent. Should Buyer's Facility Agent fail to update the Floor Price, Seller shall use the last Floor Price communicated by Buyer. Buyer's Facility Agent may not establish a Floor Price that is lower than the minimum floor price permitted in the CAISO Tariff.
- For each of the settlement scenarios presented below, the Parties will operate as follows:
- In each Settlement Interval in which the Market Price is below the Floor Price, Seller shall curtail deliveries of Facility Energy (such interval, a "Market Curtailment Period") and such Market Curtailment Period shall count toward the Curtailment Cap.
- In the Event of a Market Curtailment Period before the Curtailment Cap is reached, Buyer shall pay Zero Dollars (\$0) for any resulting Deemed Delivered Energy.
- In the Event of a Market Curtailment Period after the Curtailment Cap is reached, with respect to all resulting Deemed Delivered Energy Buyer shall pay Seller the sum of (a) the Contract Price and (b) PTC Rate multiplied by the amount of energy (in MWh) that Seller could have delivered to Buyer but was prevented from delivering to Buyer due to Market Curtailment Period.
- In each Settlement Interval in which the Market Price is below the Floor Price, in the event and to the extent that such period is subject to a Planned Outage, Forced Facility Outage, Force Majeure Event and/or Curtailment Order, the notwithstanding anything in this Exhibit P to the contrary, no Market Curtailment Period shall be deemed to have occurred, no hours will be counted against the Curtailment Cap, and no payment will be due for Deemed Delivered Energy.

Exhibit P

- The Parties may by mutual written agreement modify this Protocol from time to time to ensure that the economic benefits and costs are consistent with the Parties' expectations under this Agreement.


## EXHIBIT Q <br> FORM OF GUARANTY

This Guaranty (this "Guaranty") is entered into as of [___] (the "Effective Date") by and between [_] , a [_] ("Guarantor"), and [ (together with its successors and permitted assigns, "Buyer"). ]

## Recitals

A. Buyer and Golden Fields Solar IV, LLC, a Delaware limited liability company ("Seller"), entered into that certain Renewable Power Purchase Agreement (as amended, restated or otherwise modified from time to time, the "PPA") dated as of [ $\qquad$ ], 20 $\qquad$ .
B. Guarantor is entering into this Guaranty as Performance Security to secure Seller's obligations under the PPA, as required by Section 8.8 of the PPA.
C. It is in the best interest of Guarantor to execute this Guaranty inasmuch as Guarantor will derive substantial direct and indirect benefits from the execution and delivery of the PPA.
D. Initially capitalized terms used but not defined herein have the meaning set forth in the PPA.

## Agreement

1. Guaranty. For value received, Guarantor does hereby unconditionally, absolutely and irrevocably guarantee, as primary obligor and not as a surety, to Buyer the full, complete and prompt payment by Seller of any and all amounts and payment obligations now or hereafter owing from Seller to Buyer under the PPA, including, without limitation, compensation for penalties, the Termination Payment, indemnification payments or other damages, as and when required pursuant to the terms of the PPA (the "Guaranteed Amount"), provided, that Guarantor's aggregate liability under or arising out of this Guaranty shall not exceed Dollars (\$ $\qquad$ ). The Parties understand and agree that any payment by Guarantor or Seller of any portion of the Guaranteed Amount shall thereafter reduce Guarantor's maximum aggregate liability hereunder on a dollar-for-dollar basis. This Guaranty is an irrevocable, absolute, unconditional and continuing guarantee of the full and punctual payment and performance, and not of collection, of the Guaranteed Amount and, except as otherwise expressly addressed herein, is in no way conditioned upon any requirement that Buyer first attempt to collect the payment of the Guaranteed Amount from Seller, any other guarantor of the Guaranteed Amount or any other Person or entity or resort to any other means of obtaining payment of the Guaranteed Amount. In the event Seller shall fail to duly, completely or punctually pay any Guaranteed Amount as required pursuant to the PPA, Guarantor shall promptly pay such amount as required herein.
2. Demand Notice. For avoidance of doubt, a payment shall be due for purposes of this Guaranty only when and if a payment is due and payable by Seller to Buyer under the terms and conditions of the Agreement. If Seller fails to pay any Guaranteed Amount as required pursuant to the PPA for five (5) Business Days following Seller's receipt of Buyer's written notice of such failure (the
"Demand Notice"), then Buyer may elect to exercise its rights under this Guaranty and may make a demand upon Guarantor (a "Payment Demand") for such unpaid Guaranteed Amount. A Payment Demand shall be in writing and shall reasonably specify in what manner and what amount Seller has failed to pay and an explanation of why such payment is due and owing, with a specific statement that Buyer is requesting that Guarantor pay under this Guaranty. Guarantor shall, within five (5) Business Days following its receipt of the Payment Demand, pay the Guaranteed Amount to Buyer.
3. Scope and Duration of Guaranty. This Guaranty applies only to the Guaranteed Amount. This Guaranty shall continue in full force and effect from the Effective Date until the earlier of the following: (x) all Guaranteed Amounts have been paid in full (whether directly or indirectly through set-off or netting of amounts owed by Buyer to Seller), (y) replacement Performance Security is provided in an amount and form required by the terms of the PPA, or ( z ) one hundred eighty (180) days after the early termination of the PPA or expiration of the PPA by its terms. Further, this Guaranty (a) shall remain in full force and effect without regard to, and shall not be affected or impaired by any invalidity, irregularity or unenforceability in whole or in part of this Guaranty, and (b) subject to the preceding sentence, shall be discharged only by complete performance of the undertakings herein. Without limiting the generality of the foregoing, the obligations of the Guarantor hereunder shall not be released, discharged, or otherwise affected and this Guaranty shall not be invalidated or impaired or otherwise affected for the following reasons:
(i) the extension of time for the payment of any Guaranteed Amount, or
(ii) any amendment, modification or other alteration of the PPA, or
(iii) any indemnity agreement Seller may have from any party, or
(iv) any insurance that may be available to cover any loss, except to the extent insurance proceeds are used to satisfy the Guaranteed Amount, or
(v) any voluntary or involuntary liquidation, dissolution, receivership, insolvency, bankruptcy, assignment for the benefit of creditors, reorganization, arrangement, composition or readjustment of, or other similar proceeding affecting, Seller or any of its assets, including but not limited to any rejection or other discharge of Seller's obligations under the PPA imposed by any court, trustee or custodian or any similar official or imposed by any law, statue or regulation, in each such event in any such proceeding, or
(vi) the release, modification, waiver or failure to pursue or seek relief with respect to any other guaranty, pledge or security device whatsoever, or
(vii) any payment to Buyer by Seller that Buyer subsequently returns to Seller pursuant to court order in any bankruptcy or other debtor-relief proceeding, or
(viii) those defenses based upon (A) the legal incapacity or lack of power or authority of any Person, including Seller and any representative of Seller to enter into the PPA or perform its
obligations thereunder, (B) lack of due execution, delivery, validity or enforceability, including of the PPA, or (C) Seller's inability to pay any Guaranteed Amount or perform its obligations under the PPA, or
(ix) any other event or circumstance that may now or hereafter constitute a defense to payment of the Guaranteed Amount, including, without limitation, statute of frauds and accord and satisfaction;
provided that, subject to Guarantor's payment of a Guaranteed Amount in accordance with Paragraph 2, Guarantor reserves the right to assert for itself in a subsequent proceeding any defenses, setoffs or counterclaims that Seller is or may be entitled to assert against Buyer (except for such defenses, setoffs or counterclaims that may be asserted by Seller with respect to the PPA, but that are expressly waived under any provision of this Guaranty).
4. Waivers by Guarantor. Guarantor hereby unconditionally waives as a condition precedent to the performance of its obligations hereunder, with the exception of the requirements in Paragraph 2, (a) notice of acceptance, presentment or protest with respect to the Guaranteed Amounts and this Guaranty, (b) notice of any action taken or omitted to be taken by Buyer in reliance hereon, (c) any requirement that Buyer exhaust any right, power or remedy or proceed against Seller under the PPA, and (d) any event, occurrence or other circumstance which might otherwise constitute a legal or equitable discharge of a surety. Without limiting the generality of the foregoing waiver of surety defenses, it is agreed that the occurrence of any one or more of the following shall not affect the liability of Guarantor hereunder:
(i) at any time or from time to time, without notice to Guarantor, the time for payment of any Guaranteed Amount shall be extended, or such performance or compliance shall be waived;
(ii) the obligation to pay any Guaranteed Amount shall be modified, supplemented or amended in any respect in accordance with the terms of the PPA;
(iii) subject to Paragraph 9, any (a) sale, transfer or consolidation of Seller into or with any other entity, (b) sale of substantial assets by, or restructuring of the corporate existence of, Seller or (c) change in ownership of any membership interests of, or other ownership interests in, Seller; or
(iv) the failure by Buyer or any other Person to create, preserve, validate, perfect or protect any security interest granted to, or in favor of, Buyer or any Person.
5. Subrogation. Notwithstanding any payments that may be made hereunder by the Guarantor, Guarantor hereby agrees that until the earlier of payment in full of all Guaranteed Amounts or expiration of the Guaranty in accordance with Paragraph 3, it shall not be entitled to, nor shall it seek to, exercise any right or remedy arising by reason of its payment of any Guaranteed Amount under this Guaranty, whether by subrogation or otherwise, against Seller or seek contribution or reimbursement of such payments from Seller.
6. Representations and Warranties. Guarantor hereby represents and warrants that (a) it has all necessary and appropriate [limited liability company/[corporate] powers and authority and the
legal right to execute and deliver, and perform its obligations under, this Guaranty, (b) this Guaranty constitutes its legal, valid and binding obligations enforceable against it in accordance with its terms, except as enforceability may be limited by bankruptcy, insolvency, moratorium and other similar laws affecting enforcement of creditors' rights or general principles of equity, (c) the execution, delivery and performance of this Guaranty does not and will not contravene Guarantor's organizational documents, any applicable Law or any contractual provisions binding on or affecting Guarantor, (d) there are no actions, suits or proceedings pending before any court, governmental agency or arbitrator, or, to the knowledge of the Guarantor, threatened, against or affecting Guarantor or any of its properties or revenues which may, in any one case or in the aggregate, adversely affect the ability of Guarantor to enter into or perform its obligations under this Guaranty, and (e) no consent or authorization of, filing with, or other act by or in respect of, any arbitrator or Governmental Authority, and no consent of any other Person (including, any stockholder or creditor of the Guarantor), that has not heretofore been obtained is required in connection with the execution, delivery, performance, validity or enforceability of this Guaranty by Guarantor.
7. Notices. Notices under this Guaranty shall be deemed received if sent to the address specified below: (i) on the day received if served by overnight express delivery, and (ii) four Business Days after mailing if sent by certified, first class mail, return receipt requested. If transmitted by facsimile, such notice shall be deemed received when the confirmation of transmission thereof is received by the party giving the notice. Any party may change its address or facsimile to which notice is given hereunder by providing notice of the same in accordance with this Paragraph 7.

If delivered to Buyer, to it at
If delivered to Guarantor, to it at

8. Governing Law and Forum Selection. This Guaranty shall be governed by, and interpreted and construed in accordance with, the laws of the United States and the State of California, excluding choice of law rules. The Parties agree that any suit, action or other legal proceeding by or against any party (or its affiliates or designees) with respect to or arising out of this Guaranty shall be brought in the federal courts of the United States or the courts of the State of California sitting in the County of Riverside, California.
9. Miscellaneous. This Guaranty shall be binding upon Guarantor and its successors and assigns and shall inure to the benefit of Buyer and its successors and permitted assigns pursuant to the PPA. No provision of this Guaranty may be amended or waived except by a written instrument executed by Guarantor and Buyer. This Guaranty is not assignable by Guarantor without the prior
written consent of Buyer. No provision of this Guaranty confers, nor is any provision intended to confer, upon any third party (other than Buyer's successors and permitted assigns) any benefit or right enforceable at the option of that third party. This Guaranty embodies the entire agreement and understanding of the parties hereto with respect to the subject matter hereof and supersedes all prior or contemporaneous agreements and understandings of the parties hereto, verbal or written, relating to the subject matter hereof. If any provision of this Guaranty is determined to be illegal or unenforceable (i) such provision shall be deemed restated in accordance with applicable Laws to reflect, as nearly as possible, the original intention of the parties hereto and (ii) such determination shall not affect any other provision of this Guaranty and all other provisions shall remain in full force and effect. This Guaranty may be executed in any number of separate counterparts, each of which when so executed shall be deemed an original, and all of said counterparts taken together shall be deemed to constitute one and the same instrument. This Guaranty may be executed and delivered by electronic means with the same force and effect as if the same was a fully executed and delivered original manual counterpart.

## [Signature on next page]

IN WITNESS WHEREOF, the undersigned has caused this Guaranty to be duly executed and delivered by its duly authorized representative on the date first above written.

## GUARANTOR:

$\qquad$
By:
Printed Name: $\qquad$ Title: $\qquad$
BUYER:
$\qquad$
By: $\qquad$ Printed Name: $\qquad$
Title: $\qquad$
By: $\qquad$
Printed Name: $\qquad$ Title: $\qquad$

Report to City Council
TO: Mayor and City Council
FROM:
Sean P. Kelleher, Community Development Director
AGENDA DATE:
December 19, 2023
TITLE:
GATEWAY HEIGHTS 108 UNIT CONDOMINIUM PROJECT

## RECOMMENDED ACTION

## Recommendations: That the City Council:

1. ADOPT Resolution 2023-XX:
2. CERTIFYING the Initial Study/Mitigated Negative Declaration prepared for the Proposed Project consisting of General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Tentative Tract Map 38459 (PEN22-0127) and Conditional Use Permit (PEN21-0066); and
3. ADOPTING the Mitigation Monitoring and Reporting Program prepared for the Mitigated Negative Declaration; and
4. ADOPT Resolution 2023-XX:
5. APPROVING General Plan Amendment (PEN20-0095), Tentative Tract Map 38459 (PEN22-0127) and Conditional Use Permit (PEN21-0066); and
6. INTRODUCE Ordinance No. [next in order]:
7. Approving a Change of Zone (PEN20-0096) and corresponding amendment to the City's Zoning Atlas.

## SUMMARY

Staff recommends approving the Proposed Project consisting of General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Tentative Tract Map 38459 (PEN22-0127), and Conditional Use Permit (PEN21-0066), for the development of a 108-unit townhouse condominium project and associated amenities and public
improvements.

## BACKGROUND

On September 5, 2023, the City Council continued the public hearing for the Proposed Project, allowing the applicant time to address concerns associated with Parking, Emergency Access, and Biological Resources, which are discussed further below.

## Parking

Based on the comments received, the Applicant prepared a Parking Analysis and modified the Project Site to provide additional parking. The Proposed Project now includes 283 parking spaces, including 216 spaces within enclosed garages, 27 guest parking spaces, and 40 open parking spaces along Streets B and C. The 283 parking spaces exceed the 243 parking spaces that are required for the Proposed Project.

Additionally, the Applicant has offered three conditions of approval requiring owners to utilize their garages for parking, register their vehicles with the Homeowners Association, and provide signage and striping for all guest parking spaces.

## Emergency Access

The Emergency Access for the Proposed Project at Morton Road was designed by the Applicant in consultation with the City's Fire Prevention Division. The Applicant has confirmed that in the event of an emergency, first responders will have access to the Knox Box at Poarch Road and the 215 Freeway and they can direct residents and guests to the appropriate evacuation routes.

## Biological Resources

In compliance with the California Environmental Quality Act and the Multiple Species Habitat Conservation Plan, a Biological Resources Analysis was prepared as part of the Initial Study for the Proposed Project. As part of the field analysis, the Proposed Project's Biologist visited the Project Site, and did not find any special status plants.

At the September $5^{\text {th }}$ Public Hearing, the Plummer's Mariposa Lily was discussed. The Plummer's Mariposa Lily however is not identified or designated as a State or federally listed endangered or threatened species. Additionally, the proposed project includes a 15.97-acre remainder parcel that will be maintained as natural open space.

## DISCUSSION

The Proposed Project was considered by the Planning Commission at a duly noticed public hearing conducted on June 8, 2023, and the Planning Commission voted unanimously $4-0$ to certify and approve the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program and approve General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Tentative Tract Map 38459 (PEN22-0127), and Conditional Use Permit (PEN21-0066) for the Proposed Project.

## Proposed Project

The Proposed Project consists of a General Plan Amendment to change the existing land use designation to Residential 10 and Parks/Open Space with a Change of Zone to change the zoning designation to Residential 10 (R10) District and Open Space (OS) district The Proposed Project also includes a Conditional Use Permit (CUP) for a Planned Unit Development (PUD) and a Tentative Tract Map (TTM) to develop a 108 unit townhouse condominium project, on a 16.59 -acre portion of 32.56 -acre Project Site.

The 15.97-acre remainder parcel will either be granted to the County of Riverside by the applicant to become part of the Box Springs Mountain Reserve or will be maintained by the Homeowners Association as natural open space. Additionally, the Proposed Project, as designed, will incorporate a 0.89 -acre park which will also be maintained by the Homeowners Association, but will permit public access. The Proposed Project will also include the construction of a portion of a County Flood Control Master Planned Culvert (Master Drainage Plan Line-B) as well as other on-site and off-site improvements.

## General Plan Amendment

A General Plan Amendment (GPA) application was submitted to change the land use designation of the Project Site from R2 Residential and Hillside Residential to R10 Residential and Parks/Open Space. The R10 land use designation is intended to provide for a variety of residential products and encourage innovation in housing types with amenities not generally found in suburban subdivisions, such as common open spaces and recreational areas. The primary purpose of areas designated Parks/Open Space is to provide areas that are substantially unimproved, including, but not limited to, areas for outdoor recreation and the preservation of natural resources. The proposed General Plan Designations will allow for the Proposed Project to be constructed on a 16.59 -acre portion of the 32.56 -acre Project Site while retaining the remainder of the Project Site as Open Space.

## Change of Zone

A Change of Zone (CZ) application was submitted to rezone the Project Site from Residential 2 (R2) District and Hillside Residential (HR) District to Residential 10 (R10) District and Open Space (OS) District. Under the Proposed Project's current Residential (R2) District, a maximum of 2.0 units per gross acre is allowed. To obtain the desired number of units, a change of zone is required to rezone the Project Site to Residential 10 (R10) District, which allows up to 10.0 units per gross acre.

## Conditional Use Permit for a Planned Unit Development

The Applicant is requesting a Conditional Use Permit for a Planned Unit Development (PUD) to allow for flexible standards to address the unique characteristics of the Project Site. The PUD document (graphics and text) prepared for the Proposed Project will establish the land use regulations, development standards, and design guidelines for the tract, including the dedication of permanent open space.

The PUD document also provides guidelines for architectural themes for the townhomes that meet or exceed City-wide design standards in the Municipal Code. All development within the tract must meet the standards stated in the PUD, including plotting, setbacks, open space areas, and architecture. Additionally, the PUD provides design guidance for community entrances and perimeter fencing around the community and around the drainage areas.

## Tentative Tract Map

Tentative Tract Map No. 38459 will subdivide the 32.56 gross acres of vacant and unimproved land into one 16.59-acre (common-area) lot for 108 condominium units, and one 15.97-acre "remainder" lot for public open space. The Tentative Map would also create the interior private loop streets and dedicate the 0.89 -acre park site. All on-site streets and drainage facilities will be maintained lots by the Homeowners Association.

## Site/Surrounding Area

The 32.56 -acre Project Site is a vacant and unimproved pie-shaped hillside lot located on the east side of Morton Road at the northwestern City boundary. To the north, properties are located within unincorporated Riverside County and are part of the Box Springs Mountain Reserve. Properties to the east are vacant and located within the Hillside Residential (HR) District. Properties to the west are also located within unincorporated Riverside County and are designated as "Gateway Center" Specific Plan. Properties to the south are located within the Residential 5 (R5) District and Hillside Residential (HR) District and are generally developed with single-family homes.

## Access/Parking

The Proposed Project's access will be provided by Morton Road with a private loop road serving the residential units. The Proposed Project has been designed to exceed the minimum parking requirements, providing a two-car garage for each residential unit, as well as 50 guest parking spaces along the private streets.

## Design/Landscaping

The PUD guidelines for the Proposed Project will include two elevation styles: Santa Barbara and Modern Farmhouse. Each building style will have three color combinations to provide interest among the housing types.

The PUD includes typical configurations for the new homes and common area landscaping. The HOA will maintain all common area landscaping in an effort to maintain a consistent well-maintained appearance of the streetscapes within the community. The Proposed Project also includes a 0.89 -acre park that will primarily serve the local neighborhood, including adjoining developed residential areas.

## REVIEW PROCESS

All appropriate outside agencies have considered the Proposed Project in the context of the standard review process. The Proposed Project was reviewed by the Project

Review Staff Committee as required by the Municipal Code. Following subsequent revisions and reviews by staff, the Proposed Project was determined to be complete.

## ENVIRONMENTAL

An Initial Study was prepared by Psomas, in compliance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines. The Initial Study examined the potential impacts of the Proposed Project on the environment. The Initial Study/Mitigated Negative Declaration (IS/MND) serves as the appropriate CEQA documentation for the Proposed Project. With the implementation of the proposed mitigation measures, the Proposed Project will not have a significant effect on the environment. Technical studies prepared in support of the IS/MND include the following: Air Quality Calculations, Biological Resources Report, Jurisdictional Delineation, Rare Plant Survey Report, Burrowing Owl Survey Report, and Determination of Biologically Equivalent or Superior Preservation (DBESP) Report, Cultural Reports, Energy Calculations, Geotechnical Report, Slope Stability Report, EDR Radius Map Report, Preliminary Drainage Report, Project Specific Water Quality Management Report, Planned Unit Development, Traffic Impact Analysis, and Fire Hazard Analysis and Approach. Copies of the appendices to the IS/MND can be accessed from the link attached to this staff report. The documents were made available for review and inspection at City Hall during operating hours.

Mitigation measures are recommended for the Proposed Project in the following areas: Aesthetics, Biological Resources, Cultural Resources, Energy, Geology and Soils, Hazards and Hazardous Materials, Public Resources, and Tribal Cultural Resources, all of which are incorporated into the Mitigation Monitoring and Report Program (MMRP). The measures for cultural resources have been included to address input from the Tribal governments. The measures are intended to ensure that potential resources that might be discovered are protected. However, these measures are not required to address a known significant impact. Based on the Initial Study and the proposed mitigation measures, the Proposed Project will not cause any significant impacts to the environment. In response to comments received from the California Department of Fish and Wildlife, mitigation measures have been slightly modified. These modifications do not result in a substantial change that would require recirculation of the environmental document.

The public comment period for the Notice of Availability of the Initial Study/Mitigated Negative Declaration began on March 2, 2023, and ended on March 31, 2023, (State Clearing House Number 2023020680), which satisfies the required 30 -day review period required for the Proposed Project.

## ALTERNATIVES

1. Certify and approve the Initial Study/Mitigated Negative Declaration and the Mitigated Monitoring and Reporting Program, and approve the Proposed Project. (Staff recommends this alternative.)
2. Deny the Proposed Project. (Staff does not recommend this alternative.)

## FISCAL IMPACT

The Development of the Proposed Project will result in an increase in property taxes received by the City. Additionally, the Proposed Project will construct a portion of a County Flood Control Master Planned Culvert (Master Drainage Plan Line-B) and an 0.89 -acre park within the development that will be owned and maintained by the Homeowners Association, and open to the general public for use.

## NOTIFICATION

Consistent with the Municipal Code provisions, public notice was sent to all property owners of record within 600 feet of the Project Site, posted on the Project Site, and published in the Press Enterprise Newspaper.

## PREPARATION OF STAFF REPORT

## CITY COUNCIL GOALS

Community Image, Neighborhood Pride and Cleanliness. Promote a sense of community pride and foster an excellent image about our City by developing and executing programs which will result in quality development, enhanced neighborhood preservation efforts, including home rehabilitation and neighborhood restoration.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. Resolution No. 2023-XX - Initial Study
2. Exhibit A to Resolution No. 2023-XX - Initial Study
3. Appendicies A-G
4. Appendicies $\mathrm{H}-\mathrm{L}$
5. Exhibit B to Resolution No. 2023-XX - Notice of Intent to Adopt a Mitigated Negative Declaration
6. Exhibit C to Resolution No. 2023-XX - Mitigation Monitoring and Reporting Program
7. Ordinance No. XXXX
8. Resolution No. 2023-XX General Plan Amendment_CUP_Map
9. Gateway Heights PUD - 1 of 3
10. Gateway Heights PUD - 2 of 3
11. Gateway Heights PUD - 3 of 3
12. Project Plans
13. Aerial Map
14. Planning Commission Staff Report
15. Public Comments Presented to Planning Commission on June 8, 2023
16. Public Comment for City Council September 5, 2023 Hearing
17. Parking Study_November 132023
18. Applicant Volunteered Conditions of Approval
19. Memo to CC 12.05.23

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved | 11/27/23 4:03 PM |
| :---: | :---: | :---: |
| City Attorney Approval | $\checkmark$ Approved |  |
| City Manager Approval | $\checkmark$ Approved | 11/27/23 4:06 |

HISTORY:
12005/23
City Council CONTINUED
Next: 12/19/23
Mayor Cabrera made a motion to continue this item to the December 19th, 2023, at the request of the developer and Mayor Pro Tem Delgado.

## Motion made by Mayor Cabrera and seconded by Council Member Baca-Santa Cruz to continue the Gateway Heights Project to the December 19, 2023 City Council Meeting. <br> Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting ves, with Mayor Pro Tem Delgado and Council Member Barnard absent.

City Attorney Steven Quintanilla provided guidance regarding noticing requirements for the public hearing item.

## RESOLUTION NUMBER 2023-XX

> A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIIORNIA, CERTIFYING AND ADOPTING A MITIGATED NEGATIVE DECLARATION AND MITIGATION MONITORING AND REPORTING PROGRAM FOR A GENERAL PLAN AMENDMENT (PEN20-0095), CHANGE OF ZONE (PEN20-0096), CONDITIONAL USE PERMIT (PEN21-0066) AND TENTATIVE TRACT MAP 38459 (PEN22O127) FOR THE DEVELOPMENT OF A 108-UNIT TOWNHOUSE CONDOMINIUM PROJECT

WHEREAS, the City of Moreno Valley ("City") is a general law city and a municipal corporation of the State of California, and the lead agency for the preparation and consideration of environmental documents for local projects that are subject to requirements of the California Environmental Quality Act (CEQA) and CEQA Guidelines; and

WHEREAS, HengHou Group ("Applicant") has submitted applications for the approval of General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096) Conditional Use Permit (PEN21-0066) and Tentative Tract Map 38459 (PEN22-0127) for the development of a 108 -unit detached townhouse condominium Planned Unit Development on 32.56 -acres, with associated amenities and public improvements ("Proposed Project") located on the east side of Morton Road, approximately 300 feet north of Jennings Court (APN 256-150-001) ("Project Site"); and

WHEREAS, Planning Division Staff completed an Initial Study for the proposed Project, and, based on the Initial Study, recommended certification of a Mitigated Negative Declaration ("MND") and approval of a Mitigation Monitoring and Reporting Program ("MMRP") in accordance with Section 6 (ND Procedures) of the City's Rules and Procedures for the Implementation of the California Environmental Quality Act and the requirements of the CEQA the CEQA Guidelines Sections 15070-15075; and

WHEREAS, a Notice of Intent to Adopt a Mitigated Negative Declaration was duly noticed and circulated for public review for a period of 30 days commencing on March 2, 2023, through March 31, 2023; and

WHEREAS, in compliance with CEQA and the CEQA Guidelines, a Mitigation Monitoring and Reporting Program ("MMRP") that includes a program for reporting and monitoring the Proposed Projects' mitigation measures was prepared for the Proposed Project and circulated with the Mitigated Negative Declaration; and

WHEREAS, on June 8, 2023, a hearing was conducted by the Planning Commission whereby the Planning Commission approved Planning Commission Resolution 2023-22, recommending the City Council certify and approve the Initial Study/Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, and approve the Proposed Project; and

[^3]WHEREAS, on September 5, 2023, the City Council continued the consideration of the Proposed Project to a future date; and

WHEREAS, on December 5, 2023, a hearing was conducted by the City Council to approve the Mitigated Negative Declaration/Initial Study, Mitigation Monitoring and Reporting Program, and the Proposed Project; and

WHEREAS, at the conclusion of the December 5, 2023 public hearing, in the exercise of its own independent judgment, the City Council determined that the Initial Study/Mitigated Negative Declaration and the Mitigation Monitoring and Reporting Program will reduce the environmental impacts of the Proposed Project to levels of insignificance and that there is no substantial evidence supporting a fair argument that the Proposed Project will have a significant effect on the environment.

## NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

## Section 1. Recitals and Exhibits

That the foregoing Recitals and attached exhibits are true and correct and are hereby incorporated by this reference.

## Section 2. Evidence

That the City Council has considered all the evidence submitted into the Administrative Record for the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, including, but not limited to, the following:
(a) Initial Study/Mitigated Negative Declaration prepared for the Proposed Project, attached hereto as Exhibit A;
(b) Notice of Intent to Adopt a Mitigated Negative Declaration and Newspaper Notice, attached hereto as Exhibit B;
(c) Mitigation Monitoring and Reporting Program, attached hereto as Exhibit C;
(d) Staff Report prepared for the Planning Commission's consideration and all documents, records, and references related thereto, and Staff's presentation at the public hearing; and
(e) Testimony, comments, and correspondence from all persons that were provided at, or prior to, the June 8, 2023, Planning Commission public hearing;
(f) Planning Commission Resolution No. 2023-22, recommending that the City Council certify and approve the Initial Study/Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, and approved the Proposed Project;
(g) Staff Report for the City Council's consideration and all documents, records, and references related thereto, and Staff's presentation at the September 5,2023 , and December 5, 2023, public hearing; and
(h) Testimony, comments, and correspondence from all persons that were provided at, or prior to, the City Council September 5, 2023, and December 5, 2023 public hearing; and

## Section 3. Findings

That based on the content of the foregoing Recitals and the Evidence contained in the Administrative Record, the City Council makes the following findings:
(a) That the City Council and the City as Lead Agency has independently reviewed, analyzed, and considered the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, and the whole record before it, including, the Initial Study and comments received; and
(b) That the proposed mitigation measures will reduce all environmental impacts of the Proposed Project to levels of insignificance and there is no substantial evidence supporting a fair argument that the Proposed Project will have a significant effect on the environment; and
(c) That the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program have been completed in compliance with CEQA and the CEQA Guidelines consistent the City's Rules and Procedures for the Implementation of the California Environmental Quality Act; and
(d) That the Mitigated Negative Declaration/Initial Study and Mitigation Monitoring and Reporting Program reflect the independent judgment and analysis of the City Council and the City as Lead Agency for the Proposed Project; and
(e) That the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program are adequate to serve as the required CEQA environmental documentation for the proposed Project.

## Section 4.

Adoption
That based on the foregoing Recitals, Evidence and Findings, the City Council hereby certifies and adopts the Mitigated Negative Declaration/Initial Study attached hereto as Exhibit A and the Mitigation Monitoring and Reporting Program attached hereto as Exhibit C.

## Section 5. Repeal of Conflicting Provisions

That all the provisions as heretofore adopted by the City Council that are in conflict with the provisions of this Resolution are hereby repealed.

## Section 6. Severability

That the City Council declares that, should any provision, section, paragraph, sentence, or word of this Resolution be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this Resolution as hereby adopted shall remain in full force and effect.

## Section 7. Effective Date

That this Resolution shall take effect immediately upon the date of adoption.

## Section $8 . \quad$ Certification

That the City Clerk for the City Council shall certify to the passage of this Resolution.

PASSED AND ADOPTED THIS 5 ${ }^{\text {th }}$ day of December 2023

CITY OF MORENO VALLEY
CITY COUNCIL

Ulises Cabrera, Mayor of the City of Moreno Valley

## ATTEST:

Jane Halstead, City Clerk
APPROVED AS TO FORM:

Steven B. Quintanilla,
Interim City Attorney
Exhibits:
Exhibit A: Mitigated Negative Declaration/Initial Study
Exhibit B: Notice of Intent to Adopt a Mitigated Negative Declaration / Newspaper Notice Exhibit C: Mitigation Monitoring Plan

## Exhibit A

Initial Study

## INITIAL STUDY FOR THE GATEWAY HEIGHTS PROJECT



## Prepared By

 PSOMASContact: Sean Noonan, AICP
5 Hutton Centre Drive, Suite 300
Santa Ana, California 92707

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## APPENDICES (provided in Volume 2)

A Air Quality Calculations
B Biological Resources Report, Jurisdictional Delineation, Rare Plant Survey Report, Burrowing Owl Survey Report, and Determination of Biologically Equivalent or Superior Preservation (DBESP) Report
C Cultural Reports
D Energy Calculations
E Geotechnical Report
F Slope Stability Report
G EDR Radius Map Report
H Preliminary Drainage Report
I Project Specific Water Quality Management Plan
J Planned Unit Development
K Traffic Impact Analysis
L Fire Hazard Analysis and Approach Memorandum

## BACKGROUND INFORMATION AND PROJECT DESCRIPTION:

1. Project Case Number(s): PEN 21-0066
2. Project Title: Gateway Heights Project
3. Public Comment Period: February 15, 2023 to March 16, 2023
4. Lead Agency:

City of Moreno Valley
Community Development
Luis Lopez, Contract Planner
14177 Frederick Street
Moreno Valley, California 92553
(951) 413-3206

LuisL@moval.org
5. Documents Posted At: http://www.moval.org/cdd/documents/about-projects.html
6. Prepared By:

Sean Noonan, AICP<br>Psomas<br>5 Hutton Centre Drive, Suite 300<br>Santa Ana, California 92707<br>714-481-8035<br>Sean.Noonan@Psomas.com

7. Project Sponsor:

Applicant/Developer
Jason Ackerman
Ackerman Law PC
3200 East Guasti Road, Suite100
Ontario, California 91761
Phone: 909-456-1460

## Property Owner

Shizao Zheng

1378 West Zhongshan Road Ningbo City, Zhejiang Province, China
Phone: 626-666-1470

Email: jason.ackerman@ackermanlawpc.com
8. Project Location: The Project Site is located approximately one mile north of the State Route (SR) 60 and Interstate (I) 215 interchange. The Project Site is approximately 110 feet north of Jennings Court and immediately east of Morton Road in the western portion of the City of Moreno Valley, Riverside County, California, as shown in Figure 1, Vicinity Map. The Project Site is bounded on the northerly and westerly property lines by the Riverside County jurisdictional border. The Project Site is comprised of Tax Assessor Parcel Number (APN) 256-150-001 and is located entirely within the City of Moreno Valley.

The Project Site is located in Section 34 of Township 2 South, Range 4 West, Riverside East 7.5 minute quadrangle map. The approximate center of the Project Site is at longitude $117^{\circ} 17^{\prime} 39.7^{\prime \prime} \mathrm{W}$ and latitude $33^{\circ} 57^{\prime} 34.95{ }^{\prime \prime} \mathrm{N}$.
9. General Plan Designation: Residential 2 (R2) and Hillside Residential (HR)
10. Specific Plan Name and Designation: Not applicable for APN 256-150-001.

11. Existing Zoning: Residential 2 (R2) and Hillside Residential (HR)

As defined in the City's Municipal Code, the primary purpose of the R2 district is to provide for suburban lifestyles on residential lots larger than are commonly available in suburban subdivisions, and to allow non-equestrian residential developments in a rural atmosphere. This district is intended as an area for development of large lot, single-family residential development at a maximum allowable density of two dwelling units per net acre.

The primary purpose of the HR district is to balance the preservation of hillside areas with the development of view oriented residential uses. It is the further intent of this district to provide regulations for the limited development of those hillside areas in a manner that would maintain natural open space areas, protect significant landforms and other natural resources, protect views from existing development, retain opportunities for views from development sites, preserve and enhance vistas from public places, minimize the extent and occurrence of erosion and other potential hazards of development in areas of steep topography, and generally protect the public health, safety and welfare. The keeping of animals is permitted, however, the keeping of large animals may be prohibited subject to compatibility with local urbanization and topographic constraints.

## 12. Surrounding Land Uses and Setting:

|  | Land Use | Zoning |
| :---: | :---: | :---: |
| Project Site | Vacant, Hillside | R2 and <br> HR |
| North | Vacant, Hillside | HR |
| South | Single-Family <br> Residential | R5 |
| East | Vacant, Hillside | HR |
| West |  | Vacant |
| R2: Residential 2; HR: Hillside Residential; R5: Residential 5; MDR: Medium Density <br> Residential <br> Sources: Moreno Valley 2020a, 2020b, and 2021b; County of Riverside, 2021). <br> *Parcels to the west of Morton Road are located within unincorporated Riverside County, <br> and the City of Riverside sphere of influence. Land use and zoning pursuant to County <br> records. |  |  |

## 13. Description of the Site and Project:

## Environmental Setting

The Project Site is characterized as undeveloped, vacant lands situated in the southwestern foothills of the Box Springs Mountains. Elevations in the Project Site range from approximately 1,590 feet above mean sea level (amsl) in the southwest corner to 2,080 feet amsl in the northeast corner. A Project Location Map is provided as Figure 2, which shows the Project Site and its general environmental setting. Also, the Project Site is depicted in Figure 3, Site Photographs.

The Project Site is surrounded by vacant, undeveloped land to the north, east, and west with large-lot single-family residential uses to the south and southeast. The Box Springs Mountain Park and Reserve is located north of the Project Site, which is owned by several entities including the County of Riverside, University of California, and Western Riverside County Regional Conservation Authority.

Several erosional features with deep incised banks occur throughout the Project Site and are the result of sheet flow off Box Springs Mountain. There is also evidence of natural springs and one pool along the eastern portion of the Project Site near the base of the Box Springs Mountains.

Sometime between 1942 and 1955, the northeastern portion of the Project Site was developed with residences, which were accessible from a dirt access road. Although the residences were previously removed, the dirt road remains along with eucalyptus trees, which are assumed to have been planted around the residences. Also, several unauthorized dirt off-highway vehicle trails traverse the Project Site.


## Aerial Location Map

Gateway Heights Project


Photo 1: View of the Project Site looking east from Morton Road.


Photo 2: View looking south across the Project Site towards adjacent residential development.

## Dry Utilities

Electricity service is provided by Southern California Edison (SCE) via facilities within Morton Road that run up to and within Jennings Court. However, no existing electricity service is currently available north of the existing residential development.

Natural gas is provided to existing residential development south of the Project Site via an existing pipeline within Morton Road.

An existing 6-inch High Pressure Fuel Line owned by Santa Fe Pacific Pipeline is located on the easterly side of Morton Road.

Also, existing utility poles and overhead lines are located within the Project Site; however, these utilities are not located within an existing easement. These facilities are east of the Project's proposed development area and would not be affected.

## Wet Utilities

An existing 12-inch Polyvinyl chloride (PVC) water line and 8-inch sewer line are located within Morton Road that serves the existing residential development south of the Project Site. Stubs for water and sewer are present for future connections to existing utilities, in order to provide water and sewer services for the proposed development on the Project Site.

## Storm Drain Facilities

There are no existing storm drains within or adjacent to the Project Site. Stormwater flows from the Project Site along natural drainage courses. The project will require the installation of new storm drain facilities across Morton Road to transfer sheet flows southwesterly of the Project Site.

## Project Description

The Project involves the construction of 108 detached townhouse condominium units on southwesterly 16.59 acres of the 32.56 -acre Project Site, which is located in the western portion of the City of Moreno Valley, Riverside County, California. The 108 units would be organized using a 4 -inot to 10 -unit "clusters" on a total of 13 development pads. These clustered units would be arranged with garages facing a common driveway to enhance the aesthetic views of the project from the street and perimeter. . Each unit would have an attached two-car garage, and units would range from 1,400 to 1,602 square feet of interior floor area. The 16.59 acres of the Project Site that would be developed would be rezoned to Residential 10 District (R10), which allows a maximum density of 10 dwelling units per net acre. The primary purpose of the R10 district is to provide for a variety of residential products and to encourage innovation in housing types with enhanced amenities such as common open space and recreation areas. This district has the lowest density of all the multiple family residential districts in the City, and is needed in order to allow a townhouse condominium subdivision, as proposed for the Project. The remaining 15.97 acres of the Project Site would be rezoned to Open Space (OS) and dedicated as conservation land. Project improvements are depicted in Figures 4 and 5, the Project's Site Plan and Grading Plan.

The entire Project Site will utilize the PUD (Planned Unit Development) provisions of the Moreno Valley Zoning Code, in order to allow greater innovation in housing development and diversity of housing choices, preserve a significant open space/hillside feature of the Project Site, create significant useable common open space amenities, and allow flexibility in the typical R10 development standards to accommodate the Project amenities. A conditional use permit must be obtained in order to use the PUD regulations.

## Open Space

The Project includes a total of 3.1 acres of common open space, including trails and a 0.89 acre community park area at the center of the development. Also, as noted above, 15.97 acres of the Project Site would be rezoned to OS (Open Space) and would be dedicated as conservation land.





## Access, Circulation, and Parking

The Project's residential units would be accessible from a single access point on Morton Road, to be constructed as a full-access, four-lane roadway with curbs, shoulders, a landscaped center median, and a sidewalk on the east side. Three internal roads, Streets A, B, and C would serve as a two-way loop through the residential development. The Project's main entry roads, Streets A and C, would have 6 -foot-wide sidewalks on one interior side of each road, connecting to the internal sidewalk system for the development and connecting to the new Morton Road sidewalks along the property frontage and connecting to the existing sidewalk along Morton Road south of the Project Site. Street B within the development would have sidewalks on both sides of the road. Each dwelling unit would have an attached two-car garage for a total of 216 garage parking spaces. The Project also includes the street widening of Morton Road and improvements of the easterly half of Morton Road, which are partially located within Unincorporated Riverside County, and as shown in Figure 4, generally from north of Jennings Court to the County boundary just north of the Project's proposed driveway.

## Lighting and Signage

The Project would include low-level interior lighting associated with the residential units as well as outdoor lighting associated with the park and public streets.

Any new street lighting within the public right-of-way would comply with applicable City regulations and would be subject to City approval in order to maintain appropriate and safe lighting levels on both sidewalks and roadways, while minimizing light and glare on adjacent properties.

## Drainage and Stormwater

The Project includes the installation of hillside drainage, inlets, and storm drain lines to intercept and convey stormwater either along existing flow paths or to the Project's two combination detention and bioretention basins (e.g., Basins A and B). For the offsite, hillside runoff, the project is proposing three storm drain collection points. Point 502 is along the northern edge, is 7.8 cfs , and will be carried by a 24 " pipe through the project, continuing westerly along the existing flow path. The other two, points 403, and 304, are 26.7 cfs, and 90.6 cfs, respectively. 403 will be carried by a proposed $24^{\prime \prime}$ pipe and connected to a proposed $36^{\prime \prime}$ pipe that carries the flow from point 304. That proposed storm drain system also connects to the historic flow path. At time of final design, additional design including HGL will be required. The project is adjacent to the proposed MDP Line B crossing, which is just south of the projects entrance, but is offsite. The project has been designed to route the hillside flows through the project via a proposed 36 " pipe, then outlet to the Line B system. The project proposes to build the Line B Crossing. Two (2) $3^{\prime} \times 6^{\prime}$ RCB culverts will be built under Morton Road. From there flows will outlet within an existing channel that carries the regional flows and mimicking the existing conditions just south of the project.

Regarding onsite runoff, the project has incorporated drainage systems and combination bio retention and detention basins that would be of sufficient size to accept, clean, mitigate the increased runoff, and route the runoff from the site. Runoff will be routed to bio-retention basins throughout the project via storm drain inlets. The water quality basins will drain via underdrains into a storm drain system and eventually into the proposed Line B System. Detailed design of the basins, outlet structures, and any filter media would be prepared at final design (UEG 2022a). Project drainage and stormwater improvements are depicted in Figure 6, Preliminary BMP Site Plan from the Preliminary Water Quality Management Plan.

## Utility Improvements

The Project would require the connection to existing utilities, and extension of service within the Project Site. These improvements are depicted in Figure 4, Site Plan and described in more detail below.

Water. Water is provided to the Project Site by the Eastern Municipal Water District. The Project includes trenching and installation of a water line to connect at two locations along the existing 12 -inch PVC water line located within Morton Road near the intersection with Jennings Court and Penunuri Place, which serves the existing residential development south of the Project Site. EWMD would deliver water to the Project boundary where a master meter would be placed. All onsite distribution would be via a private water system,

connecting via laterals along the interior public streets to the various home clusters, and maintained by the Homeowners Association.

Sewer. Sewer collection and treatment for the Project Site is provided by the Eastern Municipal Water District. The Project would construct a sewer line to connect to the existing 8 -inch sewer line which is located within Morton Road near the intersection with Jennings Court, which serves the existing residential development south of the Project Site.

Gas. Gas service is provided to the Project Site by Southern California Gas Company. An existing gas line is located within Morton Road, which the Project would connect to for gas service. Similar to wet utilities, gas service would be connected via a trench and new gas pipe.

Electricity. Electricity for the Project would be supplied by Southern California Edison (SCE). The Project would connect to existing electrical infrastructure within the Morton Road right-of-way.

Cable and Internet. Cable and internet is provided to the Project Site by Spectrum which has existing facilities in Morton Road south of the Project Site. The Project would connect to these facilities via a trench within Morton Road south of the Project Site.

## Fuel Modification Zones

The Project includes the establishment and ongoing maintenance of 100-foot-wide fuel modification zones for most units. For two buildings where the 100 -foot-wide fuel modification zones may not be feasible, alternative on-site "hardening" techniques are proposed. Specifically, wherever less than 100 feet of FMZ (on and off site combined) is achievable, a 6 foot tall, masonry wall will be constructed at the property line in lieu of the additional FMZ. The Project would comply with the requirements of Section 8.36 .050 of the Moreno Valley Municipal Code and other applicable requirements, which require the preparation, approval, and ongoing implementation of a fuel modification plan for the Project. Review and approval of preliminary and final fuel modification plans by the Fire Code Official will occur prior to the issuance of grading permits and recordation of subdivision maps. A Fire Hazard Analysis and Approach memorandum was prepared for the Project in October 2022 by Dudek, which documents the fire protection planning that has occurred for the Project to date and is included as Appendix L. Specifically, Attachment 2 of Appendix L includes the Proposed Project Fuel Modification Plan, which shows the limits of proposed fuel modification activities.

## Anticipated Construction Schedule

Site preparation and grading of the entire Project Site would occur in one phase, which would be followed by construction of residential clusters beginning every 24 to 30 months, or consistent with the sales absorption of the prior units. As noted above, the Project includes a total of thirteen residential clusters. Construction is anticipated to commence in 2022, pending Project approval. For the purposes of the Traffic Impact Analysis (Appendix K), it was assumed that the Project would be fully constructed by 2023. The following construction durations are anticipated.

- Site preparation - 2 weeks
- Grading/excavation - 12 months
- Building construction - 12 months for each cluster
- Paving - 2 weeks for each cluster

Project grading would involve a cut volume of 90,148 cubic yards (cy) and fill volume of 56,011 cy, and require the export of approximately 34,137 cy of soil from the Project Site, as shown in Figure 5, Grading Plan. No import is needed.

## Offsite Improvements

As noted above, the extension of sewer, water, gas, and telecommunication facilities would be required within the Morton Road right of-way from the intersection of Morton Road and Jennings Court to the location where the proposed Project's access road intersects with Morton Road.
14. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Note: Conducting consultation early in the California Environmental Quality Act (CEQA) process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

Consultation under Assembly Bill 52 (AB 52) and Senate Bill 18 (SB 18) began on January 20, 2022 with letters being sent to the following tribes:

- Agua Caliente Band of Cahuilla Indians;
- Cahuilla Band of Indians;
- Torres-Martinez Desert Cahuilla Indians;
- Los Coyotes Band of Cahuilla Mission Indians;
- Morongo Band of Mission Indians;
- Pechanga Band of Luiseño Indians;
- Rincon Band of Luiseño Indians;
- San Manuel Band of Mission Indians;
- Santa Rosa Band of Mission Indians; and
- Soboba Band of Luiseño Indians.

The 90-day response period ended on April 19, 2022. Of the ten tribes contacted, two tribes requested to consult during the consultation process which included: Pechanga Band of Luiseño Indians and Rincon Band of Luiseño Indians. Additionally, the City received a request from Agua Caliente Band of Cahuilla Indians for Project documents but no formal request to consult.

## 15. Required Discretionary Approvals from the City of Moreno Valley:

- A General Plan Amendment to amend the City of Moreno Valley General Plan Land Use Map to change the land use designation for the Project Site from "Residential 2 (R2)" and "Hillside Residential (HR)" to "Residential 10 (R10)" and "Open Space (OS)" designations.
- A Change of Zone to amend the City of Moreno Valley Zoning Map to change the zoning designation for the Project Site from "Residential 2 (R2) District" and "Hillside Residential (HR)" to "Residential 10 (R10)" and "Open Space (OS) zones.
- A Tentative Tract Map (TTM 38459) to subdivide the Project Site in accordance with the Project Site Plan (Figure 4).
- A conditional use permit in order to use the PUD regulations.

16. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):

- California Department of Fish and Wildlife (CDFW)
- County of Riverside;
- US Army Corps of Engineers (USACE);
- Santa Ana Regional Water Quality Control Board (RWQCB); and
- Western Riverside County Regional Conservation Authority (RCA).


## 17. Acronyms:

| $\mu \mathrm{g} / \mathrm{m}^{3}$ | micrograms per cubic meter |
| :---: | :---: |
| AAM | Annual Arithmetic Mean |
| AAQS | Ambient Air Quality Standards |
| AICUZ | Air Installation Compatible Use Zone |
| ALUC amsl | Airport Land Use Commission above mean sea level |
| APN | Tax Assessor Parcel Number |
| AQMP | Air Quality Management Plan |
| Basin Plan | Water Quality Control Plan for the Santa Ana River Basin |
| BMPs | Best Management Practices |
| CalEEMod | California Emissions Estimator Model |
| CALGreen | California Green Building Standards Code |
| Caltrans | California Department of Transportation |
| CAP | Climate Action Plan |
| CAPCOA | California Air Pollution Control Officers |
| CARB | California Air Resources Board |
| CBC | California Building Code |
| CCR | California Code of Regulations |
| CDFW | California Department of Fish and Wildlife |
| CEC | California Energy Commission |
| CEQA | California Environmental Quality Act |
| $\mathrm{CH}_{4}$ | methane |
| CIWMP | Countywide Integrated Waste Management Plan |
| CNEL | community noise equivalent level |
| CO | carbon monoxide |
| $\mathrm{CO}_{2}$ | carbon dioxide |
| $\mathrm{CO}_{2} \mathrm{e}$ | Carbon dioxide equivalent |
| CO | carbon monoxide |
| CRPR | California Rare Plant Rank |
| CWA | Clean Water Act |
| cy | cubic yards |
| dB | decibel |
| dBA | A-weighted decibel scale |
| DBESP diesel PM | Determination of Biologically Equivalent or Superior Preservation diesel particulate matter |
| DIF | Development Impact Fee |
| DOC | Department of Conservation |
| DTSC | Department of Toxic Substances Control |
| EDR | EDR Radius Map |
| EIC | Eastern Information Center |
| EIR | Environmental Impact Report |
| EMFAC | EMissions FACtor |
| EMWD | Eastern Municipal Water District |


| FHSZ | Fire Hazard Severity Zone |
| :---: | :---: |
| FTA | Federal Transit Administration |
| FUDS | Formerly Used Defense Site |
| GHG | greenhouse gases |
| GPCD | Gallons per Capita per Day |
| GSA | Groundwater Sustainability Agency |
| GSP | Groundwater Sustainability Plan |
| GWP | global warming potential |
| HFCs | hydrofluorocarbons |
| HR | Hillside Residential |
| I | Interchange |
| in/sec | inches per second |
| IS/MND | Initial Study/Mitigated Negative Declaration |
| kBTU | kilo-British thermal units |
| km | kilometer |
| kWh | kilowatt hour; yr: year |
| lbs/day | pounds per day |
| Leq | equivalent noise level |
| Leq(3) | equivalent noise level 3-hour average |
| LOS | level of service |
| LRA | Local Responsibility Area |
| LST | localized significance threshold |
| MBTA | Migratory Bird Treaty Act |
| Mills | Henry J. Mills |
| $\mathrm{mg} / \mathrm{m}^{3}$ | milligrams per cubic meter |
| MSHCP | Multiple Species Habitat Conservation Plan |
| MT/yr $\mathrm{CO}_{2} \mathrm{e}$ | metric tons per year of carbon dioxide equivalents |
| MVPD | Moreno Valley Police Department |
| MVU | Moreno Valley Utility |
| NAHC | Native American Heritage Commission |
| $\mathrm{NO}_{2}$ | nitrogen dioxide |
| $\mathrm{N}_{2} \mathrm{O}$ | nitrous oxide |
| NOx | nitrogen oxides |
| NPDES | National Pollutant Discharge Elimination System |
| $\mathrm{O}_{3}$ | ozone |
| OS | Open Space |
| PFCs | perfluorocarbons |
| PM10 | respirable particulate matter with a diameter of 10 microns or less |
| PM2.5 | fine particulate matter with a diameter of 2.5 microns or less |
| ppm | parts per million |
| ppv | peak particle velocity |
| PUD | Planned Unit Development |
| PVC | Polyvinyl chloride |
| R10 | Residential 10 |
| R2 | Residential 2 |
| RCA | Regional Conservation Authority |
| RHNA | Regional Housing Needs Assessment |
| rms | root mean square |


| RTP/SCS | Regional Transportation Plan/Sustainable Communities Strategy |
| :--- | :--- |
| RWQCB | Regional Water Quality Control Board |
| RWRF | regional water reclamation facility |
| SB | Senate Bill |
| SCAG | Southern California Association of Governments |
| SCAQMD | South Coast Air Quality Management District |
| SCE | Southern California Edison |
| SF | sulfur hexafluoride |
| Skinner | Robert A. Skinner |
| SO $_{2}$ | sulfur dioxide |
| SoCAB | South Coast Air Basin |
| SOx | sulfur oxides |
| SR | State Route |
| SRA | State Responsibility Area |
| SWPPP | Storm Water Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TAC | toxic air contaminant |
| TAZ | Transportation Analysis Zone |
| TIA | traffic impact analysis |
| USACE | U.S. Army Corps of Engineers |
| USEPA | U.S. Environmental Protection Agency |
| UWMP | Urban Water Management Plan |
| VMT | vehicle miles traveled |
| VOC | volatile organic compound |
| WRCOG | Western Riverside Council of Governments |
|  |  |

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.


## DETERMINATION (To be completed by the Lead Agency):

On the basis of this initial evaluation:
I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
I find that the proposed project MAY have a "potentially significant" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.


Luis Lopez
City of Moreno Valley
Printed Name Lead Agency

## EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a Lead Agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on projectspecific factors as well as general standards (e.g. the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3) Once the Lead Agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.
4) "Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The Lead Agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or another CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
a) Earlier Analyses Used. Identify and state where they are available for review.
b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7) Supporting Information Sources. A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.
8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9) The explanation of each issue should identify:
a) the significance criteria or threshold, if any, used to evaluate each question; and
b) the mitigation measure identified, if any, to reduce the impact to less than significance.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :--- | :---: | :---: | :---: |

## I. AESTHETICS - Except as provided in Public Resources Code $\S 21099$ - Modernization of Transportation Analysis for Transit-Oriented Infill Projects - Would the project:

a) Have a substantial adverse effect on a scenic vista?

## Response:

Less Than Significant Impact. A scenic vista is generally defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. A substantial adverse effect to a scenic vista is one that degrades the view from a designated viewing location. Most of the City of Moreno Valley is located on a relatively flat valley floor surrounded by rugged hills and mountains. The topography of the City is defined by the Box Springs Mountains and the Reche Canyon area to the north, the "Badlands" to the east, and the Mount Russell area to the south, which are identified by the City as scenic vistas (Moreno Valley 2021b).

The Project Site is located within the Box Springs Mountains, which are identified by the City as a major scenic resource as well as a scenic vista (Moreno Valley 2021c). Specifically, the City has identified the Box Springs Mountains as containing numerous rock outcroppings and boulders that add visual character to these landforms (Moreno Valley 2021b).

The Project's design minimizes aesthetic impacts by developing the lower elevations of the Project Site which contain less topography and hillside terrain, and preserving the upper (steep hillside topography) elevations. As noted in the Project Description, a total of 15.97 acres of the Project Site would be rezoned to Open Space (OS) and dedicated as conservation land. These areas to be set aside for preservation are the most visible portions of the Project Site from Morton Road near the Project entrance, and also contain the majority of sizeable rocks and boulders that the City has identified as desirable components of the area's visual character. Although the Project would convert a portion of the Project Site to residential uses, the area proposed for development would be located in the western portion of the Project Site in the lower elevation area, and the Project would preserve the natural foothills located in the eastern portion of the Project Site. Additionally, the proposed residential units would be two stories in height and would not exceed 30 -feet in height due to the sloping terrain and would be similar in appearance and massing to existing residential uses located to the southeast. Therefore, although the Project would partially obstruct views from local public viewpoints, impacts would be minimized through Project design and siting. Additionally, views from local roadways including Morton Road, as well as from SR-60 and I-215 are temporary due to the transitory nature of drivers. The Project would not substantially damage any scenic resources. The Project would result in less than significant impacts and no mitigation is required.
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?


## Response:

No Impact. The Project is not located along or near a State scenic highway. There are no State Scenic Highways in Moreno Valley as defined by the California Department of Transportation (Caltrans 2021). However, Gilman Springs Road, Moreno Beach Drive, and State Route 60 (SR-60) are designated as local scenic roads in the City's General Plan (Moreno Valley 2021b). Also, the Reche Canyon/Badlands Area Plan of Riverside County's General Plan contains several County-Designated or County-Eligible scenic roadways including San Timoteo Canyon Road, Redlands Boulevard, Gilman Springs Road, and SR-60 (County of Riverside 2011).

The Project would not be visible from any of these roadways, with the exception of SR-60, which offers minor, intermittent views of the Project Site, which would be marginally altered by the Project. As discussed

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :--- | :--- | :--- | :--- |

above under threshold I(b), the Project has avoided upper elevations of the Project Site that are most visible from Morton Road and other local public roads and viewpoints. Instead, the Project includes development of structures within the lower western portions of the Project Site. The new structures would be consistent in height and appearance (e.g., building materials) for viewers from adjacent public viewpoints, and would appear as an extension of existing suburban development that occurs to the south of the Project Site. Given there are no state scenic highways in the vicinity, no impact would result and no mitigation is required.
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?


## Response:

Less Than Significant Impact. The Project Site is located in an urbanized area as defined in Section 15191 of the State CEQA Guidelines, so this response focuses on whether the Project would substantially degrade the existing visual character or quality of public views of the Project Site and its surroundings. The primary publicly accessible vantage points of the Project Site and its surroundings are from Morton Road, which is immediately west of the Project Site. Views of the Project Site from Morton Road are shown in Figure 3, Site Photographs. Visible features in the foreground from this viewpoint include the lower elevation portion of the Project Site, represented as a flat, previously-disturbed property with dirt trails. This foreground area comprises the primary development area associated with the Project. The Project Site's higher elevations as well as a portion of the Box Springs Mountains, including rock outcroppings and native vegetation, are visible in the background. This area visible in the background comprises the portion of the site to be set aside for preservation and off-site areas to the northeast. Also, as discussed above SR-60 offers minor, intermittent views of the Project Site, which would be marginally altered by the Project. The Project's addition of residential structures and new roads on the hillside would result in a minor visual encroachment on public views of the hillside. The Project has been designed to be visually compatible with adjacent residential development, including features such as similar building heights, massing, and colors and materials including tile roofs. Also, as noted above, the Project's design minimizes aesthetic impacts by developing the lower elevations of the Project Site and preserving the higher elevations in the northeastern 15.97 acres of the Project Site, which are most visible from surrounding vantage points. The Project would have less than significant impacts relative to this threshold and no mitigation is required.
d) Create a new source of substantial light or glare which will adversely affect day or nighttime views in the area?


## Response:

Less Than Significant Impact. The Project would include low-level interior lighting associated with the residential units as well as outdoor lighting associated with the park and public streets. All lighting fixtures shall be appropriate in scale, intensity, and height for the Project. Consistent with City requirements (e.g., Section 9.16.280), exterior lighting would be hooded and arranged to reflect away from adjoining properties and streets. Regulatory requirement RR AES-1 requires the development of a lighting plan for the Project, which would ensure that lighting impacts would be less than significant.

Glare is caused by light reflections from pavement, vehicles, and building materials (e.g., reflective glass and polished surfaces). During daylight hours, the amount of glare depends on intensity and direction of sunlight. Glare can create hazards to motorists and nuisances for pedestrians and other viewers. The

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

Project would be constructed using exterior materials and finishes that are common for residential structures and are not highly-reflective. Furthermore, as discussed above, Project light fixtures would be directed downward and shielded or recessed in such a manner so that light trespass is minimized and light from the Project is not perceptible at or beyond the property line. The Project does not include any uses that would have the potential to create noticeable glare from sunlight, vehicle lights, or outdoor lighting which have the potential to pose a hazard to motorists traveling in the Project vicinity or that would affect surrounding uses. Therefore, less than significant impacts would occur, and no mitigation is required.

## Mitigation Program:

## Regulatory Requirement:

RR AES-1 The Developer shall prepare a Lighting Plan that provides the type and location of proposed exterior lighting and signage, subject to the review and approval of the City's Development Services Department. All new lighting shall be shielded and down-cast, such that the light is not cast onto adjacent properties or visible from above.
II. AGRICULTURE AND FOREST RESOURCES - In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest protocols adopted by the California Air Resources Board.
Would the project:
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?

## Response:

No Impact. The Project Site does not contain land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance according to the California Department of Conservation, California Important Farmland Finder, which identifies the Project Site as "Other Lands" (DOC 2021). Therefore, the Project would have no impact.


## Response:

No Impact. The Project Site is not zoned for agricultural use (Moreno Valley 2020b). Furthermore, no land within the City is currently under a Williamson Act contract (Moreno Valley 2019). Therefore, the Project would have no impact upon agricultural zoning or agricultural conservation, and no mitigation is required.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :--- | :---: | :---: | :---: |

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section $51104(\mathrm{~g})$ )?

## Response:

No Impact. Generally, in southern California, including Riverside County and the City of Moreno Valley, climate and topography limit the types and locations of forest lands and their potential for commercial or industrial timber utilization. Accordingly, there is no existing or currently proposed zoning of forest land, timberland, or Timberland Production Zones within the City. Also, figures released by the State of California indicate that no "California forest land" ownership, either public or private, is mapped for Riverside County including the City. Finally, the Project Site does not contained forest land as defined in Public Resources Code Section $12220(\mathrm{~g})$ since it does not support 10-percent native tree cover. Therefore, the Project would not conflict with the existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production and the Project would have no impact, directly, indirectly, or cumulatively to forest land (Moreno Valley 2019).
d) Result in the loss of forest land or conversion of forest land to non-forest use?

## Response:

No Impact. There is no commercial forestry or timber production industry within the City other than Christmas tree farms or nursery stock production (that is, cultivated, rather than wild-harvested). Therefore, the Project would not result in the loss of forest land or the conversion of forest land to non-forest use and the Project would have no impact, directly, indirectly, or cumulatively to the loss of forest land or conversion of forest land to a non-forest use (Moreno Valley 2019). Therefore, no impact would result related to this threshold and no mitigation is required.
e) Involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

## Response:

No Impact. As discussed above related to thresholds II (a) and (b), the Project is not zoned for or currently used for agricultural purposes. As discussed related to thresholds II (d) and (e), there is no commercial forestry or timber production industry within the City. Therefore, the Project would not result in the loss of forest land or the conversion of forest land to non-forest use, and the Project would have no impact directly, indirectly, or cumulatively (Moreno Valley 2019). No impact would result related to this threshold and no mitigation is required.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

III. AIR QUALITY - Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

| a) Conflict with or obstruct implementation of the | $\square$ | $\square$ | $\square$ | $\square$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| applicable air quality plan? |  |  |  |  |

## Environmental Setting

The Project Site is located within the South Coast Air Basin (SoCAB) and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SoCAB is a 6,600 -square-mile area bound by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east; and the San Diego County line to the south. The SoCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties.

Both the U.S. Environmental Protection Agency (USEPA) and the State of California have established health-based Ambient Air Quality Standards (AAQS) for air pollutants, which are known as "criteria pollutants". The AAQS are designed to protect the health and welfare of the populace within a reasonable margin of safety. The federal criteria pollutants are ozone $\left(\mathrm{O}_{3}\right)$, carbon monoxide (CO), nitrogen dioxide $\left(\mathrm{NO}_{2}\right)$, sulfur dioxide $\left(\mathrm{SO}_{2}\right)$, respirable particulate matter with a diameter of 10 microns or less (PM10), fine particulate matter with a diameter of 2.5 microns or less (PM2.5), and lead.

The State of California Air Resources Board (CARB) has established standards for the federal criteria pollutants that are generally more restrictive than the national AAQS, and additional standards for atmospheric sulfates, vinyl chloride, hydrogen sulfide, and visibility. National and state AAQS are shown in Table 1.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

TABLE 1
CALIFORNIA AND FEDERAL AMBIENT AIR QUALITY STANDARDS

| Pollutant | Averaging Time | California Standards | Federal Standards |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Primary ${ }^{\text {a }}$ | Secondary ${ }^{\text {b }}$ |
| $\mathrm{O}_{3}$ | 1 Hour | $0.09 \mathrm{ppm}\left(180 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | - | - |
|  | 8 Hour | $0.070 \mathrm{ppm}\left(137 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | $0.070 \mathrm{ppm}\left(137 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | Same as Primary |
| PM10 | 24 Hour | $50 \mu \mathrm{~g} / \mathrm{m}^{3}$ | $150 \mu \mathrm{~g} / \mathrm{m}^{3}$ | Same as Primary |
|  | AAM | $20 \mu \mathrm{~g} / \mathrm{m}^{3}$ | - | Same as Primary |
| PM2.5 | 24 Hour | - | $35 \mu \mathrm{~g} / \mathrm{m}^{3}$ | Same as Primary |
|  | AAM | $12 \mu \mathrm{~g} / \mathrm{m}^{3}$ | $12.0 \mu \mathrm{~g} / \mathrm{m}^{3}$ | $15.0 \mu \mathrm{~g} / \mathrm{m}^{3}$ |
| CO | 1 Hour | $20 \mathrm{ppm}\left(23 \mathrm{mg} / \mathrm{m}^{3}\right)$ | $35 \mathrm{ppm}\left(40 \mathrm{mg} / \mathrm{m}^{3}\right)$ | - |
|  | 8 Hour | $9.0 \mathrm{ppm}\left(10 \mathrm{mg} / \mathrm{m}^{3}\right)$ | $9 \mathrm{ppm}\left(10 \mathrm{mg} / \mathrm{m}^{3}\right)$ | - |
|  | 8 Hour (Lake Tahoe) | $6 \mathrm{ppm}\left(7 \mathrm{mg} / \mathrm{m}^{3}\right)$ | - | - |
| $\mathrm{NO}_{2}$ | AAM | $0.030 \mathrm{ppm}\left(57 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | $0.053 \mathrm{ppm}\left(100 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | Same as Primary |
|  | 1 Hour | $0.18 \mathrm{ppm}\left(339 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | $0.100 \mathrm{ppm}\left(188 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | - |
| $\mathrm{SO}_{2}$ | 24 Hour | $0.04 \mathrm{ppm}\left(105 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | - | - |
|  | 3 Hour | - | - | $\begin{gathered} 0.5 \mathrm{ppm} \\ \left(1,300 \mu \mathrm{~g} / \mathrm{m}^{3}\right) \end{gathered}$ |
|  | 1 Hour | $0.25 \mathrm{ppm}\left(655 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | $0.075 \mathrm{ppm}\left(196 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ | - |
| Lead | 30-day Avg. | $1.5 \mu \mathrm{~g} / \mathrm{m}^{3}$ | - | - |
|  | Calendar Quarter | - | $1.5 \mu \mathrm{~g} / \mathrm{m}^{3}$ | Same as Primary |
|  | Rolling 3-month Avg. | - | $0.15 \mu \mathrm{~g} / \mathrm{m}^{3}$ |  |
| Visibility Reducing Particles | 8 Hour | Extinction coefficient of 0.23 per km - visibility $\geq 10$ miles ( 0.07 per km - $\geq 30$ miles for Lake Tahoe) | No Federal Standards |  |
| Sulfates | 24 Hour | $25 \mu \mathrm{~g} / \mathrm{m}^{3}$ |  |  |  |
| Hydrogen Sulfide | 1 Hour | $0.03 \mathrm{ppm}\left(42 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ |  |  |  |
| Vinyl Chloride | 24 Hour | $0.01 \mathrm{ppm}\left(26 \mu \mathrm{~g} / \mathrm{m}^{3}\right)$ |  |  |  |

$\mathrm{O}_{3}$ : ozone; ppm: parts per million; $\mu \mathrm{g} / \mathrm{m}^{3}$ : micrograms per cubic meter; PM10: respirable particulate matter 10 microns or less in diameter; AAM: Annual Arithmetic Mean; - : No Standard; PM2.5: fine particulate matter 2.5 microns or less in diameter; CO: carbon monoxide; $\mathrm{mg} / \mathrm{m}^{3}$ : milligrams per cubic meter; $\mathrm{NO}_{2}$ : nitrogen dioxide; $\mathrm{SO}_{2}$ : sulfur dioxide; km : kilometer.
a National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.
b National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
Note: More detailed information in the data presented in this table can be found at the CARB website (www.arb.ca.gov).
Source: CARB 2016

Regional air quality is defined by whether the area has attained or not attained State and federal air quality standards, as determined by air quality data from various monitoring stations. Areas that are considered in "nonattainment" are required to prepare plans and implement measures that will bring the region into "attainment". When an area has been reclassified from nonattainment to attainment for a federal standard, the status is identified as "maintenance", and there must be a plan and measures established that will keep the region in attainment for the following ten years. Table 2 summarizes the attainment status of the SoCAB for the criteria pollutants.

|  | Less Than <br> Potentially <br> Significant <br> Impact | Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

TABLE 2
CRITERIA POLLUTANT DESIGNATIONS IN THE SOUTH COAST AIR BASIN

| Pollutant | State | Federal |
| :---: | :---: | :---: |
| $\mathrm{O}_{3}$ (1-hour) | Nonattainment | Nonattainment |
|  |  | Extreme Nonattainment |
| $\mathrm{O}_{3}$ (8-hour) | Nonattainment | Attainment/Maintenance |
| PM 10 | Nonattainment | Moderate Nonattainment |
| PM 2.5 | Attainment | Attainment/Maintenance |
| CO | Attainment | Attainment/Maintenance |
| $\mathrm{NO}_{2}$ | Attainment | Attainment |
| $\mathrm{SO}_{2}$ | Attainment | Nonattainment/Attainment ${ }^{\text {a }}$ |
| Lead | Unclassified |  |
| Visibility-Reducing Particles | Attainment | No Standards |
| Sulfates | Unclassified |  |
| Hydrogen Sulfide |  |  |

$\mathrm{O}_{3}$ : ozone; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; CO : carbon monoxide; $\mathrm{NO}_{2}$ : nitrogen dioxide; $\mathrm{SO}_{2}$ : sulfur dioxide; CARB: California Air Resources Board; SoCAB: South Coast Air Basin
a Los Angeles County is classified as nonattainment for lead; the remainder of the SoCAB is in attainment of State and federal standards.
b "Unclassified" designation indicates that the air quality data for the area are incomplete and do not support a designation of attainment or nonattainment.

Source: CARB 2018, USEPA 2020.

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or serious illness or that may pose a present or potential hazard to human health. TACs may be emitted from a variety of common sources, including motor vehicles, gasoline stations, dry cleaners, industrial operations, painting operations, and research and teaching facilities. TACs are different than the "criteria" pollutants previously discussed in that AAQS have not been established for them. TACs occurring at extremely low levels may still affect health, and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts on human health are described by having carcinogenic risk and being chronic (i.e., of long duration) or acute (i.e., severe but of short duration). Diesel particulate matter (diesel PM) is a TAC and is responsible for the majority of California's known cancer risk from outdoor air pollutants.

The effects from air pollution can be significant, both in the short-term during smog alerts, but also from long-term exposure to pollutants. While the majority of the populace can overcome short-term air quality health concerns, selected segments of the population are more vulnerable to its effects. Specifically, young children, the elderly, and persons with existing health problems are most susceptible to respirator complications.

Air quality data for the Project Site is represented by the Perris Valley monitoring station. Pollutants measured at this monitoring station include $\mathrm{O}_{3}$, and PM10. The monitoring data presented in Table 3, Air Quality Levels Measured at the Perris Valley Monitoring Stations, include maximum pollutant levels and exceedances of federal and State air quality standards for the years 2017-2019.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

TABLE 3
AIR QUALITY LEVELS MEASURED AT THE PERRIS VALLEY MONITORING STATION

| Pollutant | California Standard | National <br> Standard | Year | Max. Level ${ }^{\text {a }}$ | Days State Standard Exceeded | Days National Standard Exceeded |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \mathrm{O}_{3} \\ \text { (1 hour) } \end{gathered}$ | 0.09 ppm | None | 2017 | 0.12 | 33 | N/A |
|  |  |  | 2018 | 0.117 | 31 | N/A |
|  |  |  | 2019 | 0.118 | 26 | N/A |
| $\begin{gathered} \mathrm{O}_{3} \\ \text { (8 hour) } \end{gathered}$ | 0.070 ppm | 0.070 ppm | 2017 | 0.105 | 80 | 80 |
|  |  |  | 2018 | 0.103 | 67 | 67 |
|  |  |  | 2019 | 0.095 | 64 | 64 |
| PM10 (24 hour) | $50 \mu \mathrm{~g} / \mathrm{m}^{3}$ | $150 \mu \mathrm{~g} / \mathrm{m}^{3}$ | 2017 | 75 | 11 (19\%) | 0 |
|  |  |  | 2018 | 64 | 3 (5\%) | 0 |
|  |  |  | 2019 | 97 | 4 (7\%) | 0 |
| PM2.5 <br> (24 Hour) | None | $35 \mu \mathrm{~g} / \mathrm{m}^{3}$ | 2017 | - | NA | - |
|  |  |  | 2018 | - | NA | - |
|  |  |  | 2019 | - | NA | - |
| $\begin{gathered} \mathrm{NO}_{2} \\ \text { (1 hour) } \end{gathered}$ | 0.18 ppm | 0.100 ppm | 2017 | - | - | - |
|  |  |  | 2018 | - | - | - |
|  |  |  | 2019 | - | - | - |

$-: \quad \mathrm{O}_{3}$ : ozone; ppm: parts per million; PM10: respirable particulate matter with a diameter of 10 microns or less; $\mu \mathrm{g} / \mathrm{m}^{3}: \mathrm{micrograms}$ per cubic meter; -: Data Not Reported or insufficient data available to determine the value; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; N/A indicates that there is no applicable standard.
a Estimated days based on measurement every six days.
Source: CARB 2021, SCAQMD 2021

The SCAQMD defines a "sensitive receptor" as a land use or facility such as residences, schools, childcare centers, athletic facilities, playgrounds, retirement homes, and convalescent homes (SCAQMD 1993). The sensitive receptors nearest to the Project Site are single-family residences adjacent to the Project's southern boundary.

## Significance Criteria

Appendix G of the State CEQA Guidelines states that the significance criteria established by the applicable air quality management district may be relied upon to make significance determinations. The SCAQMD has established significance thresholds to assess the regional and localized impacts of Project-related air pollutant emissions; Table 4 presents the current significance thresholds.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

TABLE 4

## SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

 AIR QUALITY SIGNIFICANCE THRESHOLDS| Mass Daily Thresholds ${ }^{\text {a }}$ |  |  |
| :---: | :---: | :---: |
| Pollutant | Construction | Operation |
| NOx | $100 \mathrm{lbs} / \mathrm{day}$ | $55 \mathrm{lbs} /$ day |
| VOC | $75 \mathrm{lbs} / \mathrm{day}$ | $55 \mathrm{lbs} / \mathrm{day}$ |
| PM10 | $150 \mathrm{lbs} /$ day | $150 \mathrm{lbs} / \mathrm{day}$ |
| PM2.5 | $55 \mathrm{lbs} / \mathrm{day}$ | $55 \mathrm{lbs} / \mathrm{day}$ |
| SOx | $150 \mathrm{lbs} / \mathrm{day}$ | $150 \mathrm{lbs} / \mathrm{day}$ |
| CO | $550 \mathrm{lbs} /$ day | $550 \mathrm{lbs} / \mathrm{day}$ |
| Lead | $3 \mathrm{lbs} / \mathrm{day}$ | $3 \mathrm{lbs} /$ day |
| TACs, Odor, and GHG Thresholds |  |  |
| TACs (including carcinogens and noncarcinogens) | Maximum Incremental Cancer Risk $\geq 10$ in 1 million <br> Cancer Burden > 0.5 excess cancer cases (in areas $\geq 1$ in 1 million) <br> Chronic \& Acute Hazard Index $\geq 1.0$ (project increment) |  |
| Odor | Project creates an odor nuisance pursuant to SCAQMD Rule 402 |  |
| GHG | 10,000 MT/yr $\mathrm{CO}_{2} \mathrm{e}$ for industrial facilities |  |
| Ambient Air Quality Standards for Criteria Pollutants ${ }^{\text {b, c }}$ |  |  |
| $\begin{gathered} \mathrm{NO}_{2} \\ \text { 1-hour average } \\ \text { annual arithmetic mean } \end{gathered}$ | 0.18 ppm (State) 0.03 ppm (State) and 0.0534 ppm (federal) | causes or contrib t standards: <br> (federal) |
| PM10 <br> 24-hour average annual average | $10.4 \mu \mathrm{~g} / \mathrm{m}^{3}$ (construction) $^{\mathrm{c}} \& 2.5 \mu \mathrm{~g} / \mathrm{m}^{3}$ (operation) $1.0 \mu \mathrm{~g} / \mathrm{m}^{3}$ |  |
| PM2.5 <br> 24-hour average | $10.4 \mu \mathrm{~g} / \mathrm{m}^{3}$ (construction) ${ }^{\text {c }}$ \& $2.5 \mu \mathrm{~g} / \mathrm{m}^{3}$ (operation) |  |
| $\mathrm{SO}_{2}$ <br> 1-hour average 24-hour average | $\begin{aligned} 0.25 \mathrm{ppm} \text { (State) \& } & 0.075 \mathrm{ppm} \text { (federal }-99^{\text {th }} \text { percentile) } \\ & 0.04 \mathrm{ppm} \text { (State) }\end{aligned}$ |  |
| Sulfate 24-hour average | $25 \mu \mathrm{~g} / \mathrm{m}^{3}$ (State) |  |
| $\mathrm{CO}$ <br> 1-hour average 8-hour average | SCAQMD is in attainmen exceedanc $20.0$ | causes or contrib st standards: <br> ederal) |
| Lead 30-day average Rolling 3-month average | $\begin{gathered} 1.5 \mu \mathrm{~g} / \mathrm{m}^{3} \text { (State) } \\ 0.15 \mu \mathrm{~g} / \mathrm{m}^{3} \text { (federal) } \end{gathered}$ |  |
| NOx: nitrogen oxides, Ibs/day: pounds per day, VOC: volatile organic compound, PM10: respirable particulate matter with a diameter of 10 microns or less, PM2.5: fine particulate matter with a diameter of 2.5 microns or less, SOx: sulfur oxides, CO: carbon monoxide, TACs: toxic air contaminants, GHG: greenhouse gases, $\mathrm{MT} / \mathrm{yr}_{\mathrm{CO}}^{2}$ e: metric tons per year of carbon dioxide equivalents, $\mathrm{NO}_{2}$ : nitrogen dioxide, ppm: parts per million, $\mu \mathrm{g} / \mathrm{m}^{3}$ : micrograms per cubic meter; SCAQMD: South Coast Air Quality Management District |  |  |
| Source: South Coast AQMD CEQA Handbook (SCAQMD 1993) <br> Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated Ambient air quality threshold is based on SCAQMD Rule 403 |  |  |


|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |



## Response:

No Impact. Air quality in Riverside County is regulated by the SCAQMD, which is the agency principally responsible for comprehensive air pollution control in the SoCAB. The SCAQMD develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary. The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a sequence of Air Quality Management Plans (AQMPs).

On March 3, 2017, the SCAQMD adopted the 2016 AQMP, which is a regional and multi-agency effort (SCAQMD, CARB, Southern California Association of Governments [SCAG], and USEPA). The 2016 AQMP incorporates the latest scientific and technical information and planning assumptions, including SCAG's 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS); emission inventory methodologies for various source categories; and SCAG's growth forecasts (SCAG 2016). The main purpose of an AQMP is to bring an area into compliance with the requirements of federal and State air quality standards. The two principal criteria for conformance to an AQMP are:

1. Whether the project would result in an increase in the frequency or severity of existing air quality violations; cause or contribute to new violations; or delay timely attainment of air quality standards and
2. Whether the project would exceed the assumptions in the AQMP.

With respect to the first criterion, the analyses in under threshold III(b) below demonstrates that the Project would not (1) generate short-term or long-term emissions of volatile organic compounds (VOCs), nitrogen oxides ( NOx ), which are $\mathrm{O}_{3}$ precursors, or PM2.5 that could potentially cause an increase in the frequency or severity of existing air quality violations; (2) cause or contribute to new violations; or (3) delay timely attainment of air quality standards.

With respect to the second criterion, the Project would result in an increase of approximately 319 persons. The addition of 319 residents within the City would not increase or modify SCAG's population, housing, or employment projections (SCAG 2016). The Project would accommodate the projected growth in population accounted for in the 2016 AQMP emissions forecast and would provide additional wastewater storage capacity. Therefore, the Project would be consistent with the region's AQMP. No impacts would occur, and no mitigation is required.
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

## Response:

## Less Than Significant Impact.

## Construction Emissions - Regional

Criteria pollutant emissions would occur during construction from operation of construction equipment; excavation and earth-moving activities, which would generate fugitive dust; import of soil; import of construction materials; VOC emissions from paving and painting; and operation of vehicles driven to and from the site by construction workers. Emissions would vary from day to day, depending on the level of

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

activity; the specific type of construction activity occurring; and, for fugitive dust, prevailing weather conditions.

A construction-period mass emissions inventory was compiled based on an estimate of construction equipment as well as scheduling and Project phasing assumptions. More specifically, the mass emissions analysis takes into account the following:

- Combustion emissions from operating onsite stationary and mobile construction equipment;
- Fugitive dust emissions from site preparation and soils remediation/grading phases;
- VOC emissions from asphalt paving and architectural coatings; and
- Mobile-source combustion emissions and fugitive dust from worker commute and truck travel.

The California Emissions Estimator Model (CalEEMod) version 2020.4.0 computer program is designed to model construction and operational emissions for land development projects and allows for the input of project- and County-specific information. CalEEMod has separate databases for specific counties and air districts, and the Riverside County database was used for the Project.

The mass emissions thresholds (see Table 4) are based on the rate of emissions (i.e., pounds of pollutants emitted per day). Therefore, the quantity, duration, and the intensity of construction activity are important in ensuring the analysis of the maximum daily emissions scenarios. The Project activities (e.g., grading, building) are identified by start date and duration. Each activity has associated off-road equipment (e.g., loaders, backhoes) and on-road vehicles (e.g., haul trucks, concrete trucks, worker commute vehicles). The CalEEMod input for construction emissions was based on the Project's construction assumptions and default data included in CalEEMod.

Site preparation and grading of the entire Project Site would occur in one phase, which would be followed by construction of residential clusters beginning every 24 to 30 months, or consistent with the sales absorption of the prior units. Construction is anticipated to commence in 2022, pending Project approval. For the purposes of the Traffic Impact Assessment, it was assumed that the Project would be fully constructed by 2023. The following construction durations are anticipated.

- Site preparation - 2 weeks
- Grading/excavation - 12 months
- Building construction - 12 months for each cluster
- Paving - 2 weeks for each cluster

Based on information provided by the developer and supplemented with default computer model values developed by the SCAQMD, it is anticipated that the construction of the Project would involve the following equipment for each construction phase.

- Site preparation - 1 dozer, 1 water truck
- Grading - 1 dozer, 2 scrapers, 1 dump truck, 1 water truck
- Building construction - 1 crane, 3 forklifts, 1 generator set, 3 tractors/loaders/backhoes, 1 welder
- Paving - 1 paver, 1 curb machine, 1 dump truck, 1 cement truck, 1 roller
- Architectural coatings - air compressors

Project grading would involve a cut volume of 90,148 cubic yards (cy) and fill volume of 56,011 cy, and require the export of approximately 34,137 cy of soil from the Project Site, as shown in Figure 5, Grading

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :--- | :---: | :---: | :---: |

Plan. More detailed information related to construction related equipment utilization, construction worker and haul truck information can be found in Appendix A of this document.

Dust control by watering was assumed within the CalEEMod modeling, consistent with the requirements of SCAQMD Rule 403. Rule 403, Fugitive Dust, requires that fugitive dust be controlled with the best available control measures (BACM) so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. SCAQMD Rule 403 requires the application of BACM which includes prewatering and stabilization of soils during clearing and grading activities, stabilization of backfill material, and stabilization of the disturbed site once site preparation and grading activities are complete. Unpaved roads/parking lots/staging areas must be stabilized and vehicles must be limited to travel on established unpaved roads and designated parking lots/staging areas. Export of materials requires that soils are stabilized during loading, transport, and unloading through the use of a watering, sufficient freeboard distance or the use of a cover. Additional requirements may be triggered under high wind conditions (winds in excess of 25 mph ). Additional requirements are detailed in Rule 403. It is noted that construction contractors must also comply with SCAQMD Rules 401, Visible Emissions and 402, Nuisance; no quantitative reductions of particulate emissions are assumed for Rules 401 and 402.

Maximum daily emissions for the Project's peak workday are shown in Table 5, Estimated Maximum Daily Construction Emissions. As shown, all criteria pollutant emissions would be less than their respective thresholds. Thus, impacts to regional construction emissions from the Project would be less than significant.

TABLE 5
ESTIMATED MAXIMUM DAILY CONSTRUCTION EMISSIONS (LBS/DAY)

| Year | VOC | NOx | CO | SOx | PM10 | PM2.5 |
| ---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2022 | 3 | 40 | 19 | $<1$ | 6 | 3 |
| 2023 | 34 | 15 | 17 | $<1$ | 1 | 1 |
| Maximum | $\mathbf{3 4}$ | $\mathbf{4 0}$ | 19 | $<1$ | $\mathbf{6}$ | $\mathbf{3}$ |
| SCAQMD Daily Thresholds (Table 4) | $\mathbf{7 5}$ | $\mathbf{1 0 0}$ | $\mathbf{5 5 0}$ | $\mathbf{1 5 0}$ | $\mathbf{1 5 0}$ | $\mathbf{5 5}$ |
| Exceeds SCAQMD Thresholds? | No | No | No | No | No | No |

lbs/day: pounds per day; VOC: volatile organic compound(s); NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: inhalable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SCAQMD: South Coast Air Quality Management District.

Source: SCAQMD 2019 (Thresholds). CaIEEMod data in Appendix A.

## Construction Emissions - Local/Ambient Air Quality

The localized effects from the onsite portion of daily emissions were evaluated at receptor locations potentially impacted by the Project according to the SCAQMD's localized significance threshold (LST) method, which utilizes onsite emissions rate look up tables and Project-specific modeling, where appropriate. LSTs are applicable to the following criteria pollutants: $\mathrm{NO}_{2}, \mathrm{CO}, \mathrm{PM} 10$, and PM2.5. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or State ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest receptor. For the LST CO and $\mathrm{NO}_{2}$ exposure analysis, receptors who could be exposed for one hour or more are considered. For PM10 and PM2.5 exposure analysis, receptors who could be exposed for 24 hours are considered. The mass rate look-up tables were developed for each source receptor area and can be used to determine if a project may generate significant adverse localized air quality impacts. The City of Moreno Valley is in source-receptor area 24, Perris Valley. The SCAQMD provides LST mass rate look-up tables for projects that are less than or equal to five acres of area disturbed. For projects that exceed five acres, such as the Project, the five-acre LST look-up values can be used as a screening tool

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

to determine which pollutants require detailed analysis. If a project exceeds the LST look-up values, then the SCAQMD recommends that project-specific localized air quality modeling be performed.

When quantifying mass emissions for localized analysis, only emissions that occur on site are considered. Emissions for PM10 and PM2.5 includes dust suppression associated with SCAQMD Rule 403. Consistent with the SCAQMD's LST method guidelines, emissions related to offsite delivery/haul truck activity and employee trips are not considered in the evaluation of localized impacts. The LST analysis for the Project is shown in Table 6. As shown in Table 6, localized emissions would be less than their respective SCAQMD LSTs for all four pollutants. Thus, impacts would be less than significant, and no mitigation is required.

TABLE 6
LOCALIZED CONSTRUCTION POLLUTANT EMISSIONS (LBS/DAY)

|  | NOx | CO | PM10 | PM2.5 |
| :---: | :---: | :---: | :---: | :---: |
| Grading Emissions | 27 | 16 | 5 | 2 |
| SCAQMD LSTs for Site Preparation* | 187 | 999 | 8 | 5 |
| Exceeds SCAQMD Thresholds? | No | No | No | No |

Ibs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SCAQMD: South Coast Air Quality Management District; LST: Localized Significance Threshold.

* Thresholds for Source Receptor Area 24, Perris Valley, 2.5-acre daily site disturbance, 25-meter receptor distance.

Source: SCAQMD 2009.

## Long-Term Operational Emissions

Operational emissions comprised of area, energy, and mobile source emissions were estimated using CalEEMod. Area source emissions include consumer products, routine painting, and landscaping equipment and are based on CalEEMod assumptions for the specific land uses and population. Energy emissions include the use of natural gas for hot water heating.

Mobile source emissions for the Project are based on estimated Project-related trip generation forecasts, as contained in the Project trip generation memorandum (Translutions Inc. 2021). The Project would generate an estimated 1,020 daily vehicle trips. Estimated maximum daily operational emissions for the Project are shown in Table 7.

TABLE 7
ESTIMATED MAXIMUM DAILY OPERATIONAL EMISSIONS

| Source | Emissions (lbs/day) |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
|  | VOC | NOx | CO | SO $_{2}$ | PM10 | PM2.5 |
| Area sources | 28 | 2 | 37 | $<1$ | 4 | 4 |
| Energy source | $<1$ | 1 | $<1$ | $<1$ | $<1$ | $<1$ |
| Mobile sources | 2 | 2 | 25 | $<1$ | 7 | 2 |
| Total Operational Emissions* | 30 | 4 | 63 | $<1$ | 11 | 6 |
| SCAQMD Thresholds | 75 | 100 | 550 | 150 | 150 | 55 |
| Exceeds? | No | No | No | No | No | No |

Ibs/day: pounds per day; VOC: volatile organic compounds; NOx: nitrogen oxides; CO: carbon monoxide; SO2: sulfur dioxide; PM10: respirable particulate matter 10 microns or less in diameter; PM2.5: fine particulate matter 2.5 microns or less in diameter; SCAQMD: South Coast Air Quality Management District.

Some totals may not add due to rounding
Note: CalEEMod model data sheets are included in Appendix A.

|  | Less Than <br> Potentially <br> Significant <br> Impact | Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

## Cumulative Impacts

The Riverside County portion of the SoCAB is a nonattainment area for $\mathrm{O}_{3}$, PM 10 , and PM 2.5 . The Project would generate these pollutants during construction, and short-term cumulative impacts related to air quality could occur if Project construction and nearby construction activities were to occur simultaneously. In particular, with respect to local impacts, cumulative construction particulate (i.e., fugitive dust) impacts are considered when projects are located within a few hundred yards of each other. As described in the analysis above, construction emissions would be below the SCAQMD regional and localized significance thresholds. Therefore, short-term construction emissions of nonattainment pollutants would not be cumulatively considerable and Project impacts would be less than significant.

SCAQMD's policy with respect to cumulative impacts associated with criteria pollutants and their precursors is that impacts that would be directly less than significant would also be cumulatively less than significant (SCAQMD 2003). As shown in Tables 5 through 7 and discussed above, the Project's construction and operational emissions would not exceed SCAQMD thresholds. Therefore, consistent with SCAQMD policy, the cumulative construction and operational impacts of the Project would also be less than significant, and no mitigation is required.
c) Expose sensitive receptors to substantial pollutant concentrations?

## Response:

Less Than Significant Impact. Exposure of sensitive receptors is addressed for the following situations: CO hotspots; criteria pollutants from onsite construction; and TACs from onsite construction.

## Carbon Monoxide Hotspot

A CO hotspot is an area of localized CO pollution caused by severe vehicle congestion on major roadways, typically near intersections. If a project increases average delay at signalized intersections operating at level of service (LOS) E or F or causes an intersection that would operate at LOS D or better without the project to operate at LOS E or $F$ with the project, a quantitative screening is required. As discussed in Section XVII. Transportation, implementation of the Project would result the intersection of Sycamore Canyon Boulevard and Fair Isle Drive currently operating at LOS D to operate at LOS E. As a result of Senate Bill 743 (SB 743), a Project's impacts on vehicular Level of Service (LOS) are no longer considered an environmental impact. Therefore, the Project's effects on vehicular LOS are disclosed separately in the Project's Traffic Impact Analysis, provided as Appendix K. Recommended LOS-related conditions of approval are provided therein to ensure consistency with City LOS standards that are contained in the Circulation Element. Roadway improvements that are consistent with the Circulation Element of the General Plan would ensure that the LOS would not result in congested conditions that would have the potential for a CO hotspot. In addition, with the advent of catalytic converters and improved vehicle fuel efficiency standards, both the State of California and federal ambient air quality standards for carbon monoxide have not been exceeded for decades. As such, the Project would neither cause new severe congestion nor significantly worsen existing congestion. There would be no potential for a CO hotspot or exposure of sensitive receptors to substantial, Project-generated local CO emissions.

## Criteria Pollutants from Onsite Construction

Exposure of persons to $\mathrm{NO}_{2}, \mathrm{CO}, \mathrm{PM} 10$, and PM2.5 emissions is discussed in the LST analysis under the response to threshold question III(b) above. As discussed, there would be a less than significant impact and no mitigation is required.

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## Toxic Air Contaminant (Diesel PM) Emissions from Onsite Construction

Construction activities would result in short-term, Project-generated emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment used for site preparation (e.g., demolition, excavation, and grading); paving; and building construction. CARB identified diesel PM as a TAC in 1998. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer time period. According to the Office of Environmental Health Hazard Assessment, health risk assessments-which determine the exposure of sensitive receptors to TAC emissions-should be based on a 30- to 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with a project.

For the Project, there would be little off-road, heavy-duty diesel equipment in operation, and the construction period would be short when compared to a 30- to 70-year exposure period. When considering these facts combined with the highly dispersive properties of diesel PM and additional reductions in particulate emissions from newer construction equipment, as required by USEPA and CARB regulations, it can be concluded that TAC emissions during construction of the Project would not expose sensitive receptors to substantial emissions of TACs. There would be a less than significant impact and no mitigation is required.

| d)Result in other emissions (such as those leading <br> to odors adversely affecting a substantial number <br> of people? | $\square$ | $\square$ | $\square$ |
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## Response:

Less than Significant Impact. The Project would not result in other emissions that would affect a substantial number of people. Objectionable odors are generally associated with agricultural activities; landfills and transfer stations; the generation or treatment of sewage; the use or generation of chemicals; food processing; or other activities that generate unpleasant odors (SCAQMD 1993).

During construction, the Project would operate equipment that may generate odors resulting from onsite construction equipment's diesel exhaust emissions or paving operations. However, these odors would be temporary and would dissipate rapidly from the source with an increase in distance.

Potential operational odors could be created by cooking activities associated with residential uses. These odors would be similar to existing residential uses surrounding the Project Site and throughout the City and odors would be confined to the immediate vicinity of the proposed dwelling units. The Project would also be regulated from nuisance odors and other objectionable emissions by SCAQMD Rule 402. Rule 402, Nuisance, prohibits discharge from any source of air contaminants or other material which would cause injury, detriment, nuisance, or annoyance to people or the public. Compliance with Rule 402, which the Project must do, would ensure that no significant odor impacts would result. Therefore, other emissions would be considered less than significant, and no mitigation is required.

## IV. BIOLOGICAL RESOURCES - Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

## Response:

Less than Significant with Mitigation. An impact analysis for sensitive biological resources potentially on the Project Site was prepared by Dudek in 2022 (Dudek 2022c, provided as Appendix B). Focused plant and burrowing owl (Athene cunicularia) surveys were conducted by Psomas in 2021 and the results of those surveys are detailed in the July 2021 survey reports (Appendix B). Also, an MSHCP Consistency Analysis and Determination of Biologically Equivalent or Superior Preservation Report was prepared by Dudek in October 2022 (Dudek 2022b).

## Special-Status Plants

The focused plant survey determined one special status plant species, paniculate tarplant (Deinandra paniculata), is present on the Project Site. This species is not covered by the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). As a species with a California Rare Plant Rank (CRPR) of 4.2, it is considered to be of limited distribution and on a "watch list". Multiple occurrences of this species are present within the Project region. Species with a CRPR of 4.2 are not generally considered constraints on development and impacts to this species would be less than significant. No mitigation would be required.

One additional special status plant species, Parry's spineflower (Chorizanthe parryi var. parryi), has potential to occur in the Project Site. Because sufficient growing conditions for Parry's spineflower could not be confirmed for the 2021 survey year, species absence from the Project Site cannot be absolutely determined. Impacts to this species are fully covered under the MSHCP; therefore, compliance with the MSHCP offsets potential direct and indirect impact to this species and impacts would be less than significant. No mitigation is required.

## Special-Status Wildlife

One federally listed threatened species (coastal California gnatcatcher [Polioptila californica californica]) was detected within the Project Site; however, this species is a fully covered species under the MSHCP. Therefore, compliance with the MSHCP offsets the Project's direct and indirect impacts to this species with respect to the federal Endangered Species Act and the species' status as a California Species of Special Concern. Loss of an active nest of this species due to construction activities, however, would be considered a significant impact under CFW code and the federal Migratory Bird Treaty Act (MBTA). Impacts would be reduced to less than significant levels by implementing MM BIO-1, which requires a pre-construction nesting bird survey be conducted if ground-disturbing and/or vegetation clearance activities are scheduled to occur during the avian nesting season (typically February 15 through August 31).

One federally listed endangered wildlife species (San Bernardino kangaroo rat [Dipodomys merriami parvus]) has a low potential to occur within the Project Site and one federally listed endangered and statelisted threatened wildlife species (Stephen's kangaroo rat [Dipodomys stephensi]) has a moderate potential to occur within the Project Site. San Bernardino kangaroo and Stephen's kangaroo rat are fully covered under the MSCHP; therefore, compliance with the MSHCP offsets potential direct and indirect impacts to these species. Furthermore, the Project is also within the Stephen's Kangaroo Rat Habitat Conservation Plan Area, which provides take authorization for Stephen's kangaroo rat within its boundaries.

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One California Fully Protected wildlife species (white-tailed kite) has a low potential to nest and moderate potential to forage within the Project Site. This species is fully covered under the MSCHP; therefore, compliance with the MSHCP offsets potential loss of foraging and nesting habitat of this species. Loss of an active nest of this species due to construction activities, however, would be considered a significant impact under CDFW code and the federal MBTA. Impacts would be reduced to less than significant levels by implementing MM BIO-1, which requires a pre-construction nesting bird survey to be conducted by a qualified biologist.

In addition, two non-listed special status species (San Diego banded gecko [Coleonyx variegatus abbotti] and loggerheaded shrike [Lanius ludovicianus]) have moderate potential to occur within the Project Site. Two other non-listed special status species (red diamond rattlesnake [Crotalus ruber] and coast horned lizard [Phrynosoma blainvilli]) have a high potential to occur within the Project Site. All of these species are fully covered under the MSCHP; therefore, compliance with the MSHCP offsets potential direct and indirect impacts to these species. Loss of an active nest of loggerhead shrike due to construction activities, however, would be considered a significant impact under CDFW code and the federal MBTA. Impacts would be reduced to less than significant levels by implementing pre-construction nesting bird requirements specified in MM BIO-1.

## Burrowing Owl

The Project Site and vicinity contains habitat suitable for burrowing owl, a non-listed special status species. A focused burrowing owl survey was conducted in 2021 and burrowing owl were determined to be absent. If burrowing owl should colonize the Project Site or 500 -foot vicinity prior to initiation of construction activities, impacts to burrowing owl could be significant. Implementation of MM BIO-2, which requires a preconstruction survey for burrowing owl be conducted, would reduce any potential impact to less than significant levels.
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?


## Response:

No Impact. There are no special-status vegetation communities as defined by the CDFW within the Project Site; therefore, the Project would not result in direct or indirect impacts to special-status vegetation communities.

Drainage features subject to the jurisdiction of CDFW, RWQCB, USACE are present on the Project Site and some would be directly impacted by the Project. These features are also considered riverine features under the MSHCP. None of the features, however, support riparian or wetland vegetation and impacts are assessed under CEQA Checklist Question: Biological Resources C, below.
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?


## Response:

Less than Significant with Mitigation. A jurisdictional delineation was conducted for the Project Site in 2022 by Dudek (Dudek 2022b, provided as Appendix B). Based on current Project design, approximately

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0.08 acres of waters jurisdictional to the RWQCB and CDFW, and 0.05 acres of waters jurisdictional to the USACE would be permanently impacted by the Project. The Project would also result in direct impacts to approximately 0.05 acres of riverine features pursuant to the MSHCP. Fuel modification zones would avoid riverine areas. Impacts to drainage features that are jurisdictional to the USACE, RWQCB, CDFW, and under the MSHCP would be considered significant without mitigation. MM BIO-3 requires that the Developer obtain regulatory permits. Note that a Determination of Biologically Equivalent or Superior Preservation (DBESP) has already been approved by the RCA for the project. MM BIO-4 specifies minimum compensatory mitigation requirements for impacts to jurisdictional waters. Implementation of MM BIO-3 and MM BIO-4 would reduce these impacts to a less than significant level.
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with an established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?


## Response:

## Less than Significant with Mitigation.

## Nesting Birds

Project construction could result in direct and indirect impacts to nesting birds, including the loss of nests, eggs, and fledglings if ground-disturbing activities occur during the nesting season (generally February 15 through August 31). Construction activities during this time may result in reduced reproductive success and may violate the federal Migratory Bird Treaty Act and California Fish and Game Code. If construction (including any ground-disturbing activities) occurs during the nesting season, a nesting bird survey must be conducted by a qualified biologist prior to grading activities. If nesting birds are observed within or adjacent to the construction activities, avoidance of active bird nests shall occur as determined by the qualified biologist to ensure compliance with these regulations. Implementation of MM BIO-1 would reduce impacts to less than significant levels.

## Wildlife Corridors and Nursery Sites

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that function as stepping stones for wildlife dispersal. The Project Site and the surrounding environment to the north, east, and west contain open scrub habitat associated with Box Springs Mountain that likely functions as open habitat, but does not function as a corridor for wildlife. Additionally, the area is not identified as a wildlife movement corridor by the MSHCP. The Project Site does not function as a wildlife corridor and does not support any wildlife nursery sites. As a result, implementation of the Project would not result in impacts to these resources.


## Response:

Less than Significant Impact. The Heritage Trees Ordinance, which is codified as Section 9.17.030 (G) of the City of Moreno Valley Municipal Code, states that no tree taller than 15 feet or with a diameter of greater than 15 inches may be removed within City Limits. The mature trees located in the Eucalyptus alliance shown on Figure 6 of Appendix B are greater than 15 feet tall. Removing any of these trees would
conflict with the City ordinance. These trees are located beyond the edge of the Project's grading footprint; however, individual eucalyptus trees may be impacted due to the Project's fuel modification requirements, which necessitate thinning and removal of certain plant species. Section 9/17/030(G) allows removal of heritage trees to protect against hazardous conditions to property, such as would be needed to comply with fuel modification zone requirements. However, Implementation of RR BIO-1 would ensure all Heritage Trees requiring removal as a result of this project would be sufficiently mitigated by replacement trees, and staff review. Accordingly, impacts would be less than significant.


## Response:

Less than Significant with Mitigation. The Project Site occurs within the boundaries of two regional Habitat Conservation Plans: the MSHCP and the Stephens' Kangaroo Rat Habitat Conservation Plan.

## MSHCP

The Project is under the jurisdiction of the City of Moreno Valley and the Project Site is within the MSHCP Plan Area. Compliance with the MSHCP is mandatory and any conflict with the MSHCP would be likely be a significant impact.

The Project Site is not located within an MSHCP Conservation Area or within a designated Criteria Cell. To prevent conflicts with the applicable sections of the MSHCP, the Developer must do the following: pay the applicable MSHCP Development Mitigation Fee (MM BIO-5); implement resource avoidance measures associated with burrowing owl and riparian/riverine resources (MM BIO-2 and MM BIO-4); and comply with MSHCP Urban/Wildlife Interface Guidelines (MM BIO-6 and RR AES-1).

The Project is located adjacent to a proposed conservation area and has connectivity to areas described for conservation; therefore, the MSHCP Urban/Wildlife Interface Guidelines are applicable. Each of the Urban/Wildlife Interface Guidelines are further discussed below.

- Drainage/Toxics: The Project includes the construction of two water quality basins. With the development of a Stormwater Pollution Prevention Plan (MM BIO-6), the Project would be consistent with these requirements of the MSHCP.
- Lighting/Noise: The Project is located immediately north of existing residential development and adjacent to Morton Road. The Project would incorporate a setback consisting of open space within the northern portion of the Project Site. Furthermore, a lighting plan would be prepared noting that all new lighting would be shielded and down-cast, such that the light is not cast onto adjacent areas (RR AES-1). Therefore, night lighting and noise would not impact existing or future MSHCP Conservation Areas and the Project would be consistent with these requirements of the MSHCP.
- Barriers: The Project does not include fencing or other barriers that would impede wildlife. Furthermore, the Project Site does not function as a corridor for wildlife. Additionally, the area is not identified as a wildlife movement corridor by the MSHCP; therefore, the Project would be consistent with these requirements of the MSHCP.
- Grading/Land Development: No manufactured slopes would extend within existing or planned Conservation Areas as part of development of the Project. Therefore, the Project would be consistent with these requirements of the MSHCP.
- Invasives: Invasive species provided in MSHCP Table 6-2 are not to be used in development or restoration plan activities for projects adjacent to conservation areas. As described in MM BIO-6,
the Project shall not use invasive species as defined in the MSHCP Table 6-2 within its landscape plan. With implementation of this measure, the Project would be consistent with this requirement of the MSHCP.
- Fuel Modification: Weed abatement and fuel modification zones do not encroach into existing or planned Conservation Areas; therefore, the Project would be consistent with these requirements of the MSHCP.

With the project design features and mitigation measures, including the development of two combination detention and bioretention basins (e.g., Basins A and B), and implementation of MM BIO-6 and RR AES1, the Project is consistent with Section 6.1.4 of the MSHCP regarding Urban / Wildlands interface.

The Project Site supports riverine resources as defined by Section 6.1.2 of the MSHCP. The Project would result in the permanent loss of approximately 0.05 acres of MSHCP riverine resources. A DBESP has been prepared for the project identifying avoidance, minimization, and mitigation measures for impacts to riverine resources. The DBESP was reviewed and approved by the RCA in 2022 and is attached in Appendix B. With implementation of MM BIO-4 which specifies minimum compensatory mitigation requirements, the Project is consistent with Section 6.1.2 of the MSHCP regarding protection of species associated with riparian/riverine areas and vernal pools.

The Project Site occurs within an area identified by the MSHCP as requiring burrowing owl surveys. With implementation of MM BIO-2, which requires a pre-construction burrowing owl survey, the Project would be consistent with the MSHCP burrowing owl requirements and Criteria Area Species Survey Area discussed in Section 6.3.2 of the MSHCP.

As a result of implementation of MM BIO-2, MM BIO-4, MM BIO-5, MM BIO-6, MM BIO-7, and RR AES-1, potential conflicts with the MSHCP, as explained above, would be avoided and no impacts are anticipated.

## Stephens' Kangaroo Rat Habitat Conservation Plan

The Project Site is within the Stephens' Kangaroo Rat Habitat Conservation Plan boundary. With payment of the Stephens' Kangaroo Rat Habitat Conservation Plan Development Mitigation Fee (MM BIO-7), the Project would be consistent with the Stephens' Kangaroo Rat Habitat Conservation Plan and less than significant impacts would result from the Project.

## Mitigation Program:

## Regulatory Requirements:

RRAES-1 The Developer shall prepare a Lighting Plan that provides the type and location of proposed exterior lighting and signage, subject to the review and approval of the City's Development Services Department. All new lighting shall be shielded and down-cast, such that the light is not cast onto adjacent properties or visible from above.

RR BIO-1 The Developer shall obtain a tree removal permit from the City, if fuel modification, grading, or other improvements require removal of any heritage trees. The Developer would incorporate mitigation trees, replacing removed heritage trees, resulting from a tree removal permit into the Project's final landscape plan.

## Mitigation Measures:

MM BIO-1: To maintain compliance with the Migratory Bird Treaty Act and California Fish and Game Code, if ground-disturbing and/or vegetation clearance activities are scheduled to occur during the avian nesting season (typically February 15 through August 31), a preconstruction nesting bird survey shall be conducted by a qualified biologist within the

Project Site and a 500 -foot buffer around the Project Site. Surveys shall be conducted within 3 days prior to initiation of activity and shall be conducted between dawn and noon.

If an active nest is detected during the nesting bird survey, avoidance buffers shall be implemented as determined by a qualified biologist. The buffer shall be of a distance to ensure avoidance of adverse effects to the nesting bird by accounting for topography, ambient conditions, species, nest location, and activity type. All nests shall be monitored as determined by the qualified biologist until nestlings have fledged and dispersed or it is otherwise confirmed that the nest has been unsuccessful or abandoned.

MM BIO-2: The Developer shall have a qualified biologist conduct a pre-construction survey for burrowing owl in accordance with the March 2006 Burrowing Owl Survey Instructions for the Western Riverside County Multiple Species Habitat Conservation Plan Area. This survey shall occur within 30 days prior to ground-disturbance activities. A minimum of one survey site visit within the described time frame prior to disturbance is required to confirm presence or absence of owls on the site. If burrowing owl are present within the survey area, take of active nests shall be avoided as determined by a qualified biologist.

MM BIO-3: For all features identified as jurisdictional that cannot be avoided, the Developer shall obtain permits from the respective agencies prior to the initiation of construction activities. These permits include a Clean Water Act (CWA) Section 404 permit from the USACE, a CWA Section 401 water quality certification from the Regional Water Quality Control Board, and a CDFW Section 1602 Notification of Lake or Streambed Alteration.

The Developer shall implement and comply with all measures required by the jurisdictional permits. Mitigation for the loss of jurisdictional resources shall be negotiated with the resource agencies (US Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife) during the regulatory permitting process.

MM BIO-4: The Developer shall compensate for impacts to jurisdictional waters and riparian/riverine areas by providing a $1: 1$ ratio of offsite land within the Santa Ana Watershed or an adjacent watershed to be acquired for the purpose of In -Perpetuity Preservation, or through the purchase of mitigation credits at an established off-site Mitigation Bank or In-lieu Fee Program. Mitigation proposed on land acquired for the purpose of in-perpetuity mitigation that is not part of an agency-approved mitigation bank or in-lieu fee program shall include the preservation, creation, restoration, and/or enhancement of similar habitat within the Santa Ana Watershed or an adjacent watershed pursuant to a Habitat Mitigation and Monitoring Plan (HMMP) to be approved by the Lead and Responsible agencies. The HMMP shall be prepared prior to any impacts and it shall provide details as to the implementation of mitigation, maintenance, future monitoring, and management. The goal of the mitigation shall be to preserve, create, restore, and/or enhance similar habitat with equal or greater function and value than the affected habitat.

MM BIO-5: The Developer shall pay the applicable MSHCP Development Mitigation Fee prior to initiation of grading activities.

MM BIO-6: The following avoidance and minimization measures shall be implemented during Project construction activities:

- Construction limits along the northern and eastern boundaries of the Project shall be clearly marked so that adjacent native vegetation is avoided.
- Staging and storage areas for spoils, equipment, materials, fuels, lubricants, and solvents shall be located within the designated impact area or adjacent developed areas.

MM BIO-7: The Developer shall pay the applicable Stephens' Kangaroo Rat Habitat Conservation Plan Development Mitigation Fee prior to initiating any grading activities.

## V. CULTURAL RESOURCES - Would the project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

- A Stormwater Pollution Prevention Plan shall be developed and implemented.
- Invasives: Invasive species identified in Table 6-2 of the MSHCP shall not be used in development landscape plans or restoration plan activities.

Response:
No Impact. A Phase I cultural resources survey was completed by CRM Tech in 2007 for the Project Site (Appendix C), which included a records search, historical research, a systematic field survey and consultation with Native American representatives. As a result of the survey, two archaeological sites, 33-015937 (CA-RIV-8274/H) and 33-015938 (CA-RIV-8275), and a prehistoric isolate, 33-015967, were identified and recorded within the Project Site.

In order to evaluate their qualifications as "historical resources," as defined by CEQA, archaeological testing was recommended on the two sites. The isolate, which consisted of a hand-held grinding stone that appears to have been used as a mano and a pestle, was not considered a potential "historical resource" due to its lack of contextual integrity and its limited ability to contribute information to the study of prehistory (CRM Tech 2018).

Site 33-015937 (CA-RIV-8274/H) consists of both prehistoric and historic-period components, including bedrock milling features, building foundations, a well, a cistern, and a refuse deposit. CA-RIV-8275 consists of two bedrock milling features (CRM Tech 2018).

Sites 33-015937 and 33-015938 were subsequently evaluated in 2007 with a testing program, which included surface collection of artifacts and the excavation of shovel test pits, standard archaeological units, and mechanical trenches. Also, focused historical research was completed on Site 33-015937. No subsurface cultural remains were discovered during excavation, and the historical research did not identify any significant persons or events associated with the sites, nor any other historical quality of distinction. Therefore, the two sites were determined not to meet CEQA definition of "historical resources" (Chambers Group 2007).

In 2018, an Update to Previous Cultural Resources Studies was prepared by CRM Tech for the Project Site (Appendix C). This updated evaluation included a standard one-mile-radius records search, which was conducted November 14, 2018, at the Eastern Information Center (EIC). The results of the records search indicate that in addition to the survey and testing reports summarized above, another cultural resources survey also took place within the project boundaries in 2007. That survey was focused on the site of a wooden power pole that was slated to be replaced, and no cultural resources were identified in the vicinity. No other studies have occurred in the Project area since 2007 and Sites 33-015937 and 33-015938 and Isolate 33-015967 remain the only cultural resources recorded in the immediate vicinity. As stated above, all three of these known cultural resources were previously determined not to constitute "historic resources" under CEQA provisions and were not further evaluated in the 2018 updated cultural resource study.

Also in 2018, additional historical background research was conducted with the purpose of supplementing and updating the findings of the 2007 studies with information from sources that have become available since then, such as aerial photographs taken between 1966 and 2018, accessible at the Nationwide Environmental Title Research Online website and through the Google Earth software. As mentioned in the 2007 survey report, an apparent homestead was once located in the northeast portion of the Project area,

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at the location of Site 33-015937. The aerial photographs confirmed the presence of at least one residence and several ancillary structures at that location during the 1960s-1970s. By 1994, all of the buildings and structures had been removed, and some grading or clearing had occurred in the Project area for unknown purposes.

Finally the 2018 updated cultural resource study included a field inspection that focused primarily on the locations of the three previously recorded cultural resources, and the rest of the Project Site was inspected along the southern and western perimeters for an overview of the current conditions of the property. The field inspection revealed that features of Sites 33-015937 and 33-015938, such as the bedrock milling features and the structural remains, were still present in a similar condition as in 2007, but the ground stone artifact at Isolate 33-015967 could not be located. No other potential cultural resources were encountered within or adjacent to the Project boundaries during the field inspection.

Based on these findings, no historical resources eligible for the California Register of Historic Resources or a local register are present within or adjacent to the Project Site. Therefore, the Project would not result in any direct or indirect impacts to historic resources pursuant to CEQA, and no mitigation is required.
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to $\S 15064.5$ ?


## Response:

Less Than Significant with Mitigation. As described in more detail above and in the cultural reports (Appendix C), given the presence of archaeological resources in the vicinity of the Project, there is the possibility that undiscovered intact cultural resources, including archaeological resources may be present below the surface in native sediments. This would represent a significant impact. However, implementation of MM CUL-1, which requires that any suspected cultural (archaeological) resources inadvertently unearthed during grading be evaluated by a qualified archaeologist to determine their significance and make recommendations for the appropriate course of action, would reduce this impact to a level considered less than significant. Also, MM CUL-2 has been incorporated, which requires archaeological monitoring for all ground disturbance activities that occur within 30 meters (100 feet) of Sites 33-015937 and 33-015938. With implementation of these measures, impacts to archaeological resources would be reduced to a less than significant level.
c) Disturb any human remains, including those interred outside of formally dedicated cemeteries?


## Response:

Less than Significant Impact. There is no indication that human remains are present within the Project Site, including those interred outside formal cemeteries. The records searches conducted as part of the Project's Cultural Report indicates no evidence of human remains on or near the Project Site (CRM Tech 2018). In the unlikely event of an unanticipated encounter with human remains in Project Site, the California Health and Safety Code and the California Public Resources Code require that any activity in the area of a potential find be halted and the County Coroner be notified, as described in RR CUL-1. Compliance with RR CUL-1 would ensure that impacts would be less than significant.

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## Mitigation Program:

## Regulatory Requirement:

RR CUL-1: In the event of the discovery of human remains, the developer shall contact the County coroner immediately. If human remains of Native American origin are discovered during ground-disturbing activities, the developer shall comply with the State laws relating to the disposition of Native American burials that fall within the jurisdiction of the Native American Heritage Commission (NAHC; PRC §5097). According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that excavation is stopped near discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the California Native American Heritage Commission shall be notified, and appropriate measures provided by State law shall be implemented to determine the most likely living descendant(s). Disposition of the remains shall be overseen by the most likely living descendants to determine the most appropriate means of treating the human remains and any associated grave artifacts.

## Mitigation Measure

MM CUL-1: Prior to the issuance of a demolition permit, the Developer shall submit the name and qualifications of a qualified archaeologist to the City of Moreno Valley Community Development Department for review and approval. Once approved, the qualified archaeologist shall be retained by the Developer. In the event that suspected cultural (archaeological) resources or tribal cultural resources are inadvertently unearthed during excavation activities, the contractor shall immediately cease all earth-disturbing activities within a 100-foot radius of the area of discovery. The Project contractor or Developer shall contact the qualified archaeologist to request an evaluation of the significance of the find and determine an appropriate course of action. If avoidance of the resource(s) is not feasible, salvage operation requirements pursuant to Section 15064.5 of the State California Environmental Quality Act Guidelines shall be followed in consultation with the City. After the find has been appropriately avoided or mitigated, work in the area may resume.

MM CUL-2: Archaeological monitoring will be conducted by a qualified archaeologist for all ground disturbance activities that occur within 30 meters (100 feet) of Sites 33-015937 and 33-015938, which are identified in greater detail within the Project's cultural reports (Appendix C). If any suspected cultural (archaeological) resources are detected, the procedures identified in MM CUL-1 will be implemented.

## VI. ENERGY - Would the project:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

## Response:

Less Than Significant Impact. The State of California has adopted efficiency design standards within the Title 24 Building Standards and California Green Building Standards Code (CALGreen) requirements (RR ENE-1). Title 24 of the California Code of Regulations (CCR, specifically, Part 6) is California's Energy Efficiency Standards for Residential and Non-residential Buildings. Title 24 was established by the California Energy Commission (CEC) in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and to provide energy efficiency standards for residential and non-residential buildings. The 2019 California Green Building Standards Code (24 CCR, Part 11), also known as the CALGreen Code, contains mandatory requirements for new residential and nonresidential buildings throughout California (RR ENE-2). The development of the CALGreen Code is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, costeffective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the Code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impacts during and after construction. The regulation of energy efficiency for residential and non-residential structures is established by the CEC and its California Energy Code.

SCE and the Southern California Gas are utility companies that would provide electrical and natural gas services to the Project Site. Compliance with energy efficiency and conservation policies and regulations is discussed in this section.

The City of Moreno Valley has adopted Moreno Valley 2040 Plan which serves as the City's General Plan pursuant to State law. Section 7.6 Energy Resources of the Moreno Valley 2040 Plan contains attainable conservation goals and policy actions that would assist in energy conservation within the community. This Section discusses how electricity production is generated from burning fossil fuels and that transportation is currently reliant on the consumption of gasoline and diesel fuels. The advent of electric vehicles is also increasingly displacing the need to consume gasoline and diesel for transportation. The State of California leads the country in the adoption of electric vehicles (Moreno Valley 2021d).

The City of Moreno Valley further adopted a Climate Action Plan in June, 2021 that established a comprehensive Green House Gas reductions strategy for the City. Some of the regulatory policies applicable to new residential developments (operational and construction-related measures) are included herein for explanation, and which will be added as conditions of approval to the Project, to further mitigate the wasteful use of energy resources. They include the following which have been added as Regulatory Requirements below (RR ENE -3) :

1. Require new multi-family residential development to reduce the need for external trips by providing useful services/facilities on-site such as electric vehicle infrastructure. (Policy TR-9)
2. incentives such as streamlined permitting or bonus density for new multi-family buildings and reroofing projects to install "cool" roofs consistent with the current California Green Building Code (CALGreen) standards for commercial and industrial buildings. (Policy R-1)
3. Require new construction and major remodels to install interior real-time energy smart meters in line with current utility provider (e.g., MVU, SCE) efforts. (Policy R-2)

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
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4. Reduce emissions from heavy-duty construction equipment by limiting idling based on South Coast Air Quality Management District (SCAQMD) requirements and utilizing cleaner fuels, equipment, and vehicles.
a. Require provision of clear signage reminding construction workers to limit idling
b. Require project applicants to limit GHG emissions through one or more of the following measures:
i. substitute electrified or hybrid equipment for diesel/gas powered equipment
ii. Use alternative fueled equipment on site
iii. Avoid use of on-site generators. (Policy OR-2)

## Construction Impacts

Project construction would require the use of construction equipment for demolition, grading, and building activities. All off-road construction equipment is assumed to use diesel fuel. Construction also includes the vehicles of construction workers and vendors traveling to and from the Project Site.

Off-road construction equipment use was calculated from the equipment data (mix, hours per day, horsepower, load factor, and days per phase) provided in the CalEEMod construction output files included in Appendix A. The total horsepower hours for the Project was then multiplied by fuel usage estimates per hours of construction activities included in the Off-Road Model.

Fuel consumption from construction worker, vendor, and delivery/haul trucks was calculated using the trip rates and distances provided in the CaIEEMod construction output files. Total vehicle miles traveled (VMT) was then calculated for each type of construction-related trip and divided by the corresponding miles per gallon factor using CARB's EMissions FACtor (EMFAC) 2017 model. EMFAC provides the total annual VMT and fuel consumed for each vehicle type. Construction vendor and delivery/haul trucks were assumed to be heavy-duty diesel trucks.

As shown in Table 8, Energy Use During Construction, a total of 15,871 gallons of gasoline and 23,135 gallons of diesel fuel is estimated to be consumed during Project construction.

TABLE 8
ENERGY USE DURING CONSTRUCTION

| Source | Gasoline <br> (gallons) | Diesel <br> (gallons) |
| :--- | :---: | :---: |
| Off-road Construction Equipment | 10,413 | 10,457 |
| Worker commute | 4,373 | 19 |
| Vendors | 1,070 | 17 |
| On-road haul | 15 | 12,642 |
| Totals |  | $\mathbf{1 5 , 8 7 1}$ |
| Sources: based on data from CalEEMod, OffRoad, and EMFAC2017. Energy data <br> can be found in Appendix D. |  |  |

Fuel energy consumed during construction would be temporary in nature and would not represent a significant demand on energy resources. The Project would also implement best management practices such as requiring equipment to be properly maintained and minimize idling (as further stipulated under RR ENE-3). Furthermore, there are no unusual Project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in other parts of the State. Energy used in the construction of the Project would enable the development of buildings

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that meet the latest energy efficiency standards as detailed in California's Title 24 building standards (RR ENE-1). Therefore, the proposed construction activities would not result in inefficient, wasteful, or unnecessary fuel consumption and a less than significant impact would occur.

## Operational Impacts

The Project would promote building energy efficiency through compliance with energy efficiency standards (Title 24 and CALGreen [RR ENE-2]) and Climate Action Plan policies (RR ENE-3). The development of the Project is required to comply with the latest building energy efficiency standards adopted by the State of California. The estimated energy consumption attributable to the Project as calculated by CalEEMod is shown in Table 9 below.

TABLE 9
ENERGY USE DURING OPERATIONS

| Land Use | Gasoline/yr <br> (gallons) | Diesel/yr <br> (gallons) | Natural Gas <br> (kBTU/yr) | Electricity <br> (kWh/yr) |
| :---: | :---: | :---: | :---: | :---: |
| Project Land Uses | 120,409 | 1,533 | $2,447,660$ | 609,342 |

kBTU: kilo-British thermal units; kWh: kilowatt hour; yr: year
Sources: Energy data can be found in Appendix D.

Adherence to the 2019 Building Energy Efficiency Standards would result in a reduction of energy use as compared to previous energy standards (CEC 2018). Therefore, the new buildings would be more energy efficient than existing buildings proximate to the Project Site and would be among the most energy efficient buildings in the City. In terms of whether the operations phase would result in a wasteful, inefficient, or unnecessary consumption of energy resources, during Project operation, the Project would add new energy efficient units to the housing inventory within Riverside County, in keeping with new regulatory requirements that stipulate reduced energy usage. Therefore, the Project would not result in an inefficient, wasteful, or unnecessary consumption of energy. There would be a less than significant impact, and no mitigation is required.

## Mitigation Program

## Regulatory Requirements:

RR ENE-1 The Project must be designed in accordance with the applicable Title 24 Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations [CCR], Title 24, Part 6). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods.

RR ENE-2 The Project is subject to the California Green Building Standards Code (CALGreen) (CCR, Title 24, Part 11). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods.

RR ENE-3 The Project shall comply with applicable policies of the Moreno Valley Climate Action Plan by complying with meeting the following policies:

1. Require new multi-family residential development to reduce the need for external trips by providing useful services/facilities on-site such as electric vehicle infrastructure. (Policy TR-9)
2. incentives such as streamlined permitting or bonus density for new multi-family buildings and reroofing projects to install "cool" roofs consistent with the current

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California Green Building Code (CALGreen) standards for commercial and industrial buildings. (Policy R-1)
3. Require new construction and major remodels to install interior real-time energy smart meters in line with current utility provider (e.g. MVU, SCE) efforts. (Policy R-2)
4. Reduce emissions from heavy-duty construction equipment by limiting idling based on South Coast Air Quality Management District (SCAQMD) requirements and utilizing cleaner fuels, equipment, and vehicles.
a. Require provision of clear signage reminding construction workers to limit idling
b. Require project applicants to limit GHG emissions through one or more of the following measures:
i. substitute electrified or hybrid equipment for diesel/gas powered equipment
ii. Use alternative fueled equipment on site
iii. Avoid use of on-site generators. (Policy OR-2)
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

## Response:

No Impact. The Project would be required to comply with the State of California's Title 24 Energy Efficiency Standards and Title 24 Green Building Standards (RR ENE-1 and RR ENE-2, respectively) which are both adopted by a local ordinance in the City, and the Project would comply with the City's Climate Action Plan (RR ENE-3). As discussed previously, the latest building standards would incorporate the CEC's building energy efficiency standards, which would reduce energy consumption through the incorporation energy efficiency requirements. This would result in efficient use of electricity, natural gas, and water as compared to older buildings developed under less stringent Title 24 requirements.

Because the Project would comply with the latest energy efficiency standard, the Project would be consistent with energy conservation goals established within the Moreno Valley 2040 Plan and the City's Climate Action Plan (Moreno Valley 2021c, 2021d). As such, the Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency and no impact would occur.

## Mitigation Program

## Regulatory Requirements:

RR ENE-1 The Project must be designed in accordance with the applicable Title 24 Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations [CCR], Title 24, Part 6). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods.

RR ENE-2 The Project is subject to the California Green Building Standards Code (CALGreen) (CCR, Title 24, Part 11). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods.

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## VII. GEOLOGY AND SOILS - Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to https://www.conservation.ca.gov/cgs/Documents ISP 042.pdf

## Response:

No Impact. The Project Site is not located within an Alquist-Priolo Earthquake Fault Zone. According to the Geotechnical Report (Appendix E), the possibility of damage to structures or site improvements because of ground rupture is considered negligible because active faults are not known to cross the site (LGC GeoEnvironmental, Inc 2018a, DOC 2021). Therefore, no impact would result and no mitigation is required.
ii) Strong seismic ground shaking?


## Response:

Less Than Significant Impact. The potential for liquefaction was found to be negligible in the Project's Geotechnical Report because of shallow depths to very dense older alluvial fan deposits and hard bedrock,

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which are not conducive to liquefaction (LGC Geo-Environmental, Inc 2018a). Furthermore, the Project would over excavate down to competent base materials, which would minimize potential for liquefaction. The Project would result in less than significant impacts related to this threshold, and no mitigation is required.

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iv) Landslides?
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## Response:

Less Than Significant With Mitigation. Earthquake-induced land sliding often occurs in areas where previous landslides have moved and in areas where the topographic, geologic, geotechnical, and subsurface groundwater conditions are conducive to permanent ground displacements. According to the Geotechnical Report, there was no geologic literature that indicated the presence of landslides on or directly adjacent to the Project Site (LGC Geo-Environmental, Inc 2018a). However, the Project includes cuts into a slope, which have the potential to result in landslides if not designed and implemented pursuant to geotechnical recommendations. Therefore, the Slope Stability Report prepared for the Project identifies design, construction, and monitoring measures to be implemented, which would ensure that the Project's slopes would be stable once constructed (Dynamic Geotechnical Solutions 2021). Compliance with the recommendations of the Slope Stability Report, as required in MM GEO-1, would ensure that impacts that may result from landslides would be less than significant.


## Response:

Less Than Significant Impact. The Project would grade and develop the site with new impervious surfaces and new pervious landscaped areas. Project construction would expose soils on the site and would require the hauling of soil off-site, which could result in soil erosion and the loss of topsoil if not implemented consistent with regulatory requirements. The largest source of erosion and topsoil loss is uncontrolled drainage during construction. As discussed in more detail in Section IX, Hydrology and Water Quality, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into "waters of the U.S.". Construction activities shall be conducted in compliance with the statewide NPDES General Permit for Storm Water Discharges Associated with the Construction and Land Disturbance Activities (Order No 2012-0006-DWQ, NPDES No. CAS000002), adopted by the State Water Resources Control Board (SWRCB) on July 17, 2012. In compliance with the NPDES permit, erosion potential during construction of the Project would be managed with Best Management Practices (BMPs) implemented on the Project Site as part of a Storm Water Pollution Prevention Plan (SWPPP) during construction activities in accordance with NPDES requirements. Implementation of the BMPs would ensure that construction-related erosion impacts would be less than significant.


## Response:

Less Than Significant With Mitigation. The Project's Geotechnical Report found that the Project was geotechnically feasible, with implementation of grading and foundation recommendations. As noted above, the Project is not in a location susceptible to landslides. Potential impacts related to lateral spreading would

|  | Posentially Than <br> Significant <br> Impact | Lessificant <br> Signth <br> witigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
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be avoided through adherence to preliminary foundation design recommendations in the Geotechnical Report. The top level of the soil on the Project Site, where construction will take place, consists of undocumented artificial fill, topsoil, alluvium and weathered portions of the older alluvial fan deposits and bedrock are susceptible to subsidence, liquefaction, and collapse. As required by the Geotechnical Report, the Project would include the over excavation during the Project's grading down to underlying competent older alluvial fan deposits or bedrock. Over excavation would range from approximately 2 - to 10 -feet in depth depending on the location within the Project Site. With implementation of the foundation design and grading recommendations contained in the Geotechnical Report, as specified in MM GEO-1, less than significant impacts would result from the Project (LGC Geo-Environmental, Inc 2018a).
d) Be located on expansive soil, as defined in Table $18-1-\mathrm{B}$ of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?


## Response:

Less Than Significant With Mitigation. Expansive soils are materials that, when subject to a constant load, are prone to expand when exposed to water. The hazard associated with expansive soils is that they can overstress and cause damage to the foundation of buildings set on top of them. Results of the testing conducted as part of the Geotechnical Report indicates that onsite soil materials exhibit very low expansion potentials in accordance with the CBC. Therefore, with implementation of the construction and foundation recommendations in the Geotechnical Report, as specified in MM GEO-1, less than significant impacts would result from the Project, related to this threshold.
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?


## Response:

No Impact. The Project Site and related development would be connected to existing infrastructure in the vicinity (municipal sewer system) for wastewater disposal, currently served by Easter Municipal Water District. The Project does not require the development of either septic tanks or alternative wastewater systems. No related impacts would result, and no mitigation is required.

| f)Directly or indirectly destroy a unique <br> paleontological resource or site or unique <br> geologic feature? | $\square$ | $\square$ | $\square$ |
| :--- | :--- | :--- | :--- | :--- |

## Response:

Less than Significant with Mitigation. The Project Site lies on the Perris Block, which is part of an unfaulted, eroded mass of Cretaceous granitic rock of the Southern California Batholith. This formation of granite rock is composed of primarily quartz diorite with areas of biotite-hornblende Tonalite. Overlying this bedrock is the Old Alluvial Deposits of the Late Pliocene- Early Pleistocene. This layer of alluvial deposits holds moderate to high potential for paleontological resources. Overlying this alluvial deposit is the Late Pleistocene-recent Holocene Young Alluvial Valley Deposits which typically has a low potential for any paleontological resources; however, it should be noted over 100,000 fossil specimens from 105 plant and animal species from the Early Pleistocene Very Old Alluvial Fan Deposits were documented nearby at Diamond Valley Lake in the 1990s. Therefore, there is always the possibility faunal and floral assemblages may inadvertently be discovered during ground disturbance within the Young Alluvial Valley Deposits.

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| :--- | :---: | :---: | :---: | :---: |

However, it should be noted the City's General Plan EIR Figure 5.10-3 - Paleontological Resource Sensitive Areas identifies the Project Site as having Low Potential for paleontological resources. Furthermore, according to the Geotechnical Report prepared for the Project, areas of the Project Site that would be excavated include Artificial Fill (2.0feet [ft] to 5.5 ft thick), Topsoil ( 0.5 ft to 2.0 ft thick), and alluvium of the Young Alluvial Valley Deposits (2.0ft to 10.0 ft thick) followed by the Older Alluvial Fan Deposits (20.ft to 12.0 ft thick) and the Bonzal Tonalite Bedrock ( 0.5 ft to 12.0 ft thick) below, which are located within areas of the Project Site. These deposits would be excavated as a result of the Project. Therefore, ground disturbance within the Young Alluvial Valley Deposits and the Old Alluvial Fan Deposits should be considered moderate to high sensitivity for intact paleontological resources. Impacts to paleontological resources, if encountered, would be significant without mitigation. Accordingly, incorporation of MM GEO$\mathbf{2}$ which requires that a qualified paleontologist be retained to observe grading activities in the Older Alluvial Fan and Alluvium deposits on the Project Site and to salvage and catalogue fossils as necessary, would ensure that impacts to fossil resources are reduced to below a level of significance.

## Mitigation Program

## Mitigation Measures:

MM GEO-1 Prior to approval of final plans and specifications for the Project, the City shall review the Project plans to confirm that all recommendations in the Geotechnical Report (prepared by LGC Geo-Environmental, Inc in 2018), the Slope Stability Report (prepared by Dynamic Geotechnical Solutions in 2021), and any future geotechnical reports have been fully and appropriately incorporated into all grading and construction drawings.

MM GEO-2: Prior to the issuance of a grading permit, the Developer shall submit the name and qualifications of a qualified paleontologist to the City of Moreno Valley Community Development Department for review and approval. Once approved, the qualified paleontologist shall be retained by the Developer on an on-call basis to observe grading activities in the Young Alluvial Valley Deposits and Old Alluvial Fan Deposits on the Project Site and to salvage and catalogue fossils as necessary. At the Project's Pre-Grade Meeting, the paleontologist shall discuss the sensitivity of the sediment being graded and shall establish procedures for monitoring. Protocols must be developed and explained for temporarily halting or redirecting work to permit sampling, identification, and evaluation of any fossils discovered. If the fossils are deemed significant, the paleontologist shall determine appropriate actions, in cooperation with the City of Moreno Valley, to recover and treat the fossils and to prepare them to the point of identification. A final Paleontological Resources Monitoring Report shall include a catalogue and analysis of the fossils found; a summary of their significance; and the repository that would curate the fossils in perpetuity.

## VIII. GREENHOUSE GAS EMISSIONS - Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?


## Response:

## Environmental Setting

Climate change refers to any significant change in climate, such as the average temperature, precipitation, or wind patterns over a period of time. Climate change may result from natural factors, natural processes, and human activities that change the composition of the atmosphere and alter the surface and features of the land. Significant changes in global climate patterns have been associated with global warming, which is an average increase in the temperature of the atmosphere near the Earth's surface; this is attributed to

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an accumulation of greenhouse gas (GHG) emissions in the atmosphere. GHGs trap heat in the atmosphere, which in turn increases the Earth's surface temperature. Some GHGs occur naturally and are emitted into the atmosphere through natural processes, while others are created and emitted solely through human activities. The emission of GHGs through fossil fuel combustion, in conjunction with other human activities, are associated with global warming.

GHGs, as defined under California's Assembly Bill (AB) 32, include carbon dioxide $\left(\mathrm{CO}_{2}\right)$, methane $\left(\mathrm{CH}_{4}\right)$, nitrous oxide ( $\mathrm{N}_{2} \mathrm{O}$ ), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). General discussions on climate change often include water vapor, $\mathrm{O}_{3}$, and aerosols in the GHG category. Water vapor and atmospheric $\mathrm{O}_{3}$ are not gases that are formed directly in the construction or operation of development projects, nor can they be controlled in these projects. Aerosols are not gases. While these elements have a role in climate change, they are not considered by regulatory bodies, such as CARB, or climate change groups, such as The Climate Registry, as gases to be reported or analyzed for control. Therefore, no further discussion of water vapor, $\mathrm{O}_{3}$, or aerosols is provided herein.

GHGs vary widely in the power of their climatic effects; therefore, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both its potency and lifespan in the atmosphere as compared to $\mathrm{CO}_{2}$. For example, since $\mathrm{CH}_{4}$ and $\mathrm{N}_{2} \mathrm{O}$ are approximately 25 and 298 times more powerful than $\mathrm{CO}_{2}$, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 25 and 298, respectively ( $\mathrm{CO}_{2}$ has a GWP of 1 ). Carbon dioxide equivalent $\left(\mathrm{CO}_{2} e\right)$ is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the emission rate of that gas to produce the $\mathrm{CO}_{2} \mathrm{e}$ emissions.

## Regulatory Setting

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05, which proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce snowpack in the Sierra Nevada Mountains; could further exacerbate California's air quality problems; and could potentially cause a rise in sea levels. In an effort to avoid or reduce the impacts of climate change, Executive Order S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010; to year 1990 levels by 2020; and to 80 percent below 1990 levels by 2050.

AB 32, the California Global Warming Solutions Act of 2006 (California Health and Safety Code §38501), recognizes that California is the source of substantial amounts of GHG emissions. The statute states that:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems; a reduction in the quality and supply of water to the state from the Sierra snowpack; a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences; damage to marine ecosystems and the natural environment; and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

In order to avert these consequences, AB 32 establishes a State goal of reducing GHG emissions to 1990 levels by the year 2020, which is a reduction of approximately 16 percent from forecasted emission levels, with further reductions to follow. In an effort to help achieve this reduction, on November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, raising California's renewable energy goals to 33 percent by 2020.

California Executive Order B-30-15 (April 29, 2015) set an "interim" statewide emission target to reduce GHG emissions to 40 percent below 1990 levels by 2030 and directed State agencies with jurisdiction over GHG emissions to implement measures pursuant to statutory authority to achieve this 2030 target and the 2050 target of 80 percent below 1990 levels.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
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On September 8, 2016, the Governor signed Senate Bill (SB) 32 to codify the GHG reduction goals of EO B-30-15, requiring the State to reduce GHG emissions by 40 percent below 1990 levels by 2030 (Health and Safety Code Section 38566). This goal is expected to keep the State on track to meeting the goal set by EO S-3-05 of reducing GHG emissions by 80 percent below 1990 levels by 2050 . SB 32's findings state that CARB will "achieve the state's more stringent greenhouse gas emission reductions in a manner that benefits the state's most disadvantaged communities and is transparent and accountable to the public and the Legislature."

Title 24, Part 6, Energy Efficiency Standards (incorporated as RR ENE-1). The Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations [CCR], Title 24, Part 6) were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The current applicable standards are the 2019 Standards, effective January 1, 2020. The California Energy Commissions states that nonresidential buildings built with the 2019 standards will use about 30 percent less energy due to energy efficiency measures versus those built under the 2016 standards due mainly to lighting upgrades. The new code will reduce greenhouse gas emissions by 700,000 metric tons over three years (CEC 2018). The requirements of the energy efficiency standards result in the reduction of natural gas and electricity consumption. Since natural gas use produces criteria pollutant emissions, a reduction in natural gas consumption results in a related reduction in air quality emissions.

Title 24, Part 11, Green Building Standards (incorporated as RR ENE-2). The 2019 California Green Building Standards Code (CCR, Title 24, Part 11) is a code with mandatory requirements for new residential and nonresidential buildings (including buildings for retail, office, public schools, and hospitals) throughout California and became effective on January 1, 2020. The code is Part 11 of the California Building Standards Code in Title 24 of the California Code of Regulations and is also known as the CALGreen Code. The development of the CALGreen Code is intended to (1) reduce GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction. The CALGreen Code contains requirements for construction site selection, storm water control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more.

The City of Moreno Valley adopted its Climate Action Plan (CAP) on June 15, 2021 (Moreno Valley 2021d). The CAP is intended to help reduce GHG emissions, prepare the community for the impacts of climate change, improve the quality of life, and enhance economic vitality in Moreno Valley. Moreno Valley strives to be a more sustainable and resilient city in the face of climate change impacts such as air pollution, extreme heat, and drought. The CAP provides a framework for creating or updating policies, programs, practices, and incentives for Moreno Valley residents and businesses to reduce the City's GHG footprint and ensure the community and physical assets are better protected from the impacts of climate change (Moreno Valley 2021b).

## Significance Criteria

The City of Moreno Valley has not formally adopted a quantitative GHG emissions significance criterion to date. Beginning in April 2008, the SCAQMD convened a Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. On December 5, 2008, the SCAQMD Governing Board adopted its staff proposal for an interim CEQA GHG significance threshold of 10,000 metric tons of $\mathrm{CO}_{2}$ equivalent per year ( $\mathrm{MTCO}_{2} \mathrm{e} / \mathrm{yr}$ ) for projects where the SCAQMD is the lead agency (SCAQMD 2008). In September 2010, presented a revised tiered approach to determining GHG significance for residential and commercial projects (SCAQMD 2010). These proposals have not yet been considered by the SCAQMD Board.

At Tier 1, GHG emissions impacts would be less than significant if the project qualifies under a categorical or statutory CEQA exemption. At Tier 2, for projects that do not meet the Tier 1 criteria, the GHG emissions

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impact would be less than significant if the project is consistent with a previously adopted GHG reduction plan that meets specific requirements. ${ }^{1}$ At Tier 3, the Working Group proposes extending the 10,000 $\mathrm{MTCO}_{2} \mathrm{e} / \mathrm{yr}$ screening threshold currently applicable to industrial projects where the SCAQMD is the lead agency, described above, to other lead agency industrial projects. The Working Group also proposes the following Tier 3 screening values: either (1) a single 3,000 MTCO $\mathrm{M}_{2} \mathrm{e} / \mathrm{yr}$ threshold for all land use types or (2) separate thresholds of $3,500 \mathrm{MTCO}_{2} \mathrm{e} / \mathrm{yr}$ for residential projects, $1,400 \mathrm{MTCO}_{2} \mathrm{e} / \mathrm{yr}$ for commercial projects, and $3,000 \mathrm{MTCO}_{2} \mathrm{e} / \mathrm{yr}$ for mixed-use projects. The screening thresholds are based on estimates that the threshold would capture 90 percent of the GHG emissions from residential and commercial projects. Therefore, a project with emissions less than the applicable screening value would be considered to have less than significant GHG emissions. Projects with emissions greater than the Tier 3 screening values would be analyzed at Tier 4 by one of the three methods. Projects with GHG emissions not meeting the Tier 4 targets would be required to provide mitigation in the form of real, quantifiable, and verifiable offsets to achieve the target thresholds. The offsets may be achieved through project design features, other onsite methods, or by offsite actions, such as energy efficiency upgrade of existing buildings.

In summary, to date, the SCAQMD Board has adopted an interim CEQA significance threshold for GHGs for industrial projects where the SCAQMD is the lead agency and continues to consider screening levels under CEQA for residential, commercial, and mixed-use projects. This proposed screening and mitigation proposal from SCAQMD remains a work in progress; the Working Group has not convened since fall 2010. The proposal has not been considered or approved for use by the SCAQMD Board. However, the interim draft significance thresholds are used for determination of potential GHG impacts because they represent the latest basis for GHG CEQA thresholds from the SCAQMD.

## Less than Significant Impact.

## Construction Impacts

Construction activities associated with remediation and construction activities would result in emissions of GHGs. GHG emissions occurring during the construction phase are generated by vehicle engine exhaust from construction equipment, on-road hauling trucks, vendor trips, and worker commuting trips. Construction GHG emissions were calculated concurrently with air quality criteria pollutant emissions by using CalEEMod. The results are output in $\mathrm{MTCO}_{2} \mathrm{e}$ for each year of construction.

GHG emissions generated from construction activities are finite and occur for a relatively short-term period of time. Unlike the numerous opportunities available to reduce a project's long-term GHG emissions through design features, operational restrictions, use of green-building materials, and other methods, GHG emissions-reduction measures for construction equipment are relatively limited. Therefore, SCAQMD staff members recommended that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures would address construction GHG emissions as part of the operational GHG reduction strategies (SCAQMD 2008).

As shown in Table 10, Estimated Annual Greenhouse Gas Emissions from Construction, the 30-year amortized construction emissions would be $19 \mathrm{MTCO}_{2} \mathrm{e} / \mathrm{yr}$.

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TABLE 10
ESTIMATED ANNUAL GREENHOUSE GAS EMISSIONS FROM CONSTRUCTION

| Year | Emissions ( $\mathrm{MTCO}_{2} \mathrm{e}$ ) |
| :---: | :---: |
| 2022 | 437 |
| 2023 | 143 |
| Total | 580 |
| Amortized Annual Emissions* | 19 |
| $\mathrm{MTCO}_{2} \mathrm{e}$ : metric tons of carbon dioxide equivalent * Combined total amortized over 30 years Totals may not add up due to rounding Source: CalEEMod data in Appendix A. |  |

## Operational/Total Impacts

Operational GHG emissions attributed to the Project include natural gas use; purchased electricity; the electricity embodied in water consumption; the energy associated with solid waste disposal; and mobile sources. Operational GHG emissions were calculated concurrently with air quality criteria pollutant emissions by using CalEEMod, which incorporates mitigation measures based on the California Air Pollution Control Officers Association publication Quantifying Greenhouse Gas Mitigation Measures (CAPCOA 2010).

As shown in Table 11, Estimated Annual Operational and Amortized Greenhouse Gas Emissions, the annual GHG emissions would be $1,336 \mathrm{MTCO}_{2} \mathrm{e} / \mathrm{yr}$. Project related GHG emissions would be less than the SCAQMD's interim draft significance threshold of $3,000 \mathrm{MTCO}_{2 \mathrm{e}} / \mathrm{yr}$ and consequently would result in less than significant GHG impacts.

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b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of greenhouse gases?


## Response:

No Impact. As discussed above, the principal State plan and policy adopted for the purpose of reducing GHG emissions is AB 32. The quantitative goal of AB 32 is to reduce GHG emissions to 1990 levels by 2020. SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocations. SB 375 requires Metropolitan Planning Organizations to adopt a Sustainable Communities Strategy (SCS) or alternative planning strategy that will address land use allocation in that Metropolitan Planning Organization's RTP. The principles of SB 375 are incorporated in SCAG's adopted 2020 RTP/SCS.

The Project is a housing development project and would increase population within the City and increase VMT. As discussed previously, the Project would also not result in substantial amounts of GHG emissions from either the construction or operations phase and would result in emissions which are below the SCAQMD's interim draft significance thresholds.

Section 4.3 of the City's CAP discusses residential uses and mentions "The General Plan 2040 seeks to provide a range of new housing suited to people of all ages and income levels throughout Moreno Valley, with an emphasis on increasing the diversity of housing types in the community and promoting construction of multi-family and mixed-use residential development in infill areas near employment and shopping and well-served by transit and public facilities." The Project is consistent with the General Plan 2040's goal of providing multi-family residential uses representing a unique housing product type within the City, that is an alternative to single family detached homes on fee lots. The facilities on the Project Site would be built in compliance with the 2019 California Building Code and the 2019 CALGreen Code, or latest codes, which adopted for the purpose of reducing GHG emissions.

As shown in Table 11, the Project would result in emissions which are below the SCAQMD's draft interim significance threshold for GHG emissions. In addition, the Project would also incorporate the latest energy efficiency requirements detailed in the State of California's Title 24 green building standards (RR ENE-2). The Project would install electric vehicle infrastructure as required by the Title 24 building standards, and the City's CAP (as stipulated in RR ENE-3). Therefore, the Project would not conflict with the goals established within the abovementioned plans, policies, or regulations adopted for the purpose of reducing GHG emissions. There would be no impact, and no mitigation measures are required.

## Mitigation Program

## Regulatory Requirements:

RR ENE-1 The Project must be designed in accordance with the applicable Title 24 Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations [CCR], Title 24, Part 6). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods.

[^5]
## RR ENE-3 <br> The Project shall comply with applicable policies of the Moreno Valley Climate Action Plan

 by complying with meeting the following policies:1. Require new multi-family residential development to reduce the need for external trips by providing useful services/facilities on-site such as electric vehicle infrastructure. (Policy TR-9)
2. incentives such as streamlined permitting or bonus density for new multi-family buildings and reroofing projects to install "cool" roofs consistent with the current California Green Building Code (CALGreen) standards for commercial and industrial buildings. (Policy R-1)
3. Require new construction and major remodels to install interior real-time energy smart meters in line with current utility provider (e.g. MVU, SCE) efforts. (Policy R-2)
4. Reduce emissions from heavy-duty construction equipment by limiting idling based on South Coast Air Quality Management District (SCAQMD) requirements and utilizing cleaner fuels, equipment, and vehicles.
a. Require provision of clear signage reminding construction workers to limit idling
b. Require project applicants to limit GHG emissions through one or more of the following measures:
i. substitute electrified or hybrid equipment for diesel/gas powered equipment
ii. Use alternative fueled equipment on site
iii. Avoid use of on-site generators. (Policy OR-2)

## IX. HAZARDS AND HAZARDOUS MATERIALS - Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

## Response:

Less Than Significant Impact. The Project would not involve the routine use, transport, handling, or storage of hazardous materials on-site. The proposed land uses are limited to residential, and no industrial or manufacturing land uses would be developed which routinely utilize hazardous materials. The Project would result in the on-site handling of materials that are common in similar residential developments, such as commercial cleansers, solvents and other janitorial or industrial-use materials; paints; and landscape fertilizers/pesticides. While many such common materials are technically labeled "hazardous", the presence of such materials is common in a suburban environment and their transport and use is considered a less than significant impact. The Project would not generate hazardous emissions, nor would it involve hazardous materials that would create a substantive hazard to the public or environment.
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

## Response:

Less Than Significant Impact. Project construction activities routinely involve the use and handling of limited volumes of commonly used hazardous materials, such as petroleum (fuel), paints, adhesives, and solvents. During construction, there is a limited risk of spills and/or accidental release of hazardous

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materials that are used for the operation and maintenance of construction equipment. The on-site temporary handling, storage, and usage of these materials would be subject to applicable local, State, and/or federal regulations.

Based on the Department of Toxic Substances Control (DTSC) Envirostor web mapper, there is one hazardous waste site nearby, the March Air Force Base Rifle Range. The Rifle Range formerly included land east of the Project Site, and this property is now classified as a Formerly Used Defense Site (FUDS), and requires evaluation by the USACE for further action (DTSC 2021). The FUDS program was established to protect human health and the environment by investigating and, if required, cleaning up potential contamination or munitions that may remain on FUDS properties from past Department of Defense activities. At one time, the Rifle Range was approximately 648 acres, most of which was leased. According to documentation prepared by the USACE, the Rifle Range site has since been entirely redeveloped as residential and commercial uses (USACE 1994). Therefore, the Rifle Range site would pose no risk to the Project Site. Less than significant impacts would result related to this threshold, and no mitigation is required.
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?


## Response:

Less Than Significant Impact. Seneca Elementary School (11615 Wordsworth Road) is located approximately 0.24 mile south of the Project Site. However, as discussed above under Threshold IX(a), the Project would not develop land uses that involve the use, storage, or transport of hazardous materials that represent a significant hazard to the public or the environment. During Project operations the Project would result in the routine on-site handling of materials that are common in similar developments, such as commercial cleansers, solvents and other janitorial or industrial-use materials; paints; and landscape fertilizers/pesticides. As noted above, hazardous materials utilized during Project construction would be stored, transported, and used according to applicable regulations and ordinances. Therefore, the Project would result in less than significant impacts related to this threshold, and no mitigation is required.
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, will it create a significant hazard to the public or the environment?


## Response:

No Impact. Section 65962.5 requires the development of a hazardous waste and substances site list, also known as the Cortese List, which provides the location of known hazardous materials release sites. According to the EDR Radius Map prepared in 2021 and included as Appendix G (EDR 2021), as well as a search of the DTSC, which consists of a search of selected government databases for potential environmental concerns in the vicinity of the Project Site (e.g., "listed sites"), no Cortese List properties occur within the Project Site. Therefore, no impact would result from implementation of the Project, and no mitigation is required.

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e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

## Response:

Less Than Significant Impact. The Project Site is located approximately 3.95 miles north of March Air Reserve Base. As such, the Project is within Airport Compatibility Zone E of the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan. Within this zone, residential density and non-residential intensity are not restricted. There are no other private airstrips in the vicinity of the Project. Based on a review by the ALUC Director, the Project was found to be consistent with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, with implementation of standard conditions included in the letter to avoid and minimize potential impacts to aircraft related to lighting, glare, and bird strikes (ALUC 2020). These avoidance measures have been incorporated as part of the Project and include PDF HAZ-1 through PDF HAZ-4, and regulatory requirement RR AES-1. Therefore, the Project would result in less than significant impacts and no mitigation is required.
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?


## Response:

Less Than Significant With Mitigation. The City's Local Hazard Mitigation Plan (May 2017) is designed to identify hazards, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term natural or man-made hazard risks to human life and property for the City of Moreno Valley and its residents. The Project would not conflict with any of the mitigation strategies listed within Chapter 20 of the Local Hazard Mitigation Plan (May 2017). Also, the City has an Emergency Operations Plan (March 2009), which provides the City with guidance on the response to extraordinary emergency situations associated with natural, man-made and technological disasters. The Project would not conflict with or impair implementation of this plan. Finally, the Moreno Valley Utility (MVU) has adopted a Wildfire Mitigation Plan (February 2021), which describes the safety-related measures that MVU follows to reduce its risk of causing wildfires. The Project is approximately 0.72 -mile from the nearest evacuation route, Box Springs Road, identified in the Western Riverside County Vulnerability Assessment by Resilient IE, a collaboration between Western Riverside Council of Governments (WRCOG) and the San Bernardino County Transportation Authority, with funding from Caltrans (Resilient IE 2020). The Project would result in additional traffic on local roadways during construction and once the Project is constructed; however, this additional traffic would not substantially degrade level of service in a manner that would impair implementation or otherwise interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, less than significant impacts would result related to this threshold, and no mitigation is required.
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?


## Response:

Less Than Significant Impact. The Project Site, as well as much of the northern and eastern portions of the City of Moreno Valley, is subject to wildland fires. The Project Site is located within and adjacent to a Fire Hazard Severity Zone (FHSZ). The Project would be constructed in compliance with the Fire Code,

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California Building Code, and the objectives, policies, and programs of the City's General Plan (2021b). Also, the Project includes the establishment and ongoing maintenance of fuel modification zones along the northern and eastern boundaries of the Project Site, as shown in the Fire Hazard Analysis and Approach memorandum (Appendix L) that was prepared for the Project. Given the above considerations, the Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Impacts would be less than significant and no mitigation is required.

## Mitigation Program:

## Project Design Features

PDF HAZ-1: The Project's proposed basins would be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and to remain totally dry between rainfalls.

PDF HAZ-2: Vegetation in and around the basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in Project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the basins shall not include trees or shrubs that produce seeds, fruits, or berries. Landscaping in the basins, if not rip rap, would be in accordance with the guidance provided in ALUC "Landscaping Near Airports" brochure, and the "Airports, Wildlife, and Stormwater Management" brochure available at RCALUC.org which lists acceptable plants from the Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

PDF HAZ-3: A notice shall be permanently affixed to the fencing surrounding the basins with the language similar to the following: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and to not attract birds. Proper maintenance is necessary to avoid bird strikes." This sign would also include the name, telephone number, or other contact information of the person or entity responsible for monitoring and maintain the basins.

PDF HAZ-4: Prior to close of escrow on the Project's future proposed homesites, the "Notice of Airport in Vicinity" that was attached to the ALUC's 2020 Airport Land Use Commission (ALUC) Development Review - Director's Determination letter shall be provided to all prospective purchasers and occupants of the Project.

## Regulatory Requirement:

RRAES-1 The Developer shall prepare a Lighting Plan that provides the type and location of proposed exterior lighting and signage, subject to the review and approval of the City's Development Services Department. All new lighting shall be shielded and down-cast, such that the light is not cast onto adjacent properties or visible from above.

## X. HYDROLOGY AND WATER QUALITY - Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

## Response:

Less Than Significant Impact. This section discusses the Project's potential construction- and operational-related water quality impacts.

## Construction-Related Water Quality Impacts

The Project could result in short-term construction impacts to surface water quality from demolition, grading, and other construction-related activities. Storm water runoff from the Project Site during construction could contain soils and sediments from these activities. Also, spills or leaks from heavy equipment and machinery, construction staging areas, and/or building sites can also enter runoff and typically include petroleum products such as fuel, oil and grease, and heavy metals.

The SWRCB has issued the Statewide NPDES General Permit for Storm Water Discharges Associated with the Construction and Land Disturbance Activities (Order No 2012-0006-DWQ, NPDES No. CAS000002, adopted by the SWRCB on July 17, 2012). Under this Construction General Permit, individual NPDES permits or Construction General Permit coverage must be obtained for discharges of storm water from construction sites with a disturbed area of one or more acres. Since the development area within the Project Site is 16.59-acres, coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity is required. To obtain coverage, the Developer must retain the services of a certified Qualified SWPPP Developer to prepare a SWPPP for the Project. The Developer, or the contractor if specifically delegated, would electronically submit permit registration documents prior to beginning construction activities in the Storm Water Multi-Application Report Tracking System, which would consist of a Notice of Initiation, Risk Assessment, Post-Construction Calculations, a site map, the SWPPP, a signed certification statement, and the first annual fee. Project construction would also adhere to the South Coast Air Quality Management District's Rule 402 (Nuisance) and Rule 403 (Fugitive Dust) to avoid and minimize dust from leaving the site.

Construction activities are not anticipated to encounter groundwater, as levels are anticipated to be more than 73 feet below ground surface at the Project Site (LGC Geo-Environmental, Inc 2018a), which is well below the depth of proposed excavation.

Adherence to applicable regulatory requirements would ensure that Project short-term impacts to surface water quality during construction would be less than significant, and no mitigation is required.

## Operational Water Quality Impacts

The Project is located in the Santa Ana River Basin. Specifically, the Project Site drains to Box Springs Canyon, which drains to Tequesquite Arroyo, then to Santa Ana River Reach 3, and then to Prado Flood Control Basin. The SWRCB maintains the 303(d) List of Impaired Water Bodies, which identifies water bodies where water quality indicators exceed acceptable thresholds. The Project Sites does not directly drain to 303(d)-listed impaired water body; however, the Santa Ana River Reach 3 has 303(d) listed impairments for indicator bacteria, copper, and lead, and the Prado Flood Control Basin has impairments for pH (acidity and alkalinity) (UEG 2022a). The Santa Ana RWQCB develops and implements total maximum daily loads to address water quality impairments and help achieve water quality standards. Water quality is also governed through NPDES stormwater discharge permits issued to municipalities, construction sites, and industrial facilities to control non-point-source pollutants in stormwater discharges to surface waters.

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According to the Project Specific Water Quality Management Plan, provided as Appendix I, general pollutants that may result from Project operations, which are also known as project priority pollutants of concern, include bacterial indicators, nutrients, pesticides, sediments, trash and debris, and oil and grease (UEG 2022a). As detailed in the Project Description and shown on Figure 6, two combination detention and bioretention basins (e.g., Basins A and B) have been incorporated into the Project design based on the recommendations of the Project Specific Water Quality Management Plan to minimize impacts related to stormwater quality and increased stormwater volumes generated from Project implementation. Detention basins are impoundments or excavated basins for the short-term detention of stormwater runoff. Bioretention basins are landscaped depressions or shallow basins that are used to slow and treat on-site stormwater runoff. Under developed conditions, stormwater would be directed to the basins and would then percolate through the basins where it would be treated by a number of physical, chemical, and biological processes. The Project's basins would slow and clean the water before allowing it to flow downslope into existing off-site earthen drainage channels. Basin overflows have been designed to connect downstream to two natural drainage courses, similar to pre-Project conditions. Therefore, construction and operation of these basins would adequately treat stormwater runoff and a less than significant impact would occur; no mitigation would be required.
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?


## Response:

Less Than Significant Impact. The Project would not involve direct or indirect withdrawals of groundwater. Domestic water service would be provided by Eastern Municipal Water District (EMWD); EMWD has managed groundwater quantity and quality in the western portion of the San Jacinto Groundwater Basin via the West San Jacinto Groundwater Management Plan since 1995. Also, EMWD prepares annual reports documenting the implementation of the plan and activities in groundwater management zones (EMWD 2021). In addition to the existing groundwater management program, EMWD was required to complete a Groundwater Sustainability Plan (GSP) by January 2022, which they did in September 2021. Under the State Groundwater Management Act, each high and medium priority basin, as identified by the California Department of Water Resources, is required to have a Groundwater Sustainability Agency (GSA) that will be responsible for groundwater management and development of a GSP. The EMWD Board of Directors is the GSA for the West San Jacinto Groundwater Basin, which underlies the Project Site, and is responsible for development and implementation of a GSP. The Project would not conflict with or impair implementation of the Groundwater Sustainability Plan for the San Jacinto Groundwater Basin (EMWD 2021b). Therefore, the Project would not substantially decrease groundwater supplies.

Additionally, the Project would not interfere substantially with groundwater recharge as the Project Site has limited to no infiltration potential (UEG 2022a). Furthermore, the drainage feature in the southern portion of the Project Site as well as 15.97 acres of the 32.56 -acre Project Site would not be developed and would remain pervious. Therefore, although the Project would result in the addition of approximately 436,885 square feet of impervious surfaces there would be minimal change in groundwater recharge, less than significant impacts would result, and no mitigation is required (UEG 2022a).

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c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of
the course of a stream or river or through the addition of impervious surfaces, in a manner which
will:
i) Result in substantial erosion or siltation on- or
off-site?

## Response:

Less Than Significant Impact. As described above in response to threshold X(a), the Project has the potential to result in erosion and siltation during construction. Development and implementation of a SWPPP for the Project would ensure potential effects related to erosion and siltation are reduced to less than significant levels during construction. Also, as discussed above under threshold $X(a)$, two combination detention and bioretention basins (e.g., Basins A and B ) and associated drainage infrastructure, including rip rap, have been incorporated in the Project's design, which would reduce potential for erosion and siltation during Project operations. Given these considerations, less than significant impacts would result from the Project and no mitigation is required.

| ii)Substantially increase the rate or amount of <br> surface runoff in a manner which will result in <br> flooding on- or offsite? | $\square$ | $\square$ | $\square$ | $\square$ |
| :--- | :--- | :--- | :--- | :--- |
| iii)Create or contribute runoff water which will <br> exceed the capacity of existing or planned <br> stormwater drainage systems or provide <br> substantial additional sources of polluted runoff? | $\square$ | $\square$ | $\square$ | $\square$ |

## Response:

Less Than Significant Impact. The Project would result in the addition of approximately 436,885 square feet of impervious surfaces, which would result in a total of 65 percent impervious surface coverage (UEG 2022a). Although there is limited infiltration ability within the Project Site in existing conditions due to soil types and other conditions, the addition of impervious surface has the potential to permanently increase the runoff potential from the Project. Therefore, as described above in response to threshold $\mathrm{X}(\mathrm{a})$, the Project has incorporated stormwater drainage systems, as well as two combination detention and bioretention basins (e.g., Basins A and B), which would convey, retain, and treat stormwater prior to it being conveyed off-site along natural drainage courses. Basin overflows have been designed to connect downstream to two natural drainage courses, similar to pre-Project conditions. Therefore, less than significant impacts would result related to these thresholds, and no mitigation is required.
iv) Impede or redirect flood flows?

$\square$

## Response:

Less Than Significant Impact. The Flood Insurance Rate Maps (Panel 06065C0733G) for this subject property shows that the site falls within Zone X. Zone X denotes areas determined to be "Areas of Undetermined Flood Hazard" (UEG 2022b). However, the Project Site is located at a high elevation relative to natural nearby drainage courses that are typically associated with flooding. Minor ephemeral drainages, which flow only in direct response to precipitation and for short periods of time, traverse the Project Site in existing conditions. The Project would provide drainage improvements to receive, convey, detain, and treat stormwater within the Project Site, as well as curbs and gutters on proposed streets that would protect the site from offsite flows. Onsite runoff would be conveyed to two combination detention and bioretention basins (e.g., Basins A and B) using an onsite storm drain system of inlets, pipes, channels, and curb cuts. Basin overflows have been designed to connect downstream to two natural drainage courses, similar to

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pre-Project conditions. Therefore, the Project would provide adequate drainage and conveyance within the site and impacts to flood flows would be less than significant; no mitigation is required.
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

## Response:

Less Than Significant Impact. As noted above in response to threshold X(c)(iv), the Project Site's flood potential has not been determined by prior studies; however, due to the physical location and Project improvements, there would be minimal risk of on- or off-site flooding that would result from the Project. The Project is not near the ocean or other water body with the potential to be at risk of seismically-induced tidal phenomena. Furthermore, the Project would not utilize, store, or otherwise contain pollutants that would be at risk of release if inundated. Therefore, hazards related to the potential release of pollutants due to inundation caused by a flood, tsunami, and/or seiche are considered to be negligible. A less than significant impact would result from the Project related to this threshold, and no mitigation is required.

| e)Conflict with or obstruct implementation of a <br> water quality control plan or sustainable <br> groundwater management plan? | $\square$ | $\square$ | $\square$ | $\square$ |
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## Response:

Less Than Significant Impact. The RWQCB prepares and maintains the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The Basin Plan sets water quality standards in the Santa Ana River Basin by establishing beneficial uses for specific water bodies and designating numerical and narrative water quality objectives. The Basin Plan sets water quality objectives for the Project Site and its surrounding areas. Water quality thresholds identified in the Basin Plan are intended to reduce pollutant discharge and ensure that water bodies are of sufficient quality to meet their designated beneficial uses. The Project would not conflict with the water quality standards outlined in the Basin Plan or worsen water quality conditions in any 303(d)-listed water body. As discussed above in response to threshold $\mathrm{X}(\mathrm{a})$, pollutant discharge during construction would be avoided through compliance with the Construction General Permit including the preparation and implementation of a SWPPP. Once the Project is constructed, the Project would consist of a residential development. Pollutants generated during Project operations would be treated using two bioretention basins. Therefore, the Project would not be a source of pollutants for downstream water bodies and the Project would thereby not conflict with the Basin Plan.

As discussed previously in response to threshold X(b), a GSP was approved by EMWD in 2021, which establishes sustainability indicators for the groundwater basin. The Project would not directly conflict with the Sustainable Management Criteria, Projects and Management Actions, or Plan Implementation chapters of the GSP plan (EMWD 2021b). Therefore, less than significant impacts would result from the Project, and no mitigation is required related to this threshold.

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## XI. LAND USE AND PLANNING - Would the project:

a) Physically divide an established community?

## Response:

No Impact. The Project Site is vacant and is located at the northernmost portion of Morton Road where residential uses are currently established. As such, the Project does not physically divide the established community to the south. Additionally, there are roads or trails that connect any established communities at the Project Site. Under the Project, residential uses in the development immediately south of the Project Site would have the same vehicular, bicycle, and pedestrian access along Morton Road as during existing conditions. Therefore, the Project would result in no impacts related to this threshold, and no mitigation is required.
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?


## Response:

Less Than Significant Impact. The Project has been designed to be consistent with the R10 and OS general plan land use designations, the R10 and OS zoning districts (development standards), and the allowable development density permitted by those designations. The Project would require a General Plan Amendment to amend the City of Moreno Valley General Plan Land Use Map to change the land use designation for the Project Site from "Residential 2 (R2)" and "Hillside Residential (HR)" to "Residential 10 (R10)" and "Open Space (OS)" designations. The Project would also require a change of Zone to amend the City of Moreno Valley Zoning Map to change the zoning designation for the Project Site from "Residential 2 (R2) District" and "Hillside Residential (HR)" to ""Residential 10 (R10)" and "Open Space (OS) zones. Existing and proposed land use designations and zoning for the Project Site are provided in Figures 7 and 8 respectively.

A Planned Unit Development (PUD) has been prepared for the Project (UEG 2022c, Appendix J). The PUD describes the overall design concept for the Project as well as design standards and guidelines. By implementing the following design points that have been incorporated into Project Design, this Project meets these City design objectives for PUDs:

- Provides innovation and diversity in housing choices that would not otherwise be possible according to the strict application of the site development regulations in this title because the detached condominium concept provides its residents with the benefits of single-family homeownership while also conferring on them the benefits of shared community living.
- Provides access to adjacent natural resources, open space, onsite recreational facilities through the dedication of nearly one-half of the property to open space that will interconnect with a regional trail system.
- Installation of storm water pollution control systems pursuant to the municipal storm water permit issued by the RWQCB.

According to the PUD, the Project is intended as a planned residential community offering innovative cluster housing options in the lower lying portion of the site and open space on the remainder of the site. The development would include a community park, open space, and a common community design identity. This development plan coupled with the unique location of this property would provide multiple housing alternatives for both entry-level buyers, young families, and retirees, as well as student and faculty for the University of California-Riverside.

EXISTING GENERAL PLAN


PROPOSED GENERAL PLAN




|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
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The R10 (Residential 10) district designated area of the Project Site would total 16.59 acres of the 32.56 acre property and would contain 108 units, with a density of 6.51 units per acre. This density is well within allowances of the proposed General Plan designation of R10 (10 units per net acre). The remaining 16.10 acres would be changed to OS and designated for conservation. In addition to the open space, the Project would also provide a community park located in the center of the development.

The residential uses within the Project would consist of cluster units in varying sizes ranging from 4 -unit to 10-unit clusters. This development would be subject to the requirements in Chapter 9.03.040 (Residential Site Development Standards) and 9.03.060 (Planned Unit Developments) of the City of Moreno Valley's municipal code. The introduction of a multifamily residential housing product type at the urbanized edge of the City's residential neighborhoods that currently abuts a hillside / open space area, represents an incompatibility issue, when viewed from traditional planning transects theory, which is defined as a series of zones that transition from sparse rural areas to the dense urban core of a city. It typically associates multifamily residential as an appropriate "buffer zone" between low-density residential areas and commercial/mixed use areas. Here, the Project proposes a multifamily residential project adjacent to the rural / open space edge and away from the city core or area of intensity (i.e., near the 60 Freeway / Railroad areas to the south). However, this pattern of urban development will likely change in the future due to the adopted Gateway Center Specific Plan (GCSP), located within Unincorporated Riverside County on the west side of Morton Road. The GCSP is a 317 -acre mixed-use master-planned community that will introduce medium and high-density residential neighborhoods around a business park / commercial office / regional commercial centers closer to the SR-60 Freeway/ Railroad rights-of-way. The GCSP will introduce medium density residential uses at five (5) dwelling units per acre immediately adjacent to the Project Site, on the west side of Morton Road. As such, the subject Project's proposed Planned Unit Development density of 6.51 units per acre on the 16.59-acre portion would be compatible with future land development patterns in the larger vicinity. Therefore, with the approval of the General Plan Amendment and Zone Change described above for the Project, less than significant impacts would result related to zoning and land use designations.

Also, the City's General Plan EIR Land Use chapter lists the following plans and policies as having been adopted for the purpose of avoiding or mitigating an environmental effect: the City of Moreno Valley Municipal Code; Specific Plans including the City of Moreno Valley Redevelopment Plan, the Western Riverside County MSHCP, the Air Installation Compatible Use Zone (AICUZ) Study, and the SCAG Regional Plan; the SCAG Growth Management Plan, and the WRCOG Sub-Regional Comprehensive Plan. An analysis of how the Project relates to each of these related plans and policies is provided below in Table 12.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
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TABLE 12
ANALYSIS OF CONSISTENCY WITH PLANS, POLICIES, AND ORDINANCES

| Plan, Policy, or Ordinance | Consistency Analysis |
| :--- | :--- | :--- |
| Section 9.03.040 of the Moreno Valley Municipal Code | Section 9.03.040 of the Moreno Valley Municipal Code <br> provides general site development standards for <br> residential uses. As noted above, the Project proposes a <br> General Plan Amendment and a Change of Zone. The <br> City's design review would ensure that the Project is fully <br> compliant with the development standards for the <br> proposed zones within the Project Site. |
| Moreno Valley Specific Plans | The Project Site is not located in any local Specific <br> Plans as designated in the General Plan. However, <br> there is an adopted GCSP as explained above that will <br> introduce medium-density residential uses at 5 du/acre <br> to the west of Morton Road. |
| Moreno Valley Redevelopment Plan | The Project is not subject to the Moreno Valley <br> Redevelopment Plan. |
| Western Riverside County Multiple Species Habitat | The Project Site is not located in any MSHCP Criteria <br> Area or Area Plan subunit. The Project area is located <br> within a predetermined Survey Area for narrow endemic <br> plant species and for burrowing owl. Surveys were <br> conducted in 2021 and no targeted plant species or <br> burrowing owl were found within the Project Site. The <br> Project Site does not occur within or adjacent to an <br> MSHCP Core, Linkage, Constrained Linkage, or Non- <br> Contiguous Habitat Block. Therefore, an Urban/Wildland |
| Conservation Plan (MSHCP) |  |


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Because the Project would not conflict with any of these plans or policies, the Project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Less than significant impacts would result from the Project related to this threshold, and no mitigation is required.

## XII. MINERAL RESOURCES - Would the project:

a) Result in the loss of availability of a known mineral resource that will be of value to the region and the residents of the state?
b) Result in the loss of availability of a locallyimportant mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

| $\square$ | $\square$ | $\square$ | $\square$ |
| :---: | :---: | :---: | :---: |
| $\square$ | $\square$ | $\square$ |  |

## Response:

No Impact. According to the Environmental Impact Report prepared for the City of Moreno Valley General Plan (Moreno Valley 2021c), there are no regionally or statewide significant mineral resources are located within the City. Therefore, no impacts would result related to these thresholds, and no mitigation is required.

## XIII. NOISE - Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?


## Response:

Less than Significant Impact. Sound pressure levels are described in decibel (dB), which are units measured on a logarithmic scale. A doubling of the energy of a noise source (such as doubling of traffic volume) would increase the noise level by 3 dB . The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale was devised; the A-weighted decibel scale (dBA) approximates the frequency response of the average healthy ear when listening to most ordinary everyday sounds and is used in this analysis.

Human perception of noise has no simple correlation with acoustical energy. Due to subjective thresholds of tolerance, the annoyance of a given noise source is perceived very differently from person to person. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at 3 feet is approximately 60 dBA , while loud jet engine noises at 1,000 feet equate to 100 dBA , which can cause serious discomfort.

Several rating scales (or noise "metrics") exist to analyze the effects of noise on a community. These scales include the equivalent noise level (Leq) and the community noise equivalent level (CNEL). Average noise levels over a period of minutes or hours are usually expressed as dBA Leq, which is the equivalent noise level for that period of time. The period of time averaging may be specified; Leq(3) would be a 3 -hour average. When no period is specified, a one-hour average is assumed. Noise of short duration (i.e., substantially less than the averaging period) is averaged into ambient noise during the period of interest. Thus, a loud noise lasting many seconds or a few minutes may have minimal effect on the measured sound level averaged over a one-hour period.

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To evaluate community noise impacts, CNEL was developed to account for human sensitivity to nighttime noise. CNEL represents the 24 -hour average sound level with a penalty for noise occurring at night. The CNEL computation divides a 24-hour day into three periods: daytime (7:00 AM to 7:00 PM), evening (7:00 PM to 10:00 PM), and nighttime (10:00 PM to 7:00 AM). The evening sound levels are assigned a $5-\mathrm{dBA}$ penalty, and the nighttime sound levels are assigned a 10-dBA penalty prior to averaging with daytime hourly sound levels.

## Construction Noise

The City regulates construction noise through Section 8.14.040(E) and through Noise regulations contained in 11.80.030(D)(7) of the Municipal Code by limiting construction activities to 7:00 AM to 7:00 PM from Monday through Friday excluding holidays and from 8:00 AM to 4:00 PM on Saturdays. Construction is not permitted on Sundays or holidays. The City's Noise Ordinance prohibits any person from operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee.

Future development implemented under the Project could result in a temporary ambient noise increase due to construction activities. Construction noise typically occurs intermittently and varies depending upon the nature or phase of construction (e.g., demolition; land clearing, grading, and excavation; erection). Construction noise would be short term and would include noise from activities such as site preparation, truck hauling of material, pouring of concrete, and the use of power tools. Noise would also be generated by construction equipment use, including earthmovers, material handlers, and portable generators, and could reach high noise levels for brief periods.

The loudest noises during construction are typically from pile driving and blasting. No pile driving or blasting is planned for the Project.

As discussed in Section 4.13 of the MoVal 2040 Project EIR, hourly average noise levels would be approximately 83 dBA Leq at 50 feet from the center of construction activity when assessing three pieces of common construction equipment working simultaneously. Noise levels would vary depending on the nature of the construction activities including the duration of specific activities, the equipment involved, the location of the sensitive receivers, and the presence of intervening barriers. Construction noise levels of 83 dBA Leq at 50 feet would attenuate to 80 dBA Leq at 70 feet. Therefore, significant impacts would occur if sensitive land uses are located closer than 70 feet of construction activities (Moreno Valley 2021b).

The nearest sensitive receptors to the Project Site are homes on the north side of Jennings Court and Hillmer Court, within 50 feet from the southern boundary of the Project Site and within 350 feet from the center of proposed construction activity. With a bulldozer or scraper operating at the southern boundary of the Project Site with a maximum, intermittent short term noise level of 85 dBA , the noise level at the nearest home would be 79 dBA . Assuming a noise source of $83 \mathrm{dBA} \mathrm{L}_{\text {eq }}$ at the center of the Site, the noise level at the closest sensitive receptor would be approximately 66 dBA Leq. This would be less than the 80 dBA Leq $^{\text {d }}$ threshold of significance used in the MoVal 2040 Project EIR. The impact would be less than significant.

## Operational Noise - On-site Sources

Operational noise sources associated with the Project would include, but are not limited to, mechanical HVAC (heating, ventilating, and air conditioning) units; landscape maintenance equipment; and vehicles entering and exiting the Project Site. The Moreno Valley Municipal Code, Section 11.80.030 (C) prohibits noise generation in excess of $60 \mathrm{dBA} \mathrm{L}_{\text {eq }}$ in the daytime and $55 \mathrm{dBA} L_{e q}$ in the nighttime at 200 feet from the property line (Moreno Valley 2021a). Typical outdoor HVAC units may have noise levels from 65 to 75 dBA at a distance of 3 feet. Project HVAC units would be located 100 feet or more north of the property line. HVAC noise levels 200 feet south of the property line would be 45 to 55 dBA , which would not exceed

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the nighttime noise level requirement. Vehicle noise would be intermittent and would not exceed 55 dBA at 200 feet from the property line. The impact would be less than significant.

## Operational Noise - Project-Generated Traffic

As stated in the MoVal 2040 Project EIR, long-term traffic noise that affects sensitive land use would be considered substantial and constitute a significant noise impact if the project would:

- Increase noise levels by 5 dB or more where the no project noise level is less than 60 CNEL;
- Increase noise levels by 3 dB or more where the no project noise level is 60 CNEL to 65 CNEL ; or
- Increase noise levels by 1.5 dB or more where the no project noise level is greater than 65 CNEL .

The Project would generate an estimated 80 trips during the a.m. peak hour, 107 trips in the p.m. peak hour, and 1,020 total daily trips (Translutions 2021). The greatest impact for traffic noise increase would be the addition of Project traffic on the roadway with the least No Project traffic volume, which is Morton Road, north of Wordsworth Road. Based on the peak hour data in the traffic impact analysis (TIA), the No Project average daily traffic volume is less than 1,000 vehicles per day on Morton Road (Translutions 2021). The No Project noise level would be less than 55 dBA CNEL and would trigger the 5 dB significance threshold.

Comparison of the Project Completion Without Project traffic volumes to the Project Completion With Project traffic volumes shows a 270 percent increase in traffic volume. Assuming no change in average speed or fraction of trucks in the vehicle mix, the traffic noise increase would be approximately 4.4 dBA . This value is less than the 5 dBA significance threshold. The impact would be less than significant.


## Response:

Less than Significant Impact. Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers.

Construction generally includes a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, and other anomalies all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions.

The peak particle velocity (ppv) or the root mean square (rms) velocity is usually used to describe vibration amplitudes. The ppv is defined as the maximum instantaneous peak of the vibration signal and the rms is defined as the square root of the average of the squared amplitude of the signal. The ppv is more appropriate for evaluating potential building damage and is also used for evaluating human response. The units for ppv velocity are normally inches per second (in/sec).

The Municipal Code does not establish quantified limits for vibration levels (Moreno Valley 2021a). Section 9.10 .170 states that "No vibration shall be permitted which can be felt at or beyond the property line." Caltrans defines a distinctly perceptible vibration level as $0.24 \mathrm{ppv} \mathrm{in} / \mathrm{sec}$ (Caltrans 2013).

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As stated in the MoVal 2040 Project EIR, the Federal Transit Administration (FTA) provides construction vibration damage criteria for various types of buildings. The appropriate threshold for Project vibration analysis is $0.2 \mathrm{ppv} \mathrm{in} / \mathrm{sec}$, which is the FTA criterion for non-engineered timber and masonry buildings.

Pile driving and blasting are generally the sources of the most severe vibration during construction. Neither pile driving nor blasting would be used during Project construction. Conventional construction equipment would be used for grading activities. Table 13 summarizes typical vibration levels measured during construction activities for various vibration-inducing pieces of equipment.

TABLE 13
VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

| Equipment | ppv at 25 ft (in/sec) |
| :--- | :---: |
| Vibratory roller | 0.210 |
| Large bulldozer | 0.089 |
| Caisson drilling | 0.089 |
| Loaded trucks | 0.076 |
| Jackhammer | 0.035 |
| Small bulldozer | 0.003 |
| ppv: peak particle velocity; ft: feet; in/sec: inches per second. <br> Source: Caltrans 2013; FTA 2006. |  |

As shown in Table 13, a vibratory roller would produce the largest vibration. Vibration from a vibratory roller would be less than the $0.2 \mathrm{ppv} \mathrm{in} / \mathrm{sec}$ significance criterion for building damage and the $0.24 \mathrm{ppv} \mathrm{in} / \mathrm{sec}$ distinctly perceptible level at distances of 30 feet or greater. Project construction is not anticipated within 30 feet of the southern property line. The impact would be less than significant.
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

## Response:

Less than Significant Impact. March Air Reserve Base, a joint-use civilian and military facility, is located approximately 4.2 miles south-southwest of the Project Site. The northernmost 60 dBA CNEL aircraft noise contour is located south of the Project Site and across highway SR-60. Therefore, aircraft noise at the site is less than 60 dBA CNEL. Noise levels less than 65 dBA CNEL are "Normally Acceptable" for residential land uses according to the 2021 General Plan Update Noise Element (Moreno Valley 2021b). Therefore, the Project would not expose residents to excessive aircraft noise levels. The impact would be less than significant.

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## XIV. POPULATION AND HOUSING - Would the project:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of road or other infrastructure)?
$\square \quad \square \quad \square$

## Response:

Less Than Significant Impact. The Project is not anticipated to generate substantial unplanned population growth. Using an estimate of 2.95 persons per dwelling unit for residential development (United States Census Bureau 2021), the 108-unit Project could generate approximately 319 residents. It is unlikely that all the Project residents would be new residents to the City as some current City residents would likely relocate to the Project Site. However, for purposes of providing a conservative analysis, it is assumed that the Project would result in a net increase of 319 residents to the City. This additional population would represent approximately 0.0015 percent of the current City of Moreno Valley population estimate of 209,426 persons for the year 2021 (DOF 2021), and approximately 0.0012 percent of the projected population of 256,600 persons by 2040 (Moreno Valley 2021b). This minimal population growth would not be considered substantial unplanned population growth and would be consistent with the zoning and planned use of the Project Site. The Project includes no commercial or other land uses that would generate jobs, so indirect population growth is not anticipated to result from the Project. The extension of infrastructure to the subject site is not anticipated to generate future developments in the City of Moreno Valley due to the Open Space designations and hillside terrain located north and east of the site, which will not allow further development. Furthermore, the City is currently updating the City's General Plan to meet the City's Regional Housing Needs Assessment (RHNA) allocation for the Sixth Cycle Housing Element Update, which is a total of 13,627 units of total new construction. Targeted residential density changes are included to provide for higher density housing to support the meeting of state obligations under RHNA. Therefore, the Project would not result in substantial unplanned population growth and less than significant impacts would result.
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?


## Response:

No Impact. The Project would result in a residential development and would not require the demolition of any existing residential structures. Therefore, implementation of the Project would not displace existing housing or people and would not require the construction of replacement housing.

## XV. PUBLIC SERVICES - Would the project:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
i) Fire protection?

## Response:

Less Than Significant Impact. Fire protection services for the Project Site would be provided by the Moreno Valley Fire Department. The Towngate Station is the nearest station to the Project Site. The Towngate Station was jointly constructed by the City of Moreno Valley and the City of Riverside. The Towngate Station is a three bay facility that can house two engine companies, a truck company, and additional resources as needed. Currently, there is one paramedic engine assigned to this station which

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services the west side of Moreno Valley. Current equipment based at this station includes the following: one Type 1 engine, one Type 1 reserve engine, and one Paramedic Squad (Moreno Valley 2021b). Construction of the proposed 108 residential units would result in approximately 319 new residents and 108 units which would incrementally increase the demand for fire protection services, including administrative tasks associated with approval and construction of the Project (e.g., building plan check) and response to fire service calls once the Project is occupied. This minor increase in demand for fire protection services is not expected to independently require the construction of new or alteration of existing fire protection facilities to maintain an adequate level of fire protection service to the Project area. However, to maintain current levels of response times the Fire Department may need to add to their existing staffing to accommodate the Project as well as other cumulative projects in the vicinity (Moreno Valley 2021b).

Also, cumulatively, the Project along with others in the vicinity would likely necessitate construction of additional fire stations. The Moreno Valley Fire Department's Strategic Plan has identified potential locations of future fire stations within the City. However, the Project as well as other future development in the City would be required to pay a Development Impact Fee (DIF) that would be used exclusively for future facility improvements necessary to ensure contribution of its fair share of the cost of facilities and equipment. Payment of the DIF, as required by RR PUB-2, would allow future site-specific development to contribute to its fair share cost of facilities and equipment due to the increased demand for fire protection services (Moreno Valley 2021b). The construction of future fire department facilities would be subject to separate environmental review.

Furthermore, compliance with fire protection design standards during Project-specific site planning and construction design processes (as described in RR PUB-1) would ensure that the Project would not inhibit the ability of fire protection or paramedic crews to respond at optimum levels. Less than significant impacts would result related to this threshold, and no mitigation is required.
ii) Police protection?

## Response:

Less Than Significant Impact. The Project includes the addition of new homes that would increase the population and demand for police service at the Project Site above existing conditions. Police protection services for the Project Site are provided by the Moreno Valley Police Department (MVPD). Since incorporation, the City has maintained an annual contract with the Riverside County Sheriff's Department for police protection and crime prevention services. The City's existing General Plan (Moreno Valley 2021b) established a police staffing standard of at least 1 officer per 1,000 residents, as feasible given budget constraints. The Patrol Division of MVPD provides first responders to crimes in progress and to calls for service assigned by dispatch. The unit contains nine supervising sergeants, 64 sworn patrol officers, 3 K-9 teams, and 10 nonsworn officers. The MVPD receives approximately 400 to 450 calls per day. Calls to the MVPD are prioritized and assigned by urgency, from greatest urgency (Priority 1) through non-emergency calls. Priority 1 calls include emergency calls which require immediate response, when vehicular pursuit is in process, or when there is reason to believe that an immediate threat to life exists. Priority 2 calls include injured persons, robberies in progress, bomb threats, car jackings, rape, and stolen vehicles. Priority 3 calls include assault, prowlers, disturbances, tampering with vehicles, and burglary alarms. The MVPD has a response target of six minutes or less for Priority 1 calls, 15 minutes or less for Priority 2 calls, and 35 minutes or less for Priority 3 calls. MVPD operates out of the Moreno Valley Station, located in the Civic Center Complex at Alessandro and Frederick, with satellite substations in several other locations throughout the city (Moreno Valley 2021b).

The City is planning an expansion of the Civic Center complex that would include a remodeled Public Safety Building capable of accommodating roughly 600 total personnel, as well as a satellite police substation in the southeastern part of the City to service anticipated demand from new development (Moreno Valley 2021b). These two additional facilities would provide space necessary for additional staffing to provide police protection services under Project buildout. As specified in RR PUB-2, the Project would be subject

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to the payment of a DIF that would be used exclusively for future facility improvements necessary to ensure contribution of its fair share of the cost of facilities and equipment determined to be necessary to adequately accommodate new development in the City. Payment of the DIF would allow future site-specific development to contribute to its fair share cost of facilities and equipment due to the increased demand for police protection facilities. The construction of future police facilities would be subject to environmental review. Therefore, the Project would result in less than environmental impacts related to the expansion of police services.


## Response:

Less Than Significant Impact. The Project would result in the addition of new households with schoolage children that would increase attendance at local schools. The Moreno Valley Unified School District (MVUSD) serves the Project Site. The Project Site would be served by Seneca Elementary School (0.49mile south), Vista Heights Middle School ( 3.83 miles east), and Canyon Springs High School ( 3.83 miles east). MVUSD is the third largest school district in Riverside County, serving approximately 77 square miles that includes portions of the City, a small portion of the City of Riverside, and unincorporated regions in Riverside County. MVUSD serves Kindergarten through 12th grade across 39 existing school sites, with 32,763 students enrolled in the 2018-2019 school year (Moreno Valley 2021b). MVUSD has identified the need to construct additional schools to meet future enrollment demand. Construction of future schools could result in environmental impacts (Moreno Valley 2021b). At the time future schools are proposed, they would require separate environmental review and compliance with regulations in existence at that time would address potential environmental impacts related to the construction and operation of new schools. Furthermore, prior to issuance of a building permit, the Developer shall pay new development fees to the MVUSD pursuant to Section 65995 of the California Government Code. As an option to the payment of developer fees, the MVUSD and the Developer can enter into a facility and funding agreement, if approved by both parties. Evidence that agreements have been executed shall be submitted to the Community Development Department, or fees shall be paid with each building permit. Given the considerations above, the Project would result in less than significant impacts related to this threshold, and no mitigation is required.

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iv) Parks?
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## Response:

Less Than Significant Impact. The City's Parks and Community Services Department maintains approximately 482 acres of parkland within the Planning Area, which consists of seven community parks, 24 neighborhood parks, four specialty parks and 15 miles of trails/greenways existing and proposed park and recreational facilities (Moreno Valley 2021b). The City has established a park service standard of 3.0 acres of parkland per 1,000 residents to ensure that access to parks is adequate and commensurate with the size of the community. With 675.77 acres of existing and planned parkland, Moreno Valley currently has 2.68 acres per thousand residents, below the established service ratio. The City owns several properties that may be developed in the future as parks. Development of these facilities would provide new recreational open space to satisfy future demand. The City requires that new residential developments, such as the Project, be required to dedicate land for new park facilities or pay a fee that can be used for acquisition of parkland as needed to meet the community-wide standard, pursuant to Section 3.40 .020 of the Moreno Valley Municipal Code, at the time of subdivision map approval or issuance of building permits, which is a codification of State "Quimby Act" requirements. Construction of these future parks could result in environmental impacts, including disturbances or conversion of habitat, water pollution during construction, increased noise levels, and an increase in impermeable surfaces. At the time future parks are proposed, they would require a separate environmental review and compliance with regulations in existence

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at that time would address potential environmental impacts related to the construction and operation of new parks.

Based on the population increase estimate of 319 new residents, a total of 0.957 acres of new parkland must be dedicated and improved with the Project, unless in lieu fees are paid. The Project proposes a 0.89-acre neighborhood park and a total of 3.1 acres of open space consisting of common-area, trails, and the neighborhood park area within the Project Site boundaries. The Project's provision of these 3.1-acres of parkland per 319 anticipated residents added by the Project exceeds the City's goal of 3.0-acres per 1,000 residents, for new residents. However, the Quimby Act regulations require that "public parks" open to the general public be provided. If the Project proposes to add a neighborhood park that is owned and maintained by the Homeowners Association, this would not meet Quimby Act regulations. Similarly, if linear parks or public trails are open to the general public, they could count as part of the Quimby " 3 Acre/1,000 residents" standard.

The increase in Project residents would increase the demand on public parks and recreational facilities in the nearby vicinity. However, because the Project results in a relatively small number of new residents to the City's existing population and provides on-site recreational amenities, the increased use of existing public park facilities would not be at a level that would result in a substantial deterioration of existing facilities or require the need for new or physically altered facilities. Furthermore, as required by RR PUB-2, the Developer would be required to pay the DIF, a portion of which is used for parkland dedication and park improvements. Although the Project's impacts to City park facilities would be less than significant, payment of required DIF would further reduce any potential impacts on City parks and recreational facilities associated with the increased demand and use of the facilities. Therefore, based on this analysis, less than significant impacts would result from the Project, and no mitigation is required.
v) Other public facilities?

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## Mitigation Program:

## Regulatory Requirement

RR PUB-1 The Developer shall comply with all applicable codes, ordinances, and regulations, including the most current edition of the California Fire Code and the City of Moreno Valley Municipal Code, regarding fire prevention and suppression measures; fire hydrants; fire access; water availability; and other, similar requirements. Prior to issuance of building permits, the City of Moreno Valley Community Development Department and the Moreno Valley Fire Department shall verify compliance with applicable codes and that appropriate fire safety measures are included in the Project design. All such codes and measures shall be implemented prior to occupancy.

RR PUB-2 The Developer shall pay all applicable Development Impact Fees (DIFs) prior to the issuance of building permits, for parkland dedication, parkland improvements, public safety facilities, other governmental facilities, and outside agency fees including school district fees.

## XVI. RECREATION - Would the project:

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility will occur or be accelerated?

## Response:

Less than Significant Impact. See response above to threshold XV(iv) for a related response. In summary, the Project would result in an increase of 319 residents and usage of parks. However, the Project includes the provision of a neighborhood park within the Project Site and would pay the City's DIF for parkland in lieu fees as needed and as required by RR PUB-2, which would ensure that the Project pays its fair share for any required new parks or improved park facilities. Less than significant impacts would result from the Project related to this threshold, and no mitigation is required.


## Response:

No Impact. The Project includes the development of a neighborhood park within the Project Site and the impacts of the park has been addressed through the impact analysis presented throughout this document. The Project also includes the rezoning and dedication of portions of the Project Site, which may be developed by the City or others with recreational trails or other facilities at some time in the future. Any future trails or other recreational facilities within these areas would be subject to a separate environmental review. Therefore, no impacts would result from the Project related to this threshold, and no mitigation is required.

## XVII. TRANSPORTATION - Would the project:

a) Conflict with program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

## Response:

Less Than Significant Impact. The Project's consistency with programs, plans, ordinances, and policies related to the circulation system is evaluated below.

## General Plan - Circulation Element:

The Circulation Element of the City's General Plan includes an evaluation of the regional transportation system, as well as City goals and policies related to circulation. The Project would not directly conflict with any of the goals or policies contained in the Circulation Element. The Project would support the City in implementing Goal C-2 of the Circulation Element, which is to plan, design, construct, and maintain a local transportation network that provides safe and efficient access throughout the city and optimizes travel by all modes. The Project includes local roads that have been designed to allow for safe paths of travel for vehicular, bicycle, and pedestrian users. As a result of Senate Bill 743 (SB 743), a Project's impacts on vehicular Level of Service (LOS) are no longer considered an environmental impact. Therefore, the Project's effects on vehicular LOS are disclosed separately in the Project's Traffic Impact Analysis, provided as Appendix K. Recommended LOS-related conditions of approval are provided therein to ensure consistency with City LOS standards that are contained in the Circulation Element.

## Bicycle Master Plan:

The City's Bicycle Master Plan contains an analysis of existing conditions, an evaluation of opportunities and constraints for improving the City's bicycle system, and goals, policies, and objectives relating to bicycling (Moreno Valley 2014). The Bicycle Master Plan does not have any goals, policies, or objectives that relate directly to developments; therefore, the Project would not conflict with the Bicycle Master Plan. Furthermore, the Project's internal roadways have been designed to include shoulders that could be used by bicyclists.

## Conclusion

As discussed above, the Project would not conflict with a circulation-related program, plan, ordinance, or policy. The Project would result in less than significant impacts relative to this threshold, and no mitigation is required.


## Response:

Less Than Significant Impact. Based on the City of Moreno Valley Transportation Impact Analysis Preparation Guide for Vehicles Miles Traveled and Level of Service Assessment, a project located in a low VMT area can be effectively screened out from a project-level VMT assessment. To identify if the Project is in a low VMT-generating area, the WRCOG screening tool was applied using VMT per capita. Figure 16 presented within the Traffic Impact Analysis (Appendix K) shows the low VMT area screening for the Project, which shows that the Project Transportation Analysis Zone (TAZ) based VMT per capita is 15.45 miles. The jurisdictional VMT per capita is 19.04 miles. Since the Project TAZ VMT per capita is lower than the City's VMT per capita, the Project is considered to be in a low VMT generating TAZ and presumed to

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have a less than significant impact on VMT (Translutions 2021). No additional analysis is required and no mitigation measures are required.
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?


## Response:

Less Than Significant Impact. The design of driveways and other project access locations would be based on City Code, which sets the standard for such design. And the project does not propose any incompatible land uses, because only new residences are being proposed on a site that is adjacent to single family residential uses to the south. New roads and sidewalks within the Project Site are not anticipated to increase traffic hazards as they will comply with engineering industry standards for new roads, as reviewed and approved by the City of Moreno Valley's Land Development Department. The Project will create a slight realignment of the Morton Road street right-of-way to be adjusted towards the east near the project entry in order to create added street frontage. However, the re-designed street right-of-way will conform to acceptable standards for street geometry and grading principles, and will not create any increased hazards. Therefore, the Project impact is considered less than significant.
d) Result in inadequate emergency access?


## Response:

Less Than Significant Impact. The proposed new roadway connection to Morton Road and internal roadways would be designed in accordance with all applicable design and safety standards required by adopted fire codes, safety codes, and building codes established by the City's Land Development and Fire Departments. The Project would not increase delays on street segments substantially; therefore, the Project would not result in inadequate emergency access, and the Project impact is considered less than significant.

## XVIII. TRIBAL CULTURAL RESOURCES - Would the project:

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or


Response: The Project is subject to Assembly Bill 52 (AB 52) (Chapter 532, Statutes of 2014), which establishes a formal consultation process for California tribes as part of the CEQA process and equates significant impacts on "tribal cultural resources" with significant environmental impacts (Public Resources Code [PRC] § 21084.2). AB 52 requires that lead agencies undertaking CEQA review evaluate, just as they do for other historical and archeological resources, a project's potential impact to a tribal cultural resource. The City must notify all Tribal Governments that have been previously registered for AB 52 consultation interest with the City about the Notice of Intent to Adopt a Mitigated Negative Declaration, and offer a 30day review period in which to request "formal government-to-government consultation".

Also, because the Project involves a General Plan Amendment, the Project is also subject to Section 65352.3 of the CA Government Code (SB 18), which requires local planning agencies to provide

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opportunities for involvement of California Native American tribes on the contact list maintained by the Native American Heritage Commission. The listed Tribes have up to 90 days to request consultation, unless a shorter time frame is agreed to by that Tribe.

Consultation under Assembly Bill 52 (AB 52) and Senate Bill 18 (SB 18) began on January 20, 2022 with letters being sent to the following tribes:

- Agua Caliente Band of Cahuilla Indians;
- Cahuilla Band of Indians;
- Torres-Martinez Desert Cahuilla Indians;
- Los Coyotes Band of Cahuilla Mission Indians;
- Morongo Band of Mission Indians;
- Pechanga Band of Luiseño Indians;
- Rincon Band of Luiseño Indians;
- San Manuel Band of Mission Indians;
- Santa Rosa Band of Mission Indians; and
- Soboba Band of Luiseño Indians.

The 90-day response period ended on April 19, 2022. Of the ten tribes contacted, two tribes requested to consult during the consultation process which included: Pechanga Band of Luiseño Indians and Rincon Band of Luiseño Indians. Additionally, the City received a request from Agua Caliente Band of Cahuilla Indians for Project documents but no formal request to consult.

The consulting tribes consider the area sensitive for tribal cultural resources because the Project Site lies within their traditional use areas and there are cultural resource sites that have been located in the larger vicinity. Also, two components of Site 33-15937 would be impacted by the Project, which consists of both prehistoric and historic-period components, including bedrock milling features, building foundations, a well, a cistern, and a refuse deposit. were determined not to meet CEQA definition of "historical resources" (CRM Tech 2018). Given this context, the consulting tribes requested inclusion of mitigation due to the potential of the Project to unearth previously undocumented tribal cultural resources during construction. As such, MM TCR-1 through MM TCR-10 are included, which require archaeological and Native American monitoring, preparation of a Cultural Resource Monitoring Plan, procedures for artifact disposition and inadvertent finds, and preparation of Phase III and IV reports. With implementation of MM TCR-1 through MM TCR-10, impacts would be less than significant.
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.


Response: As discussed above, to avoid potential adverse effects to tribal cultural resources, MM CUL-1 and MM TCR-1 have been included to provide for Native American and archaeological monitoring of excavation and grading activities to avoid potential impacts to tribal cultural resources that may be unearthed by Project construction activities. No information has been provided to the Lead Agency

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indicating any likelihood of uncovering tribal cultural resources on the Project Site, there are no known tribal cultural resources on or adjacent to the Project Site, and no potentially significant impacts are anticipated. Mitigation measures MM CUL-1 and MM TCR-1 through TCR-10 are included in the event of any inadvertent discoveries during construction activities.

Additionally, as described previously under RR CUL-1, California Health and Safety Code, Section 7050.5 requires that if human remains are discovered in the Project Site, disturbance of the site shall halt and remain halted until the coroner has conducted an investigation. If the coroner determines that the remains are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission. Therefore, with implementation of RR CUL-1, MM CUL-1, and MM TCR-1 through MM TCR-10, impacts to TCRs would be less than significant.

## Mitigation Program:

## Mitigation Measure

MM TCR-1: Archaeological Monitoring. Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist, who meets the U.S. Secretary of the Interior Standards, to conduct monitoring of all mass grading and trenching activities.

The Project Archaeologist, in consultation with the Consulting Tribe(s) including Pechanga Band of Luiseño Indians, the contractor, and the City, shall develop a CRMP as defined in MM TCR-3. The Project archeologist shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The archaeological monitor shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed.

MM TCR-2: Native American Monitoring. Prior to the issuance of a grading permit, the Developer shall secure agreements with the Pechanga Band of Luiseño Indians for tribal monitoring. The City is also required to provide a minimum of 30 days' advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. The Native American Monitor(s) shall attend the pre-grading meeting with the Project Archaeologist, City, the construction manager and any contractors and will conduct the Tribal Perspective of the mandatory Cultural Resources Worker Sensitivity Training to those in attendance.

MM TCR-3: In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries:
a. One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Department:
i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources.
ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to MM CUL-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American

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Tribal Governments as defined in MM CUL-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City, and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.

MM TCR-3: Cultural Resource Monitoring Plan (CRMP). The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a CRMP in to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the Project Site. A consulting Tribe is defined as a Tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:
a) Project description and location;
b) Project grading and development scheduling;
c) Roles and responsibilities of individuals on the Project;
d) The pre-grading meeting and Cultural Resources Worker Sensitivity Training details;
e) The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.
f) The type of recordation needed for inadvertent finds and the stipulations of recordation of sacred items.
g) Contact information of relevant individuals for the Project.

MM TCR 4: The City shall verify that the following note is included on the Grading Plan:
"If any suspected archaeological resources are discovered during ground disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100 -foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

MM TCR 5: Inadvertent Finds. If potential historic or cultural resources are uncovered during excavation or construction activities at the Project Site that were not assessed by the archaeological report(s) and/or environmental assessment conducted prior to Project approval, all ground disturbing activities in the affected area within 100 feet of the uncovered resource must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Further ground disturbance shall not resume within the area of the discovery until an agreement has been reached by all parties as to the appropriate mitigation. Work shall be allowed to continue outside of the buffer area and will be monitored by additional archeologist and Tribal Monitors, if needed. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in MM TCR-2 before any further work commences in the affected area. If the find is determined to be significant and avoidance of the site has not been achieved, a Phase III data recovery plan shall be
prepared by the Project Archeologist, in consultation with the Tribe, and shall be submitted to the City for their review and approval prior to implementation of the said plan.

MM TCR 6: Human Remains. If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).

MM CR 7: Non-Disclosure of Reburial Locations. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or associated grave goods shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, pursuant to the specific exemption set forth in California Government Code 6254 (r)., parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code 6254 (r).

MM TCR 8: Archeology Report - Phase III and IV. Prior to final inspection, the developer/permit holder shall prompt the Project Archeologist to submit two (2) copies of the Phase III Data Recovery report (if required for the Project) and the Phase IV Cultural Resources Monitoring Report that complies with the Community Development Department's requirements for such reports. The Phase IV report shall include evidence of the required cultural/historical sensitivity training for the construction staff held during the pre-grade meeting. The Community Development Department shall review the reports to determine adequate mitigation compliance. Provided the reports are adequate, the Community Development Department shall clear this condition. Once the report(s) are determined to be adequate, two (2) copies shall be submitted to the Eastern Information Center (EIC) at the University of California Riverside (UCR) and one (1) copy shall be submitted to the Consulting Tribe(s) Cultural Resources Department(s).

MM TCR 9: In accordance with consultations and determinations made by the developer and the Pechanga Tribe, all recorded features within CA-RIV-8274 will be avoided except for bedrock milling feature (1), which is on Lot 8 . The Pechanga Tribe shall work with the project archaeologist, the developer, and the grading contractor or appropriate personnel to determine a reasonable methodology for relocating these features. Attempts will be made to excavate and relocate these boulders to the open space preserve, should their size and depth permit. If the boulders cannot be moved intact due to feasibility constraints, an attempt will be made to transversally cut into them so as to free the exposed prehistoric features, allowing the slicks themselves to be relocated to the adjacent open space preserve. The current Department of Parks and Recreation (DPR) forms shall be updated, detailing which features were relocated, the process taken, and updated maps provided documentation of the features' new location. The site record should clearly indicate that the features are not in their original location and why they were relocated.

MM TCR 10: Prior to any earthmoving activities, milling features 3 and 5 of CA-RIV-8274 will be fenced and identified as an Environmentally Sensitive Area (ESA). The Project Applicant will ensure that appropriate temporary fencing is installed (i.e., orange fabric/barrier fencing) to prevent any unintentional disturbances to features 3 and 5 of CA-RIV-8274 during any earthmoving activities on the project site. The fencing will be installed before clearing and grubbing and will not be removed until all earthmoving activities have been completed. The project archaeologist and Pechanga Tribal Monitor will be on site to monitor the fence installation and removal and will conduct daily inspections of the fencing to make sure that
it is intact and has not been breached. If the project archaeologist and/or Pechanga Tribal Monitor identify a breach of the fence, i.e., removal, cut, depressed, driven over or intentionally breached in any way, all work within a 25 -foot buffer shall cease and the Project Applicant, City, project archaeologist and the Pechanga Tribe shall meet and confer as to the best method to repair the fencing. The person(s) responsible for the breach and the Construction Supervisor (or appropriate supervisory personnel) shall be required to retake the sensitivity training provided at the beginning of construction, in addition to any other remedies considered appropriate.

## Sources:

1. Moreno Valley General Plan, adopted July 11, 2006

- Chapter 7 - Conservation Element - Section 7.2 - Cultural and Historical Resources

2. Final Environmental Impact Report City of Moreno Valley General Plan, certified July 11, 2006

- Section 5.10 - Cultural Resources
- Figure 5.10-1 - Locations of Listed Historic Resource Inventory Structures
- Figure 5.10-2 - Location of Prehistoric Sites
- Figure 5.10-3 - Paleontological Resource Sensitive Areas
- Appendix F - Cultural Resources Analysis, Study of Historical and Archaeological Resources for the Revised General Plan, City of Moreno Valley, Archaeological Associates, August 2003.

3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
4. Moreno Valley Municipal Code Title 7 - Cultural Preservation
5. Cultural Resources Inventory for the City of Moreno Valley, Riverside County, California, prepared by Daniel F. McCarthy, Archaeological Research Unit, University of California, Riverside, October 1987 (This document cannot be provided to the public due to the inclusion of confidential information pursuant to Government Code Section 6254.10.)

## XIX. UTILITIES AND SERVICE SYSTEMS - Would the project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

## Response:

## Less Than Significant Impact.

## Water

The Project Site is served by EMWD. EMWD imports water from MWD that it uses to provide water supply to the City. The imported water received from MWD is treated at two treatment plants: Henry J. Mills (Mills) in Riverside and Robert A. Skinner (Skinner) in Winchester. At Mills, State Water Project water is treated, while at Skinner a combination of State Water Project water and Colorado River Aqueduct water is treated. Untreated water supplied by MWD is treated by EMWD at a microfiltration plant in Perris. An additional
microfiltration plant is located in Hemet, which provides untreated MWD water directly to a number of agricultural and wholesale customers. EMWD is increasing the use of recycled water, through expansion and maximization of the four regional water reclamation facilities (Moreno Valley 2021b).

The Project would generate an increase in water demand through the addition of approximately 319 people and 108 residential units; however, the neighboring properties are already served by water infrastructure. The Project includes trenching and installation of a water line to connect to the existing water main line located within Morton Road near the intersection with Jennings Court, which serves the existing residential development south of the Project Site. The impacts of these water-related improvements are disclosed in this Initial Study/Mitigated Negative Declaration (IS/MND), and no other relocation or expansion of water infrastructure is anticipated.

## Wastewater

EMWD is responsible for all wastewater collection and treatment in its service area. EMWD's wastewater collection systems include: 1,534 miles of gravity sewer, 53 lift stations, and 4 operational regional water reclamation facilities (RWRFs), with interconnections between local collection systems serving each treatment plant. Inter-connections between the local collections systems serving each treatment plant allow for operational flexibility, improved reliability, and expanded deliveries of recycled water. All of EMWD's RWRFs produce tertiary effluent, suitable for all Department of Health Services permitted uses, including irrigation of food crops and full-body contact. EMWD treats all of the wastewater collected in its service area to tertiary standards and disposes of its recycled water in one of three ways: (1) customer sales, (2) discharge to Temescal Creek, or (3) percolation and evaporation while stored in ponds throughout EMWD. In 2015, EMWD collected 48,665 acre-feet of wastewater, treated 45,385 acre-feet of wastewater, and recycled 34,001 acre-feet of wastewater within its service area (Moreno Valley 2021b).

The Project would generate an increase in wastewater generation through the addition of approximately 319 people and 108 residential units; however, the neighboring properties are already served by wastewater infrastructure. The Project includes trenching and installation of a sewer line to connect to the existing sewer main line located within Morton Road near the intersection with Jennings Court, which serves the existing residential development south of the Project Site. The impacts of these wastewater-related improvements are disclosed in this IS/MND, and no other relocation or expansion of water infrastructure is anticipated. Furthermore, in July 2021 a will serve letter was received by the Developer confirming that EMWD is willing to provide water and sewer services to the Project (EMWD, July 2021a).

## Stormwater

The Project includes the installation of hillside drainage, inlets, and storm drain lines to intercept and convey stormwater either along existing flow paths or to the Project's two combination detention and bioretention basins (e.g., Basins A and B). Basin overflows have been designed to connect downstream to two natural drainage courses, similar to pre-Project conditions. Project drainage and stormwater improvements are depicted in Figure 6, Preliminary BMP Site Plan from the Preliminary Water Quality Management Plan.

## Electricity, Natural Gas, and Telecommunications

SCE and the Moreno Valley Electric Utility (MVU) provide electricity to the Planning Area. SCE, a subsidiary of Edison International, serves approximately 180 cities in 11 counties across central and southern California. Today SCE has over 6,500 residential and business clients in a service area that covers the eastern and southern portions of the city. Southern California Gas provides the City with natural gas service. SoCalGas' service territory encompasses approximately 20,000 square miles and more than 500 communities. No telecommunications facilities occur within the Project Site. The Project would install electricity, natural gas, and telecommunication lines onsite and would be responsible to connect to existing distribution lines offsite. The Project includes trenching between the Project Site and the intersection of Morton Road and Jennings Court to connect to electricity, natural gas, and telecommunications facilities.

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## Conclusion

The Project would not require the relocation or extension of utility infrastructure, beyond the connection to existing utility mainlines that are located within Morton Road southwest of the Project Site. Less than significant impacts would result related to these thresholds, and no mitigation is required.
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?


## Response:

Less than Significant Impact. EMWD's 2020 Final Urban Water Management Plan (UWMP) is an update to the 2015 UWMP and was prepared in response to Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act. Detailed information about EMWD's water demand, supply, and reliability is provided through 2040. As stated in the UWMP, EMWD's recycled water distribution system includes 135 miles of large diameter transmission pipelines, 6,000 acre feet of surface storage reservoirs (10 separate sites), and 4 regional pumping plants. As set forth in the UWMP, EMWD has the supply needed to meet the demand of its customers through 2040 (Moreno Valley 2021b). The conclusion is based on the assurances of MWD that it would be able to supply member agency demands, the reliability of local groundwater supplies achieved through groundwater management plans and the development of recycled water resources. The UWMP was developed based on future population projections prepared by SCAG, which assumed R2 and HR zoning for the Project Site (SCAG 2020).

The Project proposes a zone change, which would allow for a greater density for the Project Site, which may result in nominal increases in indoor water usage above what was assumed in the UWMP. However, this slight increase in residential density would have a negligible effect on City and regional water demand relative to the overall service area of the EMWD. In July 2021 a will serve letter was received by the Project Developer confirming that EMWD is willing to provide water and sewer services to the Project (EMWD, 2021a).

Using the Actual 2020 Gallons (of Water) Per Capita Per Day (GPCD) measurements reported in EMWD's 2020 UWMP of 125 GPCD, the new 319 residents that would reside within the Project site would result in an increased water demand above existing conditions of 39,875 gallons per day and $14,554,375$ gallons per year, which is roughly 44.67 acre-feet of water annually. The Project's demand equates to 0.0007percent of the 62,970 acre-feet of water that is anticipated to be available in 2025 by EMWD's 2020 UWMP.

Given the reasoning listed above, the Project would have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years, and impacts would be less than significant.
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?


## Response:

Less than Significant Impact. The City provides trash, recycling, and special waste handling services to residents and businesses through a contract with Waste Management. The majority of solid waste generated within the city is disposed of at Badlands Sanitary Landfill, located north of SR-60 and west of I10 off Ironwood Avenue. Two other landfills within the County of Riverside, El Sobrante Landfill and Lamb

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Canyon Landfill, also have the capacity to serve the City. These three landfills have a combined remaining capacity of approximately 178.8 million cubic yards (Moreno Valley 2021b).

The Project involves demolition of limited paved surfaces within Morton Road to construct utility improvements and drainage facilities, which would generate debris that would need to be removed from the Project Site. The solid waste generated from the demolition Project could be accommodated within the permitted capacity of the El Sobrante Landfill. Also, Project implementation would result in the development of 108 residential units. Based on a solid waste generation rate of 4.9 pounds per person per day, assuming a maximum occupancy of 319, the Project's residential uses would generate approximately 1,563 pounds of trash per day (USEPA 2021).

The City's Building Code requires development projects to complete and submit a Waste Management and Recycling Plan for approval prior to issuance of building permits. The Waste Management and Recycling Plan for the Project would identify the project type, and estimate the amount of materials to be recycled during construction. The Project would also be required to complete a Diversion Report for review by the City's Building Department to demonstrate that the Project recycled a minimum of 50 percent of its construction waste. Future site-specific development under the Project would be required to complete a Waste Management and Recycling Plan and a Diversion Plan, which would ensure consistency with local and state requirements regarding waste diversion, including the California Integrated Waste Management Act. Additionally, the Project would also be required to implement organic waste recycling programs consistent with the requirements of AB 1826 and SB 1383. Therefore, the Project would not generate solid waste in excess of state or local standards, exceed the capacity of local infrastructure, or conflict with federal, State, or local management and reduction statutes and regulations related to solid waste, and impacts would be less than significant.
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

## Response:

Less Than Significant Impact. The California Integrated Waste Management Act (AB 939), signed into law in 1989, established an integrated waste management system that focused on source reduction, recycling, composting, and land disposal of waste. In addition, the bill established a 50 percent waste reduction requirement for cities and counties by the year 2000, along with a process to ensure environmentally safe disposal of waste that could not be diverted. Per the requirements of the Integrated Waste Management Act, the Riverside County Board of Supervisors adopted the County of Riverside Countywide Integrated Waste Management Plan (CIWMP), which outlines the goals, policies, and programs the County and its cities implement to create an integrated and cost-effective waste management system that complies with the provisions of AB 939 and its diversion mandates.

In order to assist the City of Moreno Valley in achieving the mandated goals of the Integrated Waste Management Act, the Project's building occupant(s) would be required to work with future refuse haulers to develop and implement feasible waste reduction programs, including source reduction, recycling, and composting. Additionally, in accordance with the California Solid Waste Reuse and Recycling Act of 1991 (Cal Pub Res. Code Section 42911), the Project is required to provide adequate areas for collecting and loading recyclable materials where solid waste is collected. The collection areas are required to be shown on construction drawings and be in place before occupancy permits are issued. Further, in compliance with AB 341, the future occupant(s) of the Project would be required to arrange for recycling services, if the occupant generates four (4) or more cubic yards of solid waste per week. The implementation of these mandatory requirements would reduce the amount of solid waste generated by the Project and diverted to landfills, which in turn would aid in the extension of the life of affected disposal sites. The Project would be required to comply with all applicable solid waste statutes and regulations; as such, impacts related to solid waste statutes and regulations would be less than significant.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

XX. WILDFIRE - If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

## Response:

Less Than Significant Impact. The Project Site is located within a FHSZ in a Local Responsibility Area (LRA) (CALFIRE 2009). LRAs include incorporated cities, cultivated agriculture, lands, and portions of the desert. Local responsibility area fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government (CALFIRE 2007). Outside of the City of Moreno Valley Boundaries adjacent properties to the west, north, and east of the Project Site are located within a FHSZ in a State Responsibility Area (SRA) (CAL FIRE 2009). SRA is a legal term defining the area where the State has financial responsibility for wildland fire protection (CALFIRE 2007). As noted above in response to Threshold IX(f), the Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. As described in more detail in response to Threshold XVII(a), the Project would result in additional traffic on local roadways during construction and operation of the Project. However, this additional traffic would not degrade the level of service on these roads or at local intersections. As such, evacuation routes identified in local plans, including Box Springs Road, SR-60, and $\mathrm{l}-215$ would not be significantly affected by the Project. Therefore, the Project would result in less than significant impacts related to this threshold, and no mitigation is required.
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?


## Response:

Less Than Significant Impact. The Project Site, as well as much of the northern and eastern portions of the City of Moreno Valley, is subject to wildland fires. As noted above, the Project Site is located within and adjacent to a FHSZ. The Project would be constructed in compliance with the Fire Code, California Building Code, and the objectives, policies, and programs of the City's General Plan (Moreno Valley 2021b). Also, the Project includes the establishment and ongoing maintenance of fuel modification zones along the northern and eastern boundaries of the Project Site, as shown in the Fire Hazard Analysis and Approach memorandum that was prepared for the Project. Given the above considerations, the Project would not exacerbate wildfire risks, or expose Project occupants to pollutant concentrations from wildfire or the uncontrolled spread of a wildfire. Impacts would be less than significant, and no mitigation is required.
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?


## Response:

Less Than Significant Impact. The Project includes the installation and maintenance of infrastructure, including roads within the Project Site, as well as wet and dry utilities within the Project Site and within the existing, developed portions of Morton Road just south of the Project Site and north of the intersection with Jennings Court. These improvements have no features that would substantially exacerbate wildfire risks during construction, operation, or ongoing maintenance. Electrical and gas lines serving the Project would

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

be underground and within proposed and existing roadway rights-of-way. Also, as mentioned above, the Project includes the establishment and ongoing maintenance of fuel modification zones along the northern and eastern boundaries of the Project Site, as shown in the Fire Hazard Analysis and Approach memorandum that was prepared for the Project, which would result in reduced wildfire risks. Less than significant impacts would result from the Project relative to this threshold, and no mitigation is required.
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?


## Response:

Less Than Significant Impact. The Project Site is located upslope and directly adjacent to Morton Road. Stormwater flows from the Project Site would be conveyed and retained as described in more detail in response to threshold questions X (a-e) "Hydrology and Water Quality", which would avoid the potential for downslope or downstream flooding, and for significant alterations to existing drainage patterns. The Project would result in an increase in impervious surface coverage and minor alterations to ephemeral drainages that traverse the Project Site; however, the Project's drainage and water quality improvements would intercept, slow, and treat stormwater before it is allowed to flow into natural drainage courses away from the Site, similar to existing conditions. The Project's drainage design is depicted in Figure 6, Project Specific Water Quality Management Plan, which includes a system of hillside drainage facilities, inlets, and storm drain lines as well as two combination detention and bioretention basins. Through the implementation of this drainage design and stormwater BMPs, the Project would have less than significant impacts related to downslope and downstream flooding due to runoff and drainage changes.

The Project would have no effects on the stability of slopes outside of the Project Site. As described in response to threshold question $\mathrm{VII}(\mathrm{a})$ (iv) "Geology and Soils" there was no geologic literature that indicated the presence of landslides on or directly adjacent to the Project Site (LGC Geo-Environmental, Inc 2018a). Therefore, the Project would have less than significant impacts related to post-fire slope instability and landslide.

## XXI. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

|  |
| :---: | :---: | :---: | :---: |

## Response:

Less Than Significant with Mitigation. Implementation of the Project would have the potential to degrade the quality of the existing environment as described below. Potential significant impacts have been identified related to Biological Resources (IV), Cultural Resources (Section V), Geology and Soils (VII), and Tribal Cultural Resources (XVIII). Mitigation measures have been identified related to individual resource-specific impacts. The Project has the potential to result in direct and indirect impacts to nesting coastal California gnatcatcher, white-tailed kite, loggerhead shrike and other nesting birds during construction activities. Implementation of MM BIO-1, which requires a pre-construction nesting bird survey be conducted if ground-

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

disturbing and/or vegetation clearance activities are scheduled to occur during the avian nesting season (typically February 15 through August 31), would reduce impacts to these species to less than significant levels. The Project Site and vicinity contains habitat suitable for burrowing owl, a non-listed special status species. Although a focused burrowing owl survey was conducted in 2021 and burrowing owl were determined to be absent, there is the potential for burrowing owl to colonize the Project Site or nearby vicinity prior to construction due to the presence of suitable habitat. If burrowing owl should colonize the Project Site or 500 -foot vicinity prior to initiation of construction activities, impacts to burrowing owl could be significant. Implementation of MM BIO-2, which requires a pre-construction survey for burrowing owl be conducted would reduce any potential impact to less than significant levels. The Project would result in permanent impacts to drainages within the Project Site that are classified as non-wetland waters of the United States under the jurisdiction of USACE and the RWQCB, as streambed under the jurisdiction of CDFW on the Project Site, and as riverine resources pursuant to the MSHCP. MM BIO-3 requires that the Developer obtain regulatory permits. MM BIO-4 specifies minimum compensatory mitigation requirements for impacts to jurisdictional waters. With implementation of MM BIO-2, MM BIO-3, and MM BIO-4, the Project would result in less than significant impacts relative to fish or wildlife species habitat and would not cause fish or wildlife population to drop below self-sustaining levels, or threaten to eliminate a plant or animal community.

The Project is under the jurisdiction of the City of Moreno Valley and the Project Site is within the MSHCP Plan Area. Compliance with the MSHCP is mandatory and any conflict with the MSHCP would be a significant impact. To prevent conflicts with the applicable sections of the MSHCP, the Developer must do the following: pay the applicable MSHCP Development Mitigation Fee (MM BIO-5); implement resource avoidance measures associated with burrowing owl and riparian/riverine resources (MM BIO-2 and MM BIO-4); and comply with MSHCP Urban/Wildlife Interface Guidelines (MM BIO-7 and RR AES-1). Through the implementation of MM BIO-2, MM BIO-4, MM BIO-5, MM BIO-7, and RR AES-1, any potential conflicts with the MSHCP would be avoided and no impacts would be anticipated. The Project Site is within the Stephens' Kangaroo Rat Habitat Conservation Plan boundary. With payment of the Stephens' Kangaroo Rat Habitat Conservation Plan Development Mitigation Fee (MM BIO-7), the Project would be consistent with the Stephens' Kangaroo Rat Habitat Conservation Plan and less than significant impacts would result from the Project.

Given the presence of archaeological resources in the vicinity of the Project, there is the possibility that undiscovered intact cultural resources, including archaeological resources may be present below the surface in native sediments. This would represent a significant impact. However, implementation of MM CUL-1, which requires that any suspected cultural (archaeological) resources inadvertently unearthed during grading be evaluated by a qualified archaeologist to determine their significance and the appropriate course of action, would reduce this impact to a level considered less than significant. Also, MM CUL-2 has been incorporated, which requires archaeological monitoring for all ground disturbance activities that occur within 30 meters (100 feet) of Sites 33-015937 and 33-015938. With implementation of these measures, impacts to archaeological resources would be reduced to less than significant.

Implementation of the Project would increase exposure to strong seismic ground shaking to additional people. Also, the Project would result in increased risks related to earthquake-induced land sliding and expansive soils. Compliance with the applicable regulations, and proper grading, design, and building construction methods specified in the Geotechnical Report, as required in MM GEO-1, would ensure that impacts that may result from geologic conditions at the Project Site to less than significant.

Certain soils underlying portions of the Project Site are considered moderate to high sensitivity for intact paleontological resources. Impacts to paleontological resources, if encountered, would be significant without mitigation. Incorporation of MM GEO-2 which requires that a qualified paleontologist be retained to observe grading activities in the Older Alluvial Fan and Alluvium deposits on the Project Site and to salvage and catalogue fossils as necessary, would ensure that impacts to fossil resources are reduced to below a level of significance.

|  | Potentially <br> Significant <br> Impact | Less Than <br> Significant <br> with <br> Mitigation <br> Incorporated | Less Than <br> Significant <br> Impact | No <br> Impact |
| :--- | :---: | :---: | :---: | :---: |

No information has been provided to the City during the tribal consultation process for this Project indicating any likelihood of uncovering tribal cultural resources on the Project Site. Further, there are no known tribal cultural resources on or adjacent to the Project Site, and no potentially significant impacts are anticipated. Nevertheless, in the event of any inadvertent discoveries of tribal cultural resources during construction activities, mitigation measures MM TCR-1 through MM TCR-10 have been incorporated into the Project, which require archaeological and Native American monitoring, preparation of a Cultural Resource Monitoring Plan, procedures for artifact disposition and inadvertent finds, and preparation of Phase III and IV reports..

All of these significant impacts related to the Project are mitigated to less than significant levels through the implementation of the mitigation measures discussed above. With incorporation of the mitigation measures identified above, the Project would result in less than significant impacts related to this threshold.


## Response:

Less Than Significant Impact. The Project would not have adverse environmental impacts at a significant level. All potential significant impacts would be addressed with mitigation measures. No significant cumulative effects are anticipated because no resources would be adversely affected by the Project, or the Project effects would be localized and of limited extent. A less than significant impact would occur in relation to cumulatively considerable effects.
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?


## REFERENCES:

Airport Land Use Commission, Riverside County. 2020 (April 14). Airport Land Use Commission (ALUC) Development Review - Director's Determination. Riverside, CA: ALUC.

California Air Pollution Control Officers Association. 2010 (August). Quantifying Greenhouse Gas Mitigation Measures. Sacramento, CA: CAPCOA. http://www.capcoa.org/wp-content/uploads/downloads/2010/09/CAPCOA-Quantification-Report-9-14-Final.pdf

California Air Resources Board (CARB). 2021 (June 18, last accessed). Top 4 Summary. Sacramento, CA: CARB. https://www.arb.ca.gov/adam/topfour/topfour1.php.
___ 2018 (October, last updated). Maps of State and Federal Area Designations. Sacramento, CA: CARB. https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations.

California Building Standards Commission. 2019 (July). 2019 California Building Standards Code. Sacramento, CA: CBSC. https://www.dgs.ca.gov/BSC/Codes

California Department of Conservation. 2021 (January 21). California Important Farmland Finder. Sacramento, CA: DOC. https://maps.conservation.ca.gov/DLRP/CIFF/

California Department of Forestry and Fire Protection (CalFire). 2009 (December). Very High Fire Hazard Severity Zones in LRA As Recommended by CALFIRE. Sacramento, CA: CALFIRE. https://osfm.fire.ca.gov/media/5917/moreno_valley.pdf
—_. 2007 (May). Frequently Asked Questions About: Fire Hazard Severity Zoning and New Building Codes for California's Wildland-Urban Interface. Sacramento, CA: CALFIRE. https://www.sccgov.org/sites/dpd/DocsForms/Documents/FIRE_CAL_WUI_FAQs.pdf

California Department of Transportation. 2021 (June 30, access date). List of Eligible and Officially Designated State Scenic Highways. Sacramento, CA: Caltrans. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways

2013 (September). Transportation and Construction Vibration Guidance Manual. Sacramento, CA: Caltrans. http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf

California Energy Commission (CEC). 2018 (March). 2019 Energy Efficiency Building Standards. Sacramento, CA: CEC. https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Stan dards_FAQ.pdf.

Chambers Group. 2007. Kincaid Development Project: Results of an Archaeological Test Program at CA-RIV-8274 and CA-RIV-8275. Redlands, CA: Chambers Group.

County of Riverside. 2021 (January 21). Map My County. Riverside County, CA: County of Riverside. https://gis.countyofriverside.us/Html5Viewer/?viewer=MMC_Public

2011 (October). County of Riverside General Plan, Reche Canyon/Badlands Area Plan. Riverside County, CA: County of Riverside.

CRM Tech. 2018 (December 18). Update to Previous Cultural Resources Studies. Colton, CA: CRM Tech.
Department of Toxic Substances Control. 2021 (July 6, access date). EnviroStor webmapper. Sacramento, CA: DTSC. https://www.envirostor.dtsc.ca.gov/public/

Dudek.2022a. November. Fire Hazard Analysis and Approach memorandum. San Juan Capistrano, CA: Dudek. Provided as Appendix L.
——. 2022b (October). Determination of Biologically Equivalent or Superior Preservation Report for the Gateway Heights Project, Moreno Valley, California. San Juan Capistrano, CA: Dudek.
——_.2022c (October). Biological Resources Letter Report and MSHCP Consistency for Tentative Tract 37557. San Juan Capistrano, CA: Dudek. Provided as Appendix B.
——. 2022d (October). Jurisdictional Waters Delineation Update Report for Tentative Tract 37557. San Juan Capistrano, CA: Dudek. Provided as Appendix B.

Dynamic Geotechnical Solutions. 2021 (June). Slope Stability Report. Temecula, CA: Dynamic Geotechnical Solutions.

Eastern Municipal Water District. 2021a (July). 2020 Final Urban Water Management Plan (UWMP). https://www.emwd.org/post/urban-water-management-plan
——. 2021b (September). Groundwater Sustainability Plan for the San Jacinto Groundwater Basin. Perris, CA: EMWD. https://www.emwd.org/post/sustainable-groundwater-management-act

EDR. 2021 (June 17). The EDR Radius Map Report with GeoCheck for the Gateway Heights Residential Project. Shelton, Connecticut: EDR.

LGC Geo-Environmental, Inc. 2018a (September 22). Preliminary Geotechnical Investigation for the Proposed Single-Family Residential Development. Temecula, CA: LGC Geo-Environmental, Inc.
——_ 2018b (September 21). Preliminary Infiltration Testing Investigation for the Proposed Single-Family Residential Development. Temecula, CA: LGC Geo-Environmental, Inc.

Moreno Valley, City of. 2021a (January 21, current through). Moreno Valley Municipal Code. Seattle, WA: Quality Code Publishing. https://qcode.us/codes/morenovalley/
——. 2021b. General Plan 2040. Moreno Valley, CA: Moreno Valley. http://www.moval.org/city_hall/general-plan2040/MV-GeneralPlan-complete.pdf
___ 2021c. General Plan Draft Program Environmental Impact Report (DEIR). Moreno Valley, CA: Moreno Valley. http://www.moval.org/cdd/documents/general-plan-documents-deir.html
—__ 2021d. (March 30). City of Moreno Valley Climate Action Plan—Screencheck Draft. Moreno Valley, CA: the City. http://www.moval.org/city_hall/general-plan2040/Environmental/MV2040_FinalEIR_W-CommentResponse.pdf
__ 2020a. (November). City of Moreno Valley, Figure 2-2, Land Use Map. Moreno Valley, CA: Moreno Valley. http://www.moval.org/city_hall/general-plan/landuse-map.pdf
—_. 2020b. (March). City of Moreno Valley Zoning Map. Moreno Valley, CA: Moreno Valley. http://www.moval.org/cdd/pdfs/ZoningMap.pdf
2019. (August). City of Moreno Valley Initial Study Preparation Guide. Moreno Valley, CA: Moreno Valley. http://www.moval.org/cdd/pdfs/CEQA/MV-\%2OInitialStudyPrepGuide.pdf
——. 2017 (May). Local Hazard Mitigation Plan. Moreno Valley, CA: Moreno Valley. http://www.moval.org/city_hall/departments/fire/pdfs/haz-mit-plan.pdf
—_ 2014. Bicycle Master Plan. Moreno Valley, CA: Moreno Valley. https://www.moval.org/city_hall/departments/pub-works/transportation/pdfs/BicycleMasterPlan.pdf
——. 2009 (March). Emergency Operations Plan. Moreno Valley, CA: Moreno Valley. http://www.moval.org/city_hall/departments/fire/pdfs/mv-eop-0309.pdf

Moreno Valley Utility. 2021 (February 2). Wildfire Mitigation Plan, Version 2.0. Moreno Valley, CA: Moreno Valley Utility. http://www.moval.org/mvu/pubs/MVU-WildfireMitigationPlan.pdf

Psomas. 2021 (July 7). Project Consistency Analysis with Plans, Policies, and Ordinances. Santa Ana, CA: Psomas.

Resilient IE. 2020. Western Riverside County Vulnerability Assessment. Riverside, CA: Resilient IE. https://wrcog.us/DocumentCenter/View/7478/Western-Riverside-Adaptation-and-Resiliency-Strategy_Vulnerability-Assessment

Southern California Association of Governments (SCAG). 2020 (September 3, approved and fully adopted). Connect SoCal (2020-2045 Regional Transportation Plan/Sustainable Communities Strategy). Los Angeles, CA: SCAG. https://scag.ca.gov/read-plan-adopted-final-plan
___ 2016. The 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy. Los Angeles, CA: SCAG. https://scag.ca.gov/sites/main/files/fileattachments/f2016rtpscs.pdf?1606005557

South Coast Air Quality Management District (SCAQMD). 2021 (June 18, last accessed). Historical Data by Year-2017-2019. Diamond Bar, CA: SCAQMD. https://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year.
__ 2019 (April, Revision). SCAQMD Air Quality Significance Thresholds. Diamond Bar, CA: SCAQMD. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significancethresholds.pdf?sfvrsn=2.
___ 2010 (September 28). Minutes for the GHG Significance Threshold Stakeholder Working Group \#15. Diamond Bar, CA: SCAQMD.
—_ 2009. Localized Significance Thresholds. Diamond Bar, CA: SCAQMD. http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/localized-significance-thresholds

2008 (December 5). PROPOSAL: Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. Diamond Bar, CA: SCAQMD. http://www.aqmd. gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significancethresholds/ghgboardsynopsis.pdf?sfvrsn=2.
__ . 2003 (August). White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. Diamond Bar, CA: SCAQMD. https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2003-aqmp.
__ 1993. CEQA Air Quality Handbook. Diamond Bar, CA: SCAQMD.

State of California, Department of Finance. 2021 (May). E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change - January 1, 2020 and 2021. Sacramento, California: DOF. https://www.dof.ca.gov/forecasting/demographics/estimates/e-1/

Translutions, Inc. 2021 (February). Gateway Highlands Residential, Traffic Impact Analysis. Tustin, CA: Translutions.

United Engineering Group CA, Inc. 2022a (November). Project Specific Water Quality Manage Plan. Rancho Cucamonga, CA: UEG.
___ 2022b. (November). Preliminary Drainage Report for Gateway Heights. Rancho Cucamonga, CA: UEG.
—_. 2022c. (November). Planned Unit Development. Rancho Cucamonga, CA: UEG.
U.S. Department of Transportation, Federal Transit Administration (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06 (prepared by Harris Miller Miller \& Hanson, Inc.). Washington, D.C.: FTA. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf
U.S. Environmental Protection Agency. 2021 (June 30, access date). National Overview: Facts and Figures on Materials, Wastes and Recycling. Washington, DC: USEPA. https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figuresmaterials\#:~:text=Per\ capita\ MSW\ generation\ increased,person\ per\ day\% 20in\%202018.

2020 (July 28, last accessed). National Overview: Facts and Figures on Materials, Wastes, and Recycling. Washing, DC.: USEPA. https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials\#Generation.

US Army Corps of Engineers. 1994 (September). Archives Search Report Findings, March Air Force Base and Associated Sites. St. Louis, Missouri: USACE.

United States Census Bureau. 2021 (July 6, access date). Quick Facts, United States. Washington, DC: United States Census Bureau. https://www.census.gov/quickfacts/fact/table/US/PST045219


## INITIAL STUDY FOR THE GATEWAY HEIGHTS PROJECT



GATEWAY HEIGHTS PROJECT
PEN 21-0066
February 2023
Lead Agency
CITY OF MORENO VALLEY
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Prepared By
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Volume 2a

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Appendix A

## Air Quality Calculations

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied
Gateway Heights Residential Riverside-South Coast County, Winter

### 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Condo/Townhouse | 108.00 | Dwelling Unit | 17.30 | 108,000.00 | 309 |

### 1.2 Other Project Characteristics

| Urbanization | Urban | Wind Speed (m/s) | 2.4 | Precipitation Freq (Days) | 28 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Climate Zone | 10 |  |  | Operational Year | 2023 |
| Utility Company | Southern California Edison |  |  |  |  |
| CO2 Intensity (lb/MWhr) | 390.98 | CH4 Intensity (lb/MWhr) | 0.033 | N2O Intensity (lb/MWhr) | 0.004 |

### 1.3 User Entered Comments \& Non-Default Data

Project Characteristics -
Land Use - .
Construction Phase -
Off-road Equipment -
Off-road Equipment -
Off-road Equipment -
Off-road Equipment - .
Off-road Equipment -
Grading -
Trips and VMT - .
Vehicle Trips - .
Fleet Mix -
Woodstoves - No woodstoves

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied
Construction Off-road Equipment Mitigation -

| Table Name | Column Name | Default Value | New Value |
| :---: | :---: | :---: | :---: |
| tblConstructionPhase | NumDays | 30.00 | 44.00 |
| tblConstructionPhase | NumDays | 300.00 | 264.00 |
| .....................constructionPhase | NumDays | 20.00 | 10.00 |
| ....................... ${ }^{\text {tbiFleetMix }}$ | HHD | 0.02 | 0.00 |
| ................................. | L̈DA | 0.53 | 0.61 |
| .........................ilizieetMix | LDTi | 0.06 | 0.04 |
| tbiFleetMix | Ľ̇T2 | 0.17 | 0.21 |
| ....................................... | LHD1 | 0.03 | 0.00 |
| .............................. | L̈HD2 | $7.3100 \mathrm{e}-003$ | 0.00 |
| tblFleetMix | MCY | 0.02 | $5.0470 \mathrm{e}-003$ |
| ............................. | MัDV | 0.14 | 0.13 |
| ................................ | Mั̈ | $5.46800-003$ | $1.0050 \mathrm{e}-003$ |
| ................................. | M̈HD | 0.01 | 0.00 |
| ........................ tbjFl leetMix | ÖBÜS | $6.1600 \mathrm{e}-004$ | $1.5780 \mathrm{e}-003$ |
| .................................. | SBUUS | $1.1000 \mathrm{e}-003$ | $1.02800-003$ |
| ..........................izi........ | ÜBU̇S | $3.1500 \mathrm{e}-004$ | $1.2840 \mathrm{e}-003$ |
| ........................................ | MaterialExported | 0.00 | 34,137.00 |
| tbiLandÜse | LotAcreage | 6.75 | 17.30 |
| - tbiOffRoadEquipment | OffRoadEquipmentÜnitAmount | 3.00 | 1.00 |
| ............... tbiOffRoadEquipment | OffRoadEquipmentünitÄmount | 4.00 | 0.00 |
| ................................. | OffRoadEquipmentUnitÄmount | 2.00 | 0.00 |
| ...................................... | OffRoadEquipmentUnitÄmount | 1.00 | 0.00 |
| ..................................... | OffRoadEquipmentUnitAmmount | 2.00 | 0.00 |
| tbiOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbloffRoadEquipment | OffRoadEquipmentÜnitAmount | 2.00 | 1.00 |
| - tbiOffRoadEquipment | OffRoadEquipmentUnitÄmount | 2.00 | 1.00 |
| ........................................ | WorkerTripNumber | 78.00 | 25.00 |
| - tbiVehicleTrips | ST_TR | 8.14 | 9.22 |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction


## Mitigated Construction



Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Year | Ib/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2022 | 2.7971 | 39.7656 | 19.4215 | 0.0954 | 5.2077 | 1.2602 | 6.4679 | 1.8975 | 1.1647 | 3.0622 | 0.0000 | :9,794.6965 | :9,794.6965 | 1.3003 | 0.9398 | $\begin{gathered} 10,107.263 \\ 8 \end{gathered}$ |
| 2023 | 34.0356 | 14.8592 | 17.1536 | 0.0313 | 0.3563 | 0.7045 | 1.0608 | 0.0962 | 0.6629 | 0.7591 | 0.0000 | 3,003.1927 | 3,003.1927 | 0.6158 | 0.3090 | 3,030.1991 |
| Maximum | 34.0356 | 39.7656 | 19.4215 | 0.0954 | 5.2077 | 1.2602 | 6.4679 | 1.8975 | 1.1647 | 3.0622 | 0.0000 | 9,794.6965 | 9,794.6965 | 1.3003 | 0.9398 | $10,107.263$ <br> 8 |


|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | Exhaust | $\begin{gathered} \text { PM2.5 } \\ \text { Total } \end{gathered}$ | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0.00 | 0.00 | 0.00 | 0.00 | 49.02 | 0.00 | 41.54 | 52.49 | 0.00 | 36.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

### 2.2 Overall Operational

Unmitigated Operational

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Area | 27.9771 | 1.9117 | 37.3647 | 0.0542 |  | 3.9810 | 3.9810 |  | 3.9810 | 3.9810 | 374.2502 | :1,960.0437 | :2,334.2939 | 0.0527 | 0.0687 | 2,356.0724 |
| Energy | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |
| Mobile | $1.6883$ | 1.7614 | 21.7014 | 0.0600 | 7.2907 | 0.0343 | 7.3250 | 1.9358 | 0.0317 | 1.9675 |  | 6,100.7232 | 6,100.7232 | 0.3037 | 0.1892 | 6,164.7077 |
| Total | 29.7327 | 4.2485 | 59.3110 | 0.1179 | 7.2907 | 4.0618 | 11.3525 | 1.9358 | 4.0592 | 5.9950 | 374.2502 | 8,795.2702 | 9,169.5205 | 0.3705 | 0.2714 | 9,259.6482 |

## Mitigated Operational

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Site Preparation | Site Preparation | 2/24/2022 | 3/9/2022 |  | 硣 |  |
| 2 | Grading | Grading | 3/11/2022 | 5/11/2022 |  | 44 |  |
| 3 | Building Construction | Building Construction | 5/12/2022 | 5/16/2023 | 5 | 264 |  |
| 4 | Paving | Paving | 5/17/2023 | 5/30/2023 | 5 | - 10 |  |
| 5 | Architectural Coating | AArchitectural Coating | 5/31/2023 | 6/27/2023 | 5 | 20 |  |

## Acres of Grading (Site Preparation Phase): 5

## Acres of Grading (Grading Phase): 110

## Acres of Paving: 0

Residential Indoor: 218,700; Residential Outdoor: 72,900; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural

## OffRoad Equipment

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Site Preparation | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 0 | 8.00 | 158 | 0.38 |
| Grading | Graders | 0 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forkilifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Paving | Pavers | 1 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 1 | 8.00 | 132 | 0.36 |
| Paving | Roiliers | 1 | 8.00 | 80 | 0.38 |
| Ärchitectural Coating | Air Compressors | 1 1 | 6.00 | 78 | 0.48 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip <br> Number | Vendor Trip <br> Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Site Preparation |  | 3.00 |  | 0.00 | 14.70 | 6.90 | 20.00 | D_Mix | HDT_Mix | HHDT |
| Grading | 3 | 8.00 | 0.00 | 4,267.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction |  | 25.00 | 12.00 | 0.00 | 14.70 | 6.90 | 20.00 | D_Mix | HDT_Mix | $\mathrm{HH} \mathrm{C} T$ |
| Paving | 3 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDCT |
| Architectural Coating |  | 16.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

Gateway Heights Residential - Riverside-South Coast County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

### 3.1 Mitigation Measures Construction

Water Exposed Area
3.2 Site Preparation - 2022

## Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 6.5523 | 0.0000 | 6.5523 | 3.3675 | 0.0000 | 3.3675 |  |  | 0.0000 |  |  | 0.0000 |
| Off-Road | 0.8371 | 8.7937 | 3.5820 | $\begin{gathered} 8.53000 \mathrm{e} \\ 003 \end{gathered}$ |  | 0.4174 | 0.4174 |  | 0.3840 | 0.3840 |  | 827.0354 | 827.0354 | 0.2675 |  | 833.7224 |
| Total | 0.8371 | 8.7937 | 3.5820 | $\begin{gathered} 8.5300 \mathrm{e}- \\ 003 \end{gathered}$ | 6.5523 | 0.4174 | 6.9697 | 3.3675 | 0.3840 | 3.7515 |  | 827.0354 | 827.0354 | 0.2675 |  | 833.7224 |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2. } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | $0.0000$ | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | $0.0000$ |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0110 | 7.9500 e 003 | 0.0968 | 2.8000 e 004 | 0.0335 | $1.70000-$ 004 | 0.0337 | $8.89000 \mathrm{e}-$ 003 | $1.5000 \mathrm{e}-$ 004 | 90500e-003 |  | 27.9047 | 27.9047 | $7.60000-$ 004 | 7.80000 e 004 | 28.1564 |
| Total | 0.0110 | $\begin{gathered} 7.9500 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0968 | $\begin{gathered} 2.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0335 | $\begin{gathered} 1.7000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0337 | $\begin{gathered} 8.8900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 9.0500 \mathrm{e}- \\ 003 \end{gathered}$ |  | 27.9047 | 27.9047 | $\begin{gathered} 7.6000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 28.1564 |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive <br> PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2. } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | Ib/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 2.5554 | 0.0000 | 2.5554 | 1.3133 | 0.0000 | 1.3133 |  |  | 0.0000 |  |  | 0.0000 |
| Öft-Rouad | 0.8371 | 8.7937 | 3.5820 | $\begin{array}{r} 8.5300 e- \\ 003 \end{array}$ |  | 0.4174 | 0.4174 |  | 0.3840 | 0.3840 | 0.0000 | 827.0354 | 827.0354 | 0.6275 |  | 833.7.722. |
| Total | 0.8371 | 8.7937 | 3.5820 | $\begin{gathered} 8.5300 \mathrm{e}- \\ 003 \end{gathered}$ | 2.5554 | 0.4174 | 2.9728 | 1.3133 | 0.3840 | 1.6973 | 0.0000 | 827.0354 | 827.0354 | 0.2675 |  | 833.7224 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0110 | $\begin{gathered} 7.9500 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0968 | $\begin{gathered} 2.8000 \mathrm{e}-\mathrm{B} \\ 004 \end{gathered}$ | 0.0335 | $1.7000 \mathrm{e}-$ 004 | 0.0337 | $\begin{gathered} 8.8900 \mathrm{e}-\mathrm{-} \\ 003 \end{gathered}$ | $\begin{gathered} 1.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $9.0500 \mathrm{e}-003$ |  | 27.9047 | 27.9047 | $7.6000 \mathrm{e}-$ 004 | $\begin{gathered} 7.8000 \mathrm{e}-\mathrm{-} \\ 004 \end{gathered}$ | 28.1564 |
| Total | 0.0110 | $\begin{gathered} 7.9500 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0968 | $\begin{gathered} 2.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0335 | $\begin{gathered} 1.7000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0337 | $\begin{gathered} 8.8900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 1.5000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{gathered} 9.0500 \mathrm{e}- \\ 003 \end{gathered}$ |  | 27.9047 | 27.9047 | $\begin{gathered} 7.6000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 28.1564 |

Gateway Heights Residential - Riverside-South Coast County, Winter

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2022

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 8.7716 | 0.0000 | 8.7716 | 3.6114 | 0.0000 | 3.6114 |  |  | 0.0000 |  |  | 0.0000 |
| Off-Road | 2.4756 | 26.6807 | 16.3336 | 0.0389 |  | 1.1156 | 1.1156 |  | 1.0264 | 1.0264 |  | 3,767.6232 | 3,767.6232 | 1.2185 |  | 3,798.0863 |
| Total | 2.4756 | 26.6807 | 16.3336 | 0.0389 | 8.7716 | 1.1156 | 9.8872 | 3.6114 | 1.0264 | 4.6377 |  | 3,767.6232 | 3,767.6232 | 1.2185 |  | 3,798.0863 |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.2921 | 13.0637 | 2.8298 | 0.0558 | 1.6974 | 0.1442 | 1.8415 | 0.4654 | 0.1379 | 0.6033 |  | 5,952.6607 | 5,952.6607 | 0.0798 | 0.9377 | 6,234.0937 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0294 | 0.0212 | 0.2581 | $7.4000 \mathrm{e}-$ 004 | 0.0894 | $4.4000 \mathrm{e}-$ 004 | 0.0899 | 0.0237 | $4.1000 \mathrm{e}-$ 004 | 0.0241 |  | 74.4126 | 74.4126 | $2.0300 \mathrm{e}-$ 003 | $2.0800 \mathrm{e}-$ 003 | 75.0838 |
| Total | 0.3215 | 13.0849 | 3.0879 | 0.0565 | 1.7868 | 0.1446 | 1.9314 | 0.4891 | 0.1383 | 0.6274 |  | 6,027.0733 | 6,027.0733 | 0.0818 | 0.9398 | 6,309.1775 |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{gathered} \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 3.4209 | 0.0000 | 3.4209 | 1.4084 | 0.0000 | 1.4084 |  |  | $0.0000$ |  |  | $0.0000$ |
| Off-Road | 2.4756 | 26.6807 | 16.3336 | 0.0389 |  | 1.1156 | 1.1156 |  | 1.0264 | 1.0264 | 0.0000 | 3,767.6232 | $3,767.6232$ | 1.2185 |  | 3,798.0863 |
| Total | 2.4756 | 26.6807 | 16.3336 | 0.0389 | 3.4209 | 1.1156 | 4.5365 | 1.4084 | 1.0264 | 2.4348 | 0.0000 | 3,767.6232 | 3,767.6232 | 1.2185 |  | 3,798.0863 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.2921 | 13.0637 | 2.8298 | 0.0558 | 1.6974 | 0.1442 | 1.8415 | 0.4654 | 0.1379 | 0.6033 |  | 5,952.6607 | 5,952.6607 | 0.0798 | 0.9377 | 6,234.0937 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0294 | 0.0212 | 0.2581 | $7.4000 \mathrm{e}-$ 004 | 0.0894 | $4.4000 \mathrm{e}-$ 004 | 0.0899 | 0.0237 | $4.10000 \mathrm{e}-$ 004 | 0.0241 |  | 74.4126 | 74.4126 | $2.03000 \mathrm{e}-$ 003 | $2.0800 \mathrm{e}-$ 003 | 75.0838 |
| Total | 0.3215 | 13.0849 | 3.0879 | 0.0565 | 1.7868 | 0.1446 | 1.9314 | 0.4891 | 0.1383 | 0.6274 |  | 6,027.0733 | 6,027.0733 | 0.0818 | 0.9398 | 6,309.1775 |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 |  | 0.8090 | 0.8090 |  | 0.7612 | 0.7612 |  | $\square^{2,554.3336}$ | :2,554.3336 | 0.6120 |  | 2,569.6322 |
| Total | 1.7062 | 15.6156 | 16.3634 | 0.0269 |  | 0.8090 | 0.8090 |  | 0.7612 | 0.7612 |  | 2,554.3336 | 2,554.3336 | 0.6120 |  | 2,569.6322 |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | Ib/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0187 | 0.5346 | 0.1832 | $\begin{gathered} 2.1900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0769 | $\begin{gathered} 7.3300 \mathrm{e} \\ 003 \end{gathered}$ | 0.0842 | 0.0221 | $\begin{gathered} 7.02000-- \\ 003 \end{gathered}$ | 0.0292 |  | 231.7869 | 231.7869 | $\begin{gathered} 2.4100 \mathrm{e}=- \\ 003 \end{gathered}$ | 0.0344 | 242.0984 |
| Worker | 0.0920 | 0.0663 | 0.8066 | ${ }^{2.30000 e-}$ | 0.70 | ${ }^{1.30000 e-}$ | 0.2808 | 0.0741 | $\begin{gathered} 1.28000-- \\ 003 \end{gathered}$ | 0.0754 |  | 232.53394 | 232.53394 | $\begin{gathered} 6.3600 \mathrm{e} \\ 003 \end{gathered}$ | $\begin{gathered} 6.5100 \mathrm{e}- \\ 003 \end{gathered}$ | 234.63770 |
| Total | 0.1107 | 0.6008 | 0.9898 | $\begin{gathered} 4.4900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3563 | $\begin{gathered} 8.7200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3650 | 0.0962 | $\begin{gathered} 8.3000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1045 |  | 464.3263 | 464.3263 | $\begin{gathered} 8.7700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0409 | 476.7354 |

## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | 0.8090 | 0.8090 | 0.7612 | 0.7612 | 0.0000 | 2,554.3336 | 2,554.3336 | 0.6120 | \%2,569.6322 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 1.7062 | 15.6156 | 16.3634 | 0.0269 | 0.8090 | 0.8090 | 0.7612 | 0.7612 | 0.0000 | 2,554.3336 | 2,554.3336 | 0.6120 | 2,569.6322 |

Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0187 | 0.5346 | 0.1832 | $\begin{gathered} 2.19000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0769 | $\begin{gathered} 7.33000- \\ 003 \end{gathered}$ | 0.0842 | 0.0221 | $\begin{gathered} 7.0200 \mathrm{e}-- \\ 003 \end{gathered}$ | 0.0292 |  | 231.7869 | 231.7869 | $\begin{gathered} 2.4100 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0344 | 242.0984 |
| Worker | 0.0920 | 0.0663 | 0.8066 | $\begin{gathered} 2.3000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2794 | $\begin{gathered} 1.3900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2808 | 0.0741 | $\begin{gathered} 1.2800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0754 |  | 232.5394 | 232.5394 | $\begin{gathered} 60300-1 \end{gathered}$ | $\begin{gathered} 6.5100 \mathrm{e}- \\ 003 \end{gathered}$ | 234.6370 |
| Total | 0.1107 | 0.6008 | 0.9898 | $\begin{gathered} 4.4900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3563 | $\begin{gathered} 8.7200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3650 | 0.0962 | $\begin{gathered} 8.3000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1045 |  | 464.3263 | 464.3263 | $\begin{gathered} 8.7700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0409 | 476.7354 |

### 3.4 Building Construction - 2023

Unmitigated Construction On-Site

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Unmitigated Construction Off-Site



## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | $1.5728$ | 14.3849 | 16.2440 | 0.0269 |  | 0.6997 | $0.6997$ |  | 0.6584 | 0.6584 | 0.0000 | : 2,555.2099 | : | 0.6079 |  | ¿2,570.4061 |
| Total | 1.5728 | 14.3849 | 16.2440 | 0.0269 |  | 0.6997 | 0.6997 |  | 0.6584 | 0.6584 | 0.0000 | 2,555.2099 | 2,555.2099 | 0.6079 |  | 2,570.4061 |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied
Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | Exhaust <br> PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0125 | 0.4158 | 0.1669 | $\begin{gathered} 2.1000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0769 | $\begin{gathered} 3.4300 \mathrm{e}-- \\ 003 \end{gathered}$ | 0.0803 | 0.0221 | $\begin{gathered} 3.2800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0254 |  | 222.8770 | 222.8770 | $\begin{gathered} 2.22000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0330 | 232.7553 |
| Worker | 0.0856 | 0.0585 | 0.7427 | $\begin{gathered} 2.2300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2794 | $\begin{gathered} 1.3100 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2808 | 0.0741 | $\begin{gathered} 1.2000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0753 |  | 225.1059 | 225.1059 | $\begin{gathered} 5.72000- \\ 003 \end{gathered}$ | $\begin{gathered} 6.0000 \mathrm{e}- \\ 003 \end{gathered}$ | 227.0377 |
| Total | 0.0981 | 0.4743 | 0.9096 | $\begin{gathered} 4.3300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3563 | $\begin{gathered} 4.7400 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3610 | 0.0962 | $\begin{gathered} 4.4800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1007 |  | 447.9828 | 447.9828 | $\begin{gathered} 7.9400 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0390 | 459.7930 |

### 3.5 Paving - 2023

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive <br> PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \hline \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | 0.5164 | 5.0958 | 7.2921 | 0.0114 |  | 0.2551 | 0.2551 |  | 0.2347 | 0.2347 |  | 1,103.7921 | 1,103.7921 | 0.3570 |  | 1,112.7168 |
| Paving | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | "0.0000 |  |  | $0.0000$ |  |  | 0.0000 |
| Total | 0.5164 | 5.0958 | 7.2921 | 0.0114 |  | 0.2551 | 0.2551 |  | 0.2347 | 0.2347 |  | 1,103.7921 | 1,103.7921 | 0.3570 |  | 1,112.7168 |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.07274 | 0.0187 | 0.2377 | 7.1000 e 004 | 0.0894 | $4.2000 \mathrm{e}-$ 004 | 0.0898 | 0.0237 | 3.8000 e 004 | 0.0241 |  | 72.03397 | 72.07339 | 1.8300 e 003 | $1.9200 \mathrm{e}-$ 003 | 72.6521 |
| Total | 0.0274 | 0.0187 | 0.2377 | $\begin{gathered} 7.1000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0894 | $\begin{aligned} & 4.2000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0898 | 0.0237 | $\begin{gathered} 3.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0241 |  | 72.0339 | 72.0339 | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.9200 \mathrm{e}- \\ 003 \end{gathered}$ | 72.6521 |

Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | 0.5164 | 5.0958 | 7.2921 | 0.0114 |  | 0.2551 | 0.2551 |  | 0.2347 | 0.2347 | 0.0000 | 1,103.7921 | 1,103.7921 | 0.3570 |  | 1,112.7168 |
| Paving | 0.0000 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Total | 0.5164 | 5.0958 | 7.2921 | 0.0114 |  | 0.2551 | 0.2551 |  | 0.2347 | 0.2347 | 0.0000 | 1,103.7921 | 1,103.7921 | 0.3570 |  | 1,112.7168 |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2. } \end{aligned}$ | PM2.5 Total | Bio-CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| V̌endor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0274 | 0.0187 | 0.2377 | 7.10000"004 | 0.0894 | $4.2000 \mathrm{e}-$ <br> 004 | 0.0898 | 0.0237 | $3.8000 \mathrm{e}-$ 004 | 0.0241 |  | 72.033 ²0' | 72.0339 | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.9200 \mathrm{e}-\mathrm{C} \\ 003 \end{gathered}$ | ${ }^{72.6521}$ |
| Total | 0.0274 | 0.0187 | 0.2377 | $\begin{gathered} 7.1000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0894 | $\begin{gathered} 4.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0898 | 0.0237 | 3.8000e004 | 0.0241 |  | 72.0339 | 72.0339 | $1.8300 \mathrm{e}-$ 003 | $\begin{gathered} 1.9200 \mathrm{e}- \\ 003 \end{gathered}$ | 72.6521 |

### 3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Archit. Coating | $33.7892$ |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | $0.0000$ |  |  | 0.0000 |
| Off-Road | 0.1917 | 1.3030 | 1.8111 | $2.9700 \mathrm{e}-$ 003 |  | 0.0708 | 0.0708 |  | 0.0708 | 0.0708 |  | 281.4481 | 281.4481 | 0.0168 |  | 281.8690 |
| Total | 33.9808 | 1.3030 | 1.8111 | $\begin{gathered} 2.9700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0708 | 0.0708 |  | 0.0708 | 0.0708 |  | 281.4481 | 281.4481 | 0.0168 |  | 281.8690 |

## Unmitigated Construction Off-Site

| ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive <br> PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | $0.0000$ |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0548 | 0.0375 | 0.4754 | $1.4300 \mathrm{e}-$ 003 | 0.1788 | $8.4000 \mathrm{e}-$ 004 | 0.1797 | 0.0474 | $\begin{aligned} & 7.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0482 | 144.0678 | 144.0678 | $3.6600 \mathrm{e}-$ 003 | 3.84000 e 003 | 145.3041 |
| Total | 0.0548 | 0.0375 | 0.4754 | $\begin{gathered} 1.4300 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1788 | $\begin{gathered} 8.4000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.1797 | 0.0474 | $\begin{gathered} 7.7000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0482 | 144.0678 | 144.0678 | $\begin{gathered} 3.6600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 3.8400 \mathrm{e}- \\ 003 \end{gathered}$ | 145.3041 |

## Mitigated Construction On-Site



Mitigated Construction Off-Site


Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

|  | ROG | NOx | CO | SO2 | Fugitive | Exhaust | PM10 Total | Fugitive | Exhaust | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Mitigated | 1.6883 | 1.7614 | 21.7014 | 0.0600 | 7.2907 | 0.0343 | 7.3250 | 1.9358 | 0.0317 | 1.9675 |  | 6,100.7232 | 6,100.7232 | 0.3037 | 0.1892 | 6,164.7077 |
| Ünmitigated | 1.6883 | 1.7614 | 21.7014 | 0.0600 | 7.2907 | 0.0343 | 7.3250 | 1.9358 | 0.0317 | 1.9675 |  | 6,100.7232 | 6,100.7232 | 0.3037 | 0.1892 | 6,164.7077 |

### 4.2 Trip Summary Information

|  | Average Daily Trip Rate |  |  | Unmitigated | Mitigated |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Condo/Townhouse | 1,019.52 | 995.76 | 849.96 | 3,389,483 | 3,389,483 |
| Total | 1,019.52 | 995.76 | 849.96 | 3,389,483 | 3,389,483 |

### 4.3 Trip Type Information

|  | Miles |  |  | Trip \% |  |  | Trip Purpose \% |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Condo/Townhouse | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | ! | 40.60 | 86 | 11 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4.4 Fleet Mix |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
| Condo/Townhouse | 0.614215 | 0.040586 | 0.209252 | 0.126005 | 0.000000 | 0.00000 | - 0.000000 | 0.000000 | 0.001578: | 0.001284 | 0.005047 | 0.001028 | 0.001005 |

### 5.0 Energy Detail

Historical Energy Use: N
5.1 Mitigation Measures Energy

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \hline \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| NaturalGas <br> Mitigated | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |
| NaturalGas Unmitigated | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |

### 5.2 Energy by Land Use - NaturaIGas

## Unmitigated

|  | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | kBTU/yr | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Condolownhouse | 6243.28 | 0.0673 | 0.5754 | 0.2448 | 3.67000 - 003 | 0.0465 | 0.0465 | 0.0465 | 0.0465 | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total |  | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0465 | 0.0465 | 0.0465 | 0.0465 | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |

## Mitigated

|  | $\begin{array}{\|c\|} \hline \text { NaturalGas } \\ \text { Use } \end{array}$ | ROG | NOX | co | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | kBTU/yr | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Condo/Townhouse | 6.24328 | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |
| Total |  | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |

### 6.0 Area Detail

6.1 Mitigation Measures Area


Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

### 6.2 Area by SubCategory

Unmitigated


|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{gathered} \hline \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Architectural Coating | 0.1852 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Consumer Products | 2.1384 |  |  |  |  | 0.0000 | 0.0000 |  | 0.00000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Hearth | 25.3851 | 1.8090 | 28.4526 | 0.0538 |  | 3.9317 | 3.9317 |  | 3.9317 | 3.9317 | 374.2502 | 1,944.0000 | 2,318.2502 | 0.0373 | 0.0687 | 2,339.6430 |

Gateway Heights Residential - Riverside-South Coast County, Winter
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Landscaping | 0.2685 | 0.1027 | 8.9121 | $4.70000 \mathrm{e}-$ 004 | 0.0493 | 0.0493 | 0.0493 | 0.0493 |  | 16.0437 | 16.0437 | 0.0154 |  | 16.4294 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 27.9771 | 1.9117 | 37.3647 | 0.0542 | 3.9810 | 3.9810 | 3.9810 | 3.9810 | 374.2502 | 1,960.0437 | 2,334.2939 | 0.0527 | 0.0687 | 2,356.0724 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 7.0 Water Detail

### 7.1 Mitigation Measures Water

### 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

### 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

### 10.0 Stationary Equipment

Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

## Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: |

## User Defined Equipment

| Equipment Type | Number |
| :--- | :--- |

### 11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied
Gateway Heights Residential Riverside-South Coast County, Summer

### 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Condo/Townhouse | 108.00 | Dwelling Unit | 17.30 | 108,000.00 | 309 |

### 1.2 Other Project Characteristics

| Urbanization | Urban | Wind Speed (m/s) | 2.4 | Precipitation Freq (Days) | 28 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Climate Zone | 10 |  |  | Operational Year | 2023 |
| Utility Company | Southern California Edison |  |  |  |  |
| CO2 Intensity (lb/MWhr) | 390.98 | CH4 Intensity (lb/MWhr) | 0.033 | N2O Intensity (lb/MWhr) | 0.004 |

### 1.3 User Entered Comments \& Non-Default Data

Project Characteristics -
Land Use - .
Construction Phase -
Off-road Equipment -
Off-road Equipment -
Off-road Equipment -
Off-road Equipment - .
Off-road Equipment -
Grading -
Trips and VMT - .
Vehicle Trips - .
Fleet Mix -
Woodstoves - No woodstoves

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied
Construction Off-road Equipment Mitigation -

| Table Name | Column Name | Default Value | New Value |
| :---: | :---: | :---: | :---: |
| tblConstructionPhase | NumDays | 30.00 | 44.00 |
| tblConstructionPhase | NumDays | 300.00 | 264.00 |
| .....................constructionPhase | NumDays | 20.00 | 10.00 |
| ....................... ${ }^{\text {tbiFleetMix }}$ | HHD | 0.02 | 0.00 |
| ................................. | L̈DA | 0.53 | 0.61 |
| .........................ilizieetMix | LDTi | 0.06 | 0.04 |
| tbiFleetMix | Ľ̇T2 | 0.17 | 0.21 |
| ....................................... | LHD1 | 0.03 | 0.00 |
| .............................. | L̈HD2 | $7.3100 \mathrm{e}-003$ | 0.00 |
| tblFleetMix | MCY | 0.02 | $5.0470 \mathrm{e}-003$ |
| ............................. | MัDV | 0.14 | 0.13 |
| ................................ | Mั̈ | $5.46800-003$ | $1.0050 \mathrm{e}-003$ |
| ................................. | M̈HD | 0.01 | 0.00 |
| ........................ tbjFl leetMix | ÖBÜS | $6.1600 \mathrm{e}-004$ | $1.5780 \mathrm{e}-003$ |
| .................................. | SBUUS | $1.1000 \mathrm{e}-003$ | $1.02800-003$ |
| ..........................izi........ | ÜBU̇S | $3.1500 \mathrm{e}-004$ | $1.2840 \mathrm{e}-003$ |
| ........................................ | MaterialExported | 0.00 | 34,137.00 |
| tbiLandÜse | LotAcreage | 6.75 | 17.30 |
| - tbiOffRoadEquipment | OffRoadEquipmentÜnitAmount | 3.00 | 1.00 |
| ............... tbiOffRoadEquipment | OffRoadEquipmentünitÄmount | 4.00 | 0.00 |
| ................................. | OffRoadEquipmentUnitÄmount | 2.00 | 0.00 |
| ...................................... | OffRoadEquipmentUnitÄmount | 1.00 | 0.00 |
| ..................................... | OffRoadEquipmentUnitAmmount | 2.00 | 0.00 |
| tbiOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbloffRoadEquipment | OffRoadEquipmentÜnitAmount | 2.00 | 1.00 |
| - tbiOffRoadEquipment | OffRoadEquipmentUnitÄmount | 2.00 | 1.00 |
| ........................................ | WorkerTripNumber | 78.00 | 25.00 |
| - tbiVehicleTrips | ST_TR | 8.14 | 9.22 |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction


Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied
Mitigated Construction

|  | ROG | NOx | CO | SO2 | Fugitive <br> PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| 2022 | 2.8138 | 39.0865 | 19.4063 | 0.0955 | 5.2077 | 1.2600 | 6.4677 | 1.8975 | 1.1645 | 3.0620 | 0.0000 | 9,797.8945 | 9,797.8945 | 1.3010 | 0.9390 | $\begin{gathered} 10,110.250 \\ 2 \end{gathered}$ |
| 2023 | 34.0392 | 14.8333 | 17.3201 | 0.0315 | 0.3563 | 0.7045 | 1.0608 | 0.0962 | 0.6629 | 0.7591 | 0.0000 | 3,025.9702 | 3,025.9702 | 0.6159 | 0.0387 | 3,052.9046 |
| Maximum | 34.0392 | 39.0865 | 19.4063 | 0.0955 | 5.2077 | 1.2600 | 6.4677 | 1.8975 | 1.1645 | 3.0620 | 0.0000 | 9,797.8945 | 9,797.8945 | 1.3010 | 0.9390 | $\begin{array}{\|c\|} \hline 10,110.250 \\ 2 \end{array}$ |


|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{gathered} \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | $\begin{gathered} \text { PM2.5 } \\ \text { Total } \end{gathered}$ | Bio-CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 49.02 | 0.00 | 41.55 | 52.49 | 0.00 | 36.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

### 2.2 Overall Operational

## Unmitigated Operational

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Area | 27.9771 | 1.9117 | 37.3647 | 0.0542 |  | 3.9810 | 3.9810 |  | 3.9810 | 3.9810 | 374.2502 | 1,960.0437 | 2,334.2939 | 0.0527 | 0.0687 | 2,356.0724 |
| Energy | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.67000 \mathrm{e}-1 \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |
| Mobile | 2.0520 | 1.6872 | 25.3532 | 0.0659 | 7.2907 | 0.0343 | 7.3250 | 1.9358 | 0.0317 | 1.9675 |  | 6,693.5319 | 6,693.5319 | 0.2961 | 0.1847 | 6,755.9893 |
| Total | 30.0964 | 4.1743 | 62.9627 | 0.1238 | 7.2907 | 4.0618 | 11.3525 | 1.9358 | 4.0592 | 5.9950 | 374.2502 | 9,388.0789 | 9,762.3291 | 0.3629 | 0.2669 | 9,850.9299 |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Mitigated Operational



### 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Site Preparation | Site Preparation | 2/24/2022 | 3/9/2022 | 5 | 10: |  |
| 2 | Grading | Grading | 3/11/2022 | 5/11/2022 | 5 | 44 |  |
| 3 | Building Construction | Building Construction | 5/12/2022 | 5/16/2023 | 5 | 264 |  |
| 4 | Paving | Paving | 5/17/2023 | 5/30/2023 | 5 | 10 |  |
| 5 | Architectural Coating | Architectural Coating | 5131/2023 | 6/27/2023 | 5 | 20 |  |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Acres of Grading (Site Preparation Phase): 5

Acres of Grading (Grading Phase): 110
Acres of Paving: 0
Residential Indoor: 218,700; Residential Outdoor: 72,900; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Site Preparation | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 0 | 8.00 | 158 | 0.38 |
| Grading | Graders | 0 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forkilits | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Paving | Pavers | 1 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 1 | 8.00 | 132 | 0.36 |
| Paving | Roilers | 1 | 8.00 | 80 | 0.38 |
| Ärchitectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Site Preparation |  | 3.0 | 0.00 | 0.0 | 14. | 6.9 | 20.00 | D_Mix | HDT_Mix | HHDT |
| Grading |  | 8.0 | 0.00 | 4,267.00 | 14. | 6.90 | 20.00 | DMix | HDT_Mix | HHDT |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Building Construction | 9 | 25.00 | 12.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Paving | 3 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Ärchitectural Coating | 1 | 16.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | L̈D_Mix | HDTCMMix | OHDC |

### 3.1 Mitigation Measures Construction

Water Exposed Area
3.2 Site Preparation - 2022

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 6.5523 | 0.0000 | 6.5523 | 3.3675 | 0.0000 | 3.3675 |  |  | 0.0000 |  |  | 0.0000 |
| Off-Road | 0.8371 | 8.7937 | 3.5820 | $\begin{gathered} 8.53000 \mathrm{e} \\ 003 \end{gathered}$ |  | 0.4174 | 0.4174 |  | 0.3840 | 0.3840 |  | 827.0354 | 827.0354 | 0.2675 |  | 833.7224 |
| Total | 0.8371 | 8.7937 | 3.5820 | $\begin{gathered} 8.5300 \mathrm{e}- \\ 003 \end{gathered}$ | 6.5523 | 0.4174 | 6.9697 | 3.3675 | 0.3840 | 3.7515 |  | 827.0354 | 827.0354 | 0.2675 |  | 833.7224 |



Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Ẅorker | 0.0118 | $7.66000 \mathrm{e}-$ 003 | 0.1194 | $3.00000 \mathrm{e}-$ 004 | 0.0335 | $1.70000 \mathrm{e}-$ 004 | 0.0337 | $8.89000 \mathrm{e}-$ 003 | $1.50000 \mathrm{e}-$ 004 | 9 | 30.8068 | 30.8068 | $7.70000 \mathrm{e}-$ 004 | $7.60000 \mathrm{e}-$ 004 | 31.05533 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 0.0118 | $\begin{gathered} 7.6600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1194 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0335 | $\begin{gathered} 1.7000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0337 | $\begin{gathered} 8.8900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 9.0500 \mathrm{e}- \\ 003 \end{gathered}$ | 30.8068 | 30.8068 | $\begin{gathered} 7.7000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.6000 \mathrm{e}- \\ 004 \end{gathered}$ | 31.0533 |

## Mitigated Construction On-Site

|  | ROG | NOX | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | $\mathrm{lb} / \mathrm{day}$ |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 2.5554 | 0.0000 | 2.5554 | 1.3133 | 0.0000 | 1.3133 |  |  | 0.0000 |  |  | 0.0000 |
| Öff-Road | 0.8371 | 8.7937 | 3.58820 | $8.5300 \mathrm{e}-$ 003 |  | 0.4174 | 0.4174 |  | 0.3840 | 0.3840 | 0.0000 | 827.0354 | 827.0354 | 0.6275 |  | 833.7224 |
| Total | 0.8371 | 8.7937 | 3.5820 | $\begin{gathered} 8.5300 \mathrm{e}- \\ 003 \end{gathered}$ | 2.5554 | 0.4174 | 2.9728 | 1.3133 | 0.3840 | 1.6973 | 0.0000 | 827.0354 | 827.0354 | 0.2675 |  | 833.7224 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust <br> PM10 | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0118 | $\begin{gathered} 7.6600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1194 | $\begin{aligned} & 3.0000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0335 | $1.7000 \mathrm{e}-$ 004 | 0.0337 | 88900 e 003 | $\begin{gathered} 1.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $9.0500 \mathrm{e}-003$ |  | 30.8068 | 30.8068 | $7.70000-$ 004 | $\begin{gathered} 7.6000 \mathrm{e}- \\ 004 \end{gathered}$ | 31.0533 |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Total | 0.0118 | $\begin{gathered} 7.6600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1194 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0335 | $\begin{aligned} & 1.7000 e- \\ & 004 \end{aligned}$ | 0.0337 | $\begin{gathered} 8.8900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.5000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 9.0500 \mathrm{e}- \\ 003 \end{gathered}$ | 30.8068 | 30.8068 | $\begin{gathered} 7.7000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 7.6000 \mathrm{e}- \\ 004 \end{gathered}$ | 31.0533 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

### 3.3 Grading - 2022

Unmitigated Construction On-Site


Unmitigated Construction Off-Site


Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \hline \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \hline \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 3.4209 | 0.0000 | 3.4209 | 1.4084 | 0.0000 | 1.4084 |  |  | $0.0000$ |  |  | $0.0000$ |
| Öff-Road | $2.4756$ | 26.6807 | 16.3336 | 0.0388 |  | 1.1156 | 1.115 |  | 1.0264 | 1.0264 | 0.0000 | 3,767.6232 | ,3,767.6232 | 1.2185 |  | 3,798.086\% |
| Total | 2.4756 | 26.6807 | 16.3336 | 0.0389 | 3.4209 | 1.1156 | 4.5365 | 1.4084 | 1.0264 | 2.4348 | 0.0000 | 3,767.6232 | 3,767.6232 | 1.2185 |  | 3,798.0863 |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

### 3.4 Building Construction - 2022

Unmitigated Construction On-Site


Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0195 | 0.5074 | 0.1764 | $\begin{gathered} 2.1800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0769 | $\begin{gathered} 7.3200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0842 | 0.0221 | $\begin{gathered} 7.0000 \mathrm{e}-\mathrm{-} \\ 003 \end{gathered}$ | 0.0291 |  | 231.5344 | 231.5344 | $\begin{gathered} 2.4500 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0343 | 241.8277 |
| Worker | 0.0985 | 0.0638 | 0.9953 | $2.5400 \mathrm{e}-$ 003 | 0.2794 | $\begin{gathered} 1.3900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2808 | 0.0741 | $\begin{gathered} 1.2800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0754 |  | 256.7235 | 256.7235 | $\begin{gathered} 6.4000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 6.3600 \mathrm{e}- \\ 003 \end{gathered}$ | 258.7773 |
| Total | 0.1180 | 0.5713 | 1.1717 | $\begin{gathered} 4.7200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3563 | $\begin{aligned} & 8.7100 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.3650 | 0.0962 | $\begin{aligned} & 8.2800 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.1045 |  | 488.2579 | 488.2579 | $\begin{gathered} 8.8500 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0407 | 500.6050 |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | $1.7062$ | 15.6156 | 16.3634 | 0.0269 |  | 0.8090 | 0.8090 |  | 0.7612 | 0.7612 | 0.0000 | ${ }^{\text {¢2,554.3336 }}$ | 2,554.3336 | 0.6120 |  | 2,569.6322 |
| Total | 1.7062 | 15.6156 | 16.3634 | 0.0269 |  | 0.8090 | 0.8090 |  | 0.7612 | 0.7612 | 0.0000 | 2,554.3336 | 2,554.3336 | 0.6120 |  | 2,569.6322 |

Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0195 | 0.5074 | 0.1764 | $\begin{gathered} 2.1800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0769 | $7.3200 \mathrm{e}-$ 003 | 0.0842 | 0.0221 | $7.0000 \mathrm{e}-$ 003 | 0.0291 |  | 231.5344 | 231.5344 | $2.4500 \mathrm{e}-$ 003 | 0.0343 | 241.8277 |
| Worker | 0.0985 | 0.0638 | 0.9953 | $2.5400 \mathrm{e}-$ 003 | 0.2794 | $1.3900 \mathrm{e}-$ 003 | 0.2808 | 0.0741 | $1.2800 \mathrm{e}-$ 003 | 0.0754 |  | 256.7235 | 256.7235 | $6.4000 \mathrm{e}-$ 003 | $6.3600 \mathrm{e}-$ 003 | 258.7773 |
| Total | 0.1180 | 0.5713 | 1.1717 | $\begin{gathered} 4.7200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3563 | $\begin{gathered} 8.7100 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3650 | 0.0962 | $\begin{gathered} 8.2800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1045 |  | 488.2579 | 488.2579 | $\begin{gathered} 8.8500 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0407 | 500.6050 |



Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Category | Ib/day |  |  |  |  |  |  |  | lb/day |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | 0.6997 | 0.6997 | 0.6584 | 0.6584 | ${ }^{2,555.2099}{ }^{\text {2,555.2099 }}$ | 0.6079 | -2,570.4061 |
| Total | 1.5728 | 14.3849 | 16.2440 | 0.0269 | 0.6997 | 0.6997 | 0.6584 | 0.6584 | 2,555.2099 ${ }^{\text {2,555.2099 }}$ | 0.6079 | 2,570.4061 |

## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 |  | 0.6997 | 0.6997 |  | 0.6584 | 0.6584 | 0.0000 | ¢2,555.2099 | 2,555.2099 | 0.6079 |  | 570.4061, |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | Ib/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0135 | 0.3921 | 0.1614 | $\begin{gathered} 2.1000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0769 | $\begin{gathered} 3.4100 \mathrm{e} \\ 003 \end{gathered}$ | 0.0803 | 0.0221 | $3.27000-$ 003 | 0.0254 |  | 222.3252 | 222.3252 | $\begin{gathered} 2.2700 \mathrm{e} \\ 003 \end{gathered}$ | 0.0329 | 232.1721 |
| WWorker | 0.0913 | 0.050 | 0.9147 | $\begin{aligned} & 2.4600 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.2794 | $\begin{gathered} 1.310 \mathrm{e}- \\ 003 \end{gathered}$ | 0.2808 | 0.0741 | $\begin{gathered} 1.2000 \mathrm{e} \\ 003 \end{gathered}$ | 0.075 |  | 248.4351 | 248.4351 | $\begin{gathered} 5.74000- \\ 003 \end{gathered}$ | $\begin{gathered} 5.8600 \mathrm{e}- \\ 003 \end{gathered}$ | 250.3264 |
| Total | 0.1048 | 0.4485 | 1.0761 | $\begin{gathered} 4.5600 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3563 | $\begin{gathered} 4.7200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3610 | 0.0962 | $\begin{gathered} 4.4700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1007 |  | 470.7603 | 470.7603 | $\begin{gathered} 8.0100 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0387 | 482.4985 |

### 3.5 Paving - 2023

Unmitigated Construction On-Site


Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0.0.0̈ | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0292 | 0.0181 | 0.2927 | $\begin{gathered} 7.9000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0894 | $4.2000 \mathrm{e}-$ 004 | 0.0898 | 0.0237 | $3.8000 \mathrm{e}-$ 004 | 0.0241 |  | 79.4992 | 79.4992 | $1.84000 \mathrm{e}-$ 003 | $\begin{gathered} 1.8800 \mathrm{e}-\mathrm{-} \\ 003 \end{gathered}$ | 80.1045 |
| Total | 0.0292 | 0.0181 | 0.2927 | $\begin{gathered} 7.9000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0894 | $\begin{aligned} & 4.2000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0898 | 0.0237 | $\begin{gathered} 3.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0241 |  | 79.4992 | 79.4992 | $\begin{gathered} 1.8400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.8800 \mathrm{e}- \\ 003 \end{gathered}$ | 80.1045 |

## Mitigated Construction On-Site

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \& ROG \& NOx \& CO \& SO2 \& $$
\begin{aligned}
& \text { Fugitive } \\
& \text { PM10 }
\end{aligned}
$$ \& $$
\begin{aligned}
& \text { Exhaust } \\
& \text { PM10 }
\end{aligned}
$$ \& PM10 Total \& $$
\begin{aligned}
& \text { Fugitive } \\
& \text { PM2.5 }
\end{aligned}
$$ \& $$
\begin{gathered}
\text { Exhaust } \\
\text { PM2.5 }
\end{gathered}
$$ \& PM2.5 Total \& Bio- CO2 \& NBio- CO2 \& Total CO2 \& CH4 \& N2O \& CO2e <br>
\hline Category \& \multicolumn{10}{|c|}{lb/day} \& \multicolumn{6}{|c|}{lb/day} <br>
\hline Off-Road \& $$
0.5164
$$ \& 5.0958 \& 7.2921 \& 0.0114 \& \& 0.2551 \& 0.2551 \& \& 0.2347 \& 0.2347

c......... \& 0.0000 \& 1,103.7921 \& 1,103.7921 \& 0.3570 \& \& 1,112.7168 <br>

\hline Paving \& $$
0.0000
$$ \& \& \& \& \& 0.0000 \& 0.0000 \& \& 0.0000 \& \[

0.0000

\] \& \& \& \[

0.0000
\] \& \& \& 0.0000 <br>

\hline Total \& 0.5164 \& 5.0958 \& 7.2921 \& 0.0114 \& \& 0.2551 \& 0.2551 \& \& 0.2347 \& 0.2347 \& 0.0000 \& 1,103.7921 \& 1,103.7921 \& 0.3570 \& \& 1,112.7168 <br>
\hline
\end{tabular}

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0292 | 0.0181 | 0.2927 | $\begin{gathered} 7.9000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0894 | $\begin{gathered} 4.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0898 | 0.0237 | $\begin{gathered} 3.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0241 |  | 79.4992 | 79.4992 | $\begin{gathered} 1.8400 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.8800 \mathrm{e}- \\ 003 \end{gathered}$ | 80.1045 |
| Total | 0.0292 | 0.0181 | 0.2927 | $\begin{gathered} 7.9000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0894 | $\begin{gathered} 4.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0898 | 0.0237 | $\begin{gathered} 3.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0241 |  | 79.4992 | 79.4992 | $\begin{aligned} & 1.8400 \mathrm{e}- \\ & 003 \end{aligned}$ | $\begin{gathered} 1.8800 \mathrm{e}- \\ 003 \end{gathered}$ | 80.1045 |

### 3.6 Architectural Coating-2023

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Archit. Coating | 33.7892 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Off-Road | 0.1917 | 1.3030 | 1.8111 | $2.9700 \mathrm{e}-$ |  | 0.0708 | 0.0708 |  | 0.0708 | 0.0708 |  | 281.4481 | 281.4481 | 0.0168 |  | 281.8690 |
| Total | 33.9808 | 1.3030 | 1.8111 | $\begin{gathered} 2.9700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0708 | 0.0708 |  | 0.0708 | 0.0708 |  | 281.4481 | 281.4481 | 0.0168 |  | 281.8690 |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0588 | 0.0361 | 0.5854 | $\begin{gathered} 1.5700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1788 | $\begin{gathered} 8.40000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.1797 | 0.04774 | $7.7000 \mathrm{e}-$ 004 | 0.0482 |  | 158.9985 | 158.9985 | 3.6800 e 003 | $\begin{gathered} 3.7500 \mathrm{e}- \\ 003 \end{gathered}$ | 160.2089 |
| Total | 0.0584 | 0.0361 | 0.5854 | $\begin{gathered} 1.5700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.1788 | $\begin{gathered} 8.4000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.1797 | 0.0474 | $\begin{gathered} 7.7000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0482 |  | 158.9985 | 158.9985 | $\begin{gathered} 3.6800 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 3.7500 \mathrm{e}- \\ 003 \end{gathered}$ | 160.2089 |

Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Archit. Coating | 33.7892 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Off-Road | 0.1917 | 1.3030 | 1.8111 | $\begin{gathered} 2.9700 \mathrm{e}-\mathrm{-} \\ 003 \end{gathered}$ |  | 0.0708 | 0.0708 |  | 0.0707 | 0.0708 | 0.0000 | 281.4481 | 281.4481 | 0.0168 |  | 281.8690 |
| Total | 33.9808 | 1.3030 | 1.8111 | $\begin{gathered} 2.9700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0708 | 0.0708 |  | 0.0708 | 0.0708 | 0.0000 | 281.4481 | 281.4481 | 0.0168 |  | 281.8690 |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

|  | ROG | NOx | CO | SO2 | Fugitive | Exhaust | PM10 Total | Fugitive | Exhaust | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Mitigated | 2.0520 | 1.6872 | 25.3532 | 0.0659 | 7.2907 | 0.0343 | 7.3250 | 1.9358 | 0.0317 | 1.9675 |  | 6,693.5319 | 6,693.5319 | 0.2961 | 0.1847 | \%,755.9893 |
| Ünmitigated | 2.0520 | 1.6872 | 25.3532 | 0.0659 | 7.2907 | 0.0343 | 7.3250 | 1.9358 | 0.0317 | 1.9675 |  | 6,693.5319 | 6,693.5319 | 0.2961 | 0.1847 | 6,755.9893 |

### 4.2 Trip Summary Information

|  | Average Daily Trip Rate |  |  | Unmitigated | Mitigated |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Condo/Townhouse | 1,019.52 | 995.76 | 849.96 | 3,389,483 | 3,389,483 |
| Total | 1,019.52 | 995.76 | 849.96 | 3,389,483 | 3,389,483 |

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

### 4.3 Trip Type Information

|  | Miles |  |  | Trip \% |  |  | Trip Purpose \% |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Condo/Townhouse | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Condo/Townhouse | 0.614215: | 0.040586 | 0.209252: | 0.126005 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.001578 | 0.001284 | 0.005047 | 0.001028 | 0.001005 |

### 5.0 Energy Detail

Historical Energy Use: N
5.1 Mitigation Measures Energy

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| NaturalGas <br> Mitigated | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |
| NaturalGà Unmitigated | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |

### 5.2 Energy by Land Use - NaturalGas

Unmitigated

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | $\begin{gathered} \text { NaturalGas } \\ \text { Use } \end{gathered}$ | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio-CO2 | NBio-CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | kBTU/yr | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Condo/Townhouse | 6243.28 | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | ${ }^{734.5034}$ | 734.5034 | 0.0141 | 0.0135 | 738.8682 |
| Total |  | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 \mathrm{e}- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |

## Mitigated

|  | NaturalGas Use | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | kBTU/yr | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Condo/Townhouse | 6.24328 | 0.0673 | 0.5754 | 0.2448 | $\begin{aligned} & 3.6700 \mathrm{e}- \\ & 003 \end{aligned}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |
| Total |  | 0.0673 | 0.5754 | 0.2448 | $\begin{gathered} 3.6700 e- \\ 003 \end{gathered}$ |  | 0.0465 | 0.0465 |  | 0.0465 | 0.0465 |  | 734.5034 | 734.5034 | 0.0141 | 0.0135 | 738.8682 |

### 6.0 Area Detail

### 6.1 Mitigation Measures Area

Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 6.2 Area by SubCategory

## Unmitigated

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust <br> PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory | lb/day |  |  |  |  |  |  |  |  |  | lb/day |  |  |  |  |  |
| Architectural Coating | 0.1852 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Consumer Products | 2.1384 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Hearth | 25.3851 | 1.8090 | 28.4526 | 0.0538 |  | 3.3317 | 3.9317 |  | 3.9317 | 3.9317 | 3774.2502 | 1,944.0000 | 2,318.2502 | 0.0373 | 0.0687 | 2,339.6430 |
| Landscaping | 0.2685' | 0.1027 | 8.9121 | $\begin{gathered} 4.70000-1 \\ 004 \end{gathered}$ |  | 0.0493 | 0.0493 |  | 0.0493 | 0.0493 |  | 16.0437' | 16.0437 | 0.0154 |  | 16.4294 |
| Total | 27.9771 | 1.9117 | 37.3647 | 0.0542 |  | 3.9810 | 3.9810 |  | 3.9810 | 3.9810 | 374.2502 | 1,960.0437 | 2,334.2939 | 0.0527 | 0.0687 | 2,356.0724 |

## Mitigated



Gateway Heights Residential - Riverside-South Coast County, Summer
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Architectural Coating | 0.1852 |  |  |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Consumer Products | 2.1384 |  |  |  | 0.00000 | 0.0000 | 0.0000 | 0.0000 |  |  | 0.0000 |  |  | 0.0000 |
| Hearth | 25.3851 | 1.8090 | 28.4526 | 0.0538 | 3.9317 | 3.9317 | 3.9317 | 3.9317 | 374.2502 | 1,944.0000 | 2,318.2502 | 0.0373 | 0.0687 | 2,339.6430 |
| Landscaping | 0.2685 | 0.1027 | 8.9121 | $\begin{gathered} 4.70000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0493 | 0.0493 | 0.0493 | 0.0493 |  | 16.0437 | 16.0437 | 0.0154 |  | 16.4294 |
| Total | 27.9771 | 1.9117 | 37.3647 | 0.0542 | 3.9810 | 3.9810 | 3.9810 | 3.9810 | 374.2502 | 1,960.0437 | 2,334.2939 | 0.0527 | 0.0687 | 2,356.0724 |

### 7.0 Water Detail

7.1 Mitigation Measures Water

### 8.0 Waste Detail

8.1 Mitigation Measures Waste
9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

### 10.0 Stationary Equipment

## Fire Pumps and Emergency Generators

## Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
| :---: | :---: | :---: | :---: | :---: | :---: |

## User Defined Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied 11.0 Vegetation

Gateway Heights Residential - Riverside-South Coast County, Annual
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Gateway Heights Residential

## Riverside-South Coast County, Annual

### 1.0 Project Characteristics

1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Condo/Townhouse | 108.00 | Dwelling Unit | 17.30 | 108,000.00 | 309 |

### 1.2 Other Project Characteristics

| Urbanization | Urban | Wind Speed (m/s) | 2.4 | Precipitation Freq (Days) |
| :--- | :--- | :--- | :--- | :--- |
| Climate Zone | 10 |  | Operational Year |  |
| Utility Company | Southern California Edison |  | 2023 |  |
| CO2 Intensity    <br> (lb/MWhr) 390.98  CH4 Intensity <br> $(\mathbf{l b} / \mathbf{M W h r})$ | N2O Intensity <br> (Ib/MWhr) |  |  |  |

### 1.3 User Entered Comments \& Non-Default Data

Project Characteristics -
Land Use -
Construction Phase - .
Off-road Equipment - .
Off-road Equipment - .
Off-road Equipment - .
Off-road Equipment - .
Off-road Equipment - .
Grading -
Trips and VMT -
Vehicle Trips -
Fleet Mix - .

Gateway Heights Residential - Riverside-South Coast County, Annual
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Woodstoves - No woodstoves

Construction Off-road Equipment Mitigation -

| Table Name | Column Name | Default Value | New Value |
| :---: | :---: | :---: | :---: |
| tblConstructionPhase | NumDays | 30.00 | 44.00 |
| tbiconstructionPhase | NumDays | 300.00 | 264.00 |
| tbiConstructionPhase | NumDays | 20.00 | 10.00 |
| tbiFleetMix | HHD | 0.02 | 0.00 |
| tbiFleetMix | LDA | 0.53 | 0.61 |
| tbiFleetMix | LDT1 | 0.06 | 0.04 |
| tbiFleetMix | LDT2 | 0.17 | 0.21 |
| tbiFleetMix | LHD1 | 0.03 | 0.00 |
| tbiFleetMix | LHD2 | $7.3100 \mathrm{e}-003$ | 0.00 |
| tbiFleetMix | MCY | 0.02 | $5.0470 \mathrm{e}-003$ |
| tbiFleetMix | MDV | 0.14 | 0.13 |
| tbiFleetMix | MH' | $5.4680 \mathrm{e}-003$ | $1.0050 \mathrm{e}-003$ |
| tbiFleetMix | MHD | 0.01 | 0.00 |
| tbiFleetMix | OBUS | $6.1600 \mathrm{e}-004$ | $1.5780 \mathrm{e}-003$ |
| tbiFleetMix | SBUS | $1.1000 \mathrm{e}-003$ | $1.0280 \mathrm{e}-003$ |
| tbiFleetMix | UBUS | $3.1500 \mathrm{e}-004$ | $1.2840 \mathrm{e}-003$ |
| tbiGrading | MaterialExported | 0.00 | 34,137.00 |
| tbiLandÚse | LotAcreage | 6.75 | 17.30 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 1.00 |
| tbiófroadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tbiOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tbiOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tbiOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tbiOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tbióffRoadEquipment | OffRoadEquipmentUnitĂmount | 2.00 | 1.00 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| tbIOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| :---: | :---: | :---: | :---: |
| tblTripsAndVMT | WorkerTripNumber | 78.00 | 25.00 |
| tbIVehicleTrips | ST_TR | 8.14 | 9.22 |
| tblVehicleTrips | SU_TR | 6.28 | 7.87 |
| tblVehicleTrips | WD_TR | 7.32 | 9.44 |
| tblWoodstoves | NumberCatalytic | 5.40 | 0.00 |
| tbIWoodstoves | NumberNoncatalytic | 5.40 | 0.00 |
| tbiWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tbiWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |

### 2.0 Emissions Summary

### 2.1 Overall Construction

Unmitigated Construction


[^6]Gateway Heights Residential - Riverside-South Coast County, Annual
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| 2022 | 0.2173 | 2.2728 | 1.8974 | 4.7700e-003: | 0.1562 | 0.0981 | 0.2543 | 0.0561 | 0.0918 | 0.1479 | 0.0000 | 428.4095 | 428.4095 | 0.0742 | 0.0219 | 436.7783 |
| 2023 | 0.4239 | 0.7595 | 0.8946 | 1.6200e-003 | 0.0192 | 0.0362 | 0.0554 | $\begin{gathered} 5.1800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0340 | 0.0392 | 0.0000 | 141.5837 | 141.5837 | 0.0289 | $\begin{gathered} 1.7600 \mathrm{e}- \\ 003 \end{gathered}$ | 142.8314 |
| Maximum | 0.4239 | 2.2728 | 1.8974 | 4.7700e-003 | 0.1562 | 0.0981 | 0.2543 | 0.0561 | 0.0918 | 0.1479 | 0.0000 | 428.4095 | 428.4095 | 0.0742 | 0.0219 | 436.7783 |


|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | $\begin{gathered} \hline \text { PM2.5 } \\ \text { Total } \end{gathered}$ | Bio-CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 43.98 | 0.00 | 30.78 | 48.93 | 0.00 | 23.89 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |


| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $2-1-2022$ | $4-30-2022$ | 0.8164 | 0.8164 |
| 2 | $5-1-2022$ | $7-31-2022$ | 0.6856 | 0.6856 |
| 3 | $8-1-2022$ | $10-31-2022$ | 0.5920 | 0.5920 |
| 4 | $11-1-2022$ | $1-31-2023$ | 0.5759 | 0.5759 |
| 5 | $2-1-2023$ | $4-30-2023$ | 0.5252 | 0.5252 |
| 6 | $5-1-2023$ | $7-31-2023$ | 0.4764 | 0.4764 |
|  |  | 0.8164 | 0.8164 |  |

### 2.2 Overall Operational

Unmitigated Operational


## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


## Mitigated Operational

|  | ROG | NOx | CO | SO2 | $\begin{gathered} \text { Fugitive } \\ \text { PM10 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Area | 0.7749 | 0.0355 | 1.4697 | 7.3000e-004 |  | 0.0553 | 0.0553 |  | 0.0553 | 0.0553 | 4.2439 | 23.8639 | 28.1078 | $\begin{gathered} 2.1700 \mathrm{e}- \\ 003 \end{gathered}$ | 7.8000e-004 | 28.3942 |
| Energy | 0.0123 | 0.1050 | 0.0447 | $6.7000 \mathrm{e}-004$ |  | $\begin{gathered} 8.4900 \mathrm{e}- \\ 003 \end{gathered}$ | $8.49000-003$ |  | $\begin{gathered} 8.4900 \mathrm{e}- \\ 003 \end{gathered}$ | $8.49000-003$ | 0.0000 | 216.8693 | 216.8693 | 0.0104 | $3.2000 \mathrm{e}-003$ | 218.0834 |
| Mobile | 0.3041 | 0.3180 | 3.9948 | 0.0109 | 1.2695 | $\begin{gathered} 6.0700 \mathrm{e}- \\ 003 \end{gathered}$ | 1.2755 | 0.3375 | $\begin{gathered} 5.6000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3431 | 0.0000 | 999.9603 | 999.9603 | 0.0486 | 0.0308 | 1,010.3480 |
| Waste |  |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 10.0846 | 0.0000 | 10.0846 | 0.5960 | 0.0000 | 24.9842 |
| Water |  |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 2.2324 | 24.9897 | 27.2221 | 0.2314 | $5.67000-003$ | 34.6966 |
| Total | 1.0914 | 0.4584 | 5.5092 | 0.0123 | 1.2695 | 0.0699 | 1.3393 | 0.3375 | 0.0694 | 0.4069 | 16.5609 | 1,265.6832 | 1,282.2441 | 0.8885 | 0.0404 | 1,316.5063 |



Gateway Heights Residential - Riverside-South Coast County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

### 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Site Preparation | Site Preparation | 2/24/2022 | 3/9/2022 |  |  |  |
| 2 | Grading | Grading | 3/11/2022 | 5/11/2022 | - | -1...".14 |  |
| 3 | Building Construction | Building Construction | 5/12/2022 | 5/16/2023 |  | 264 |  |
| 4 | PPaving | Paving | 5/17/2023 | 5/30/2023 |  | 10 |  |
| 5 | Architectural Coating | Architectural Coating | $5131 / 2023$ | $67 / 27 / 2023$ |  | 20 |  |

## Acres of Grading (Site Preparation Phase): 5

## Acres of Grading (Grading Phase): 110

## Acres of Paving: 0

Residential Indoor: 218,700; Residential Outdoor: 72,900; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Site Preparation | :Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 0 | 8.00 | 158 | 0.38 |
| Grading | Graders | 0 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | $8.00$ | $89$ | 0.20 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Building Construction | Generator Sets | 1 | 84 | 0.74 |
| :---: | :---: | :---: | :---: | :---: |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 97 | 0.37 |
| Building Construction | Welders | 1 | 46 | 0.45 |
| Paving | Pavers | 1 | 130 | 0.42 |
| Paving | Paving Equipment | 1 | 132 | 0.36 |
| Paving | Rollers | 1 | 80 | 0.38 |
| Architectural Coating | Air Compressors | 1 | 78 | 0.48 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip <br> Number | Vendor Trip <br> Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Site Preparation | 1 | 3.00 | 0.00 | 0.00 | 14.70 | 6.90 |  | _Mix | HDT_Mix | HHDT |
| Grading | 3 | 8.00 | 0.00 | 4,267.00 | 14.70 | 6.90 | 20.00 | D_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 25.00 | 12.00 | 0.00 | 14.70 | 6.90 |  | D_Mix | HDT_Mix | HHDT |
| Paving | 3 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | D_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 16.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | D_Mix | HDT_Mix | HHDT |

### 3.1 Mitigation Measures Construction

Water Exposed Area
3.2 Site Preparation - 2022

Unmitigated Construction On-Site


Gateway Heights Residential - Riverside-South Coast County, Annual
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Off-Road | 4.1900e- | 0.0440 | 0.0179 | 4.0000e-005: |  | $2.0900 \mathrm{e}-$ 003 | $2.0900 \mathrm{e}-003$ |  | $1.9200 e-$ 003 | 1.9200e-003 | 0.0000 | 3.7514 | 3.7514 | $1.2100 e-$ 003 | 0.0000 | 3.7817 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | $\begin{gathered} 4.1900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0440 | 0.0179 | 4.0000e-005 | 0.0328 | $\begin{gathered} 2.0900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0349 | 0.0168 | $\begin{gathered} 1.9200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0188 | 0.0000 | 3.7514 | 3.7514 | $\begin{gathered} 1.2100 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 3.7817 |


|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 0.0128 | 0.0000 | 0.0128 | $\begin{gathered} 6.5700 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 6.5700e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

Gateway Heights Residential - Riverside-South Coast County, Annual
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Off-Road | $4.1900 \mathrm{e}-$ 003 | 0.0440 | 0.0179 | 4.0000e-005 |  | $2.0900 \mathrm{e}-$ 003 | 2.0900e-003 |  | $1.9200 \mathrm{e}-$ 003 | 1.9200e-003 | 0.0000 | 3.7514 | 3.7514 | $1.21000-$ 003 | 0.0000 | 3.7817 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | $\begin{aligned} & 4.1900 \mathrm{e}- \\ & 003 \end{aligned}$ | 0.0440 | 0.0179 | 4.0000e-005 | 0.0128 | $\begin{gathered} 2.0900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0149 | $\begin{gathered} 6.5700 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.9200 \mathrm{e}- \\ 003 \end{gathered}$ | 8.4900e-003 | 0.0000 | 3.7514 | 3.7514 | $\begin{gathered} 1.2100 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 3.7817 |

## Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{gathered} \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $5.1000 \mathrm{e}-004$ | 0.0000 | $\begin{gathered} 1.6000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | $1.70000-004$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | $4.00000-005$ | 0.0000 | 0.1295 | 0.1295 | 0.0000 | 0.0000 | 0.1307 |
| Total | $\begin{gathered} 5.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{aligned} & 4.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | 5.1000e-004 | 0.0000 | $\begin{gathered} 1.6000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | $1.7000 \mathrm{e}-004$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.0000 | 4.0000e-005 | 0.0000 | 0.1295 | 0.1295 | 0.0000 | 0.0000 | 0.1307 |

### 3.3 Grading-2022

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 0.1930 | 0.0000 | 0.1930 | 0.0795 | 0.0000 | 0.0795 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Off-Road | 0.0545 | 0.5870 | 0.3593 | 8.6000e-004 |  | 0.0245 | 0.0245 |  | 0.0226 | 0.0226 | 0.0000 | 75.1945 | 75.1945 | 0.0243 | 0.0000 | 75.8025 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 0.0545 | 0.5870 | 0.3593 | 8.6000e-004 | 0.1930 | 0.0245 | 0.2175 | 0.0795 | 0.0226 | 0.1020 | 0.0000 | 75.1945 | 75.1945 | 0.0243 | 0.0000 | 75.8025 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## Unmitigated Construction Off-Site



|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust <br> PM10 | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Fugitive Dust |  |  |  |  | 0.0753 | 0.0000 | 0.0753 | 0.0310 | 0.0000 | 0.0310 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Off-Road | 0.0545 | 0.5870 | 0.3593 | 8.6000e-004 |  | 0.0245 | 0.0245 |  | 0.0226 | 0.0226 | 0.0000 | 75.1944 | 75.1944 | 0.0243 | 0.0000 | 75.8024 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 0.0545 | 0.5870 | 0.3593 | 8.6000e-004 | 0.0753 | 0.0245 | 0.0998 | 0.0310 | 0.0226 | 0.0536 | 0.0000 | 75.1944 | 75.1944 | 0.0243 | 0.0000 | 75.8024 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Mitigated Construction Off-Site


### 3.4 Building Construction-2022

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | 0.1425 | 1.3039 | 1.3663 | 2.2500e-003: |  | 0.0676 | 0.0676 |  | 0.0636 | 0.0636 | 0.0000 | 193.4906 | 193.4906 | 0.0464 | 0.0000 | 194.6495 |

Gateway Heights Residential - Riverside-South Coast County, Annual
EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| Total | 0.1425 | 1.3039 | 1.3663 | 2.2500e-003 | 0.0676 | 0.0676 | 0.0636 | 0.0636 | 0.0000 | 193.4906 | 193.4906 | 0.0464 | 0.0000 | 194.6495 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | Exhaust PM10 | PM10 Total | $\begin{gathered} \hline \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | $1.5900 \mathrm{e}-$ 003 | 0.0445 | 0.0150 | $1.8000 \mathrm{e}-004$ | $\begin{gathered} 6.3300 \mathrm{e}- \\ 003 \end{gathered}$ | $6.1000 \mathrm{e}-$ 004 | $6.9400 \mathrm{e}-003$ | 1.8300 e 003 | $\begin{gathered} 5.90000 \mathrm{e} \\ 004 \end{gathered}$ | $2.4100 \mathrm{e}-003$ | 0.0000 | 17.5468 | 17.5468 | $1.8000 \mathrm{e}-$ 004 | $\begin{gathered} 2.6000 \mathrm{e}- \\ 003 \end{gathered}$ | 18.3273 |
| Worker | $\begin{gathered} 7.2900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 5.6800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0710 | $2.00000-004$ | 0.0229 | $\begin{gathered} 1.2000 \mathrm{e}-\mathrm{-} \\ 004 \end{gathered}$ | 0.0231 | $\begin{gathered} 6.0900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $6.20000-003$ | 0.0000 | 18.0262 | 18.0262 | $\begin{gathered} 4.8000 \mathrm{e}- \\ 004 \end{gathered}$ | $5.0000 \mathrm{e}-$ 004 | 18.1880 |
| Total | $\begin{gathered} 8.8800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0502 | 0.0860 | 3.8000e-004 | 0.0293 | $\begin{gathered} 7.3000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0300 | $\begin{gathered} 7.9200 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 8.6100e-003 | 0.0000 | 35.5730 | 35.5730 | $\begin{gathered} 6.6000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 003 \end{gathered}$ | 36.5153 |


|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | Exhaust PM10 | PM10 Total | $\begin{gathered} \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | 0.1425 | 1.3039 | 1.3663 | !2.2500e-003 |  | 0.0676 | 0.0676 |  | 0.0636 | 0.0636 | 0.0000 | 193.4904 | 193.4904 | 0.0464 | 0.0000 | 194.6492 |
| Total | 0.1425 | 1.3039 | 1.3663 | $2.2500 \mathrm{e}-003$ |  | 0.0676 | 0.0676 |  | 0.0636 | 0.0636 | 0.0000 | 193.4904 | 193.4904 | 0.0464 | 0.0000 | 194.6492 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Packet Pg. 651 |

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## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | $\begin{gathered} 1.5900 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0445 | 0.0150 | $1.8000 \mathrm{e}-004$ | $6.3300 \mathrm{e}-$ 003 | $\begin{gathered} 6.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $6.94000-003$ | $\begin{gathered} 1.8300 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 5.9000 \mathrm{e}- \\ 004 \end{gathered}$ | $2.4100 \mathrm{e}-003$ | 0.0000 | 17.5468 | 17.5468 | $1.8000 \mathrm{e}-$ 004 | $\begin{gathered} 2.6000 \mathrm{e}- \\ 003 \end{gathered}$ | 18.3273 |
| Worker | $7.2900 \mathrm{e}-$ 003 | $5.6800 \mathrm{e}-$ 003 | 0.0710 | $2.0000 \mathrm{e}-004$ | 0.0229 | $1.2000 \mathrm{e}-$ 004 | 0.0231 | $\begin{gathered} 60900 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $6.2000 \mathrm{e}-003$ | 0.0000 | 18.0262 | 18.0262 | $4.8000 \mathrm{e}-$ 004 | $\begin{gathered} 5.0000 \mathrm{e}-\mathrm{-} \\ 004 \end{gathered}$ | 18.1880 |
| Total | $\begin{gathered} 8.8800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0502 | 0.0860 | 3.8000e-004 | 0.0293 | $\begin{gathered} 7.3000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0300 | $\begin{gathered} 7.9200 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 7.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 8.6100e-003 | 0.0000 | 35.5730 | 35.5730 | $\begin{gathered} 6.6000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.1000 \mathrm{e}- \\ 003 \end{gathered}$ | 36.5153 |

### 3.4 Building Construction-2023

Unmitigated Construction On-Site


## Gateway Heights Residential - Riverside-South Coast County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Unmitigated Construction Off-Site



Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | 0.0763 | 0.6977 | 0.7878 | 1.3100e-003: |  | 0.0339 | 0.0339 |  | 0.0319 | 0.0319 | 0.0000 | 112.4252 | 112.4252 | 0.0267 | 0.0000 | 113.0938 |
| Total | 0.0763 | 0.6977 | 0.7878 | 1.3100e-003 |  | 0.0339 | 0.0339 |  | 0.0319 | 0.0319 | 0.0000 | 112.4252 | 112.4252 | 0.0267 | 0.0000 | 113.0938 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 3.5 Paving - 2023

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{gathered} \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | $\begin{gathered} 2.5800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0255 | 0.0365 | 6.0000e-005 |  | $\begin{gathered} 1.2800 \mathrm{e}- \\ 003 \end{gathered}$ | 1.2800e-003 |  | $\begin{gathered} 1.1700 \mathrm{e}- \\ 003 \end{gathered}$ | 1.1700e-003 | 0.0000 | 5.0067 | 5.0067 | $\begin{gathered} 1.6200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 5.0472 |
| Paving | $0.0000$ |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Total | $\begin{gathered} 2.5800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0255 | 0.0365 | $6.0000 \mathrm{e}-005$ |  | $\begin{gathered} 1.2800 \mathrm{e}- \\ 003 \end{gathered}$ | 1.2800e-003 |  | $\begin{gathered} 1.1700 \mathrm{e}- \\ 003 \end{gathered}$ | 1.1700e-003 | 0.0000 | 5.0067 | 5.0067 | $\begin{gathered} 1.6200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 5.0472 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | $\begin{gathered} 1.3000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | $1.2500 \mathrm{e}-003$ | 0.0000 | $\begin{gathered} 4.4000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | $4.4000 \mathrm{e}-004$ | $\begin{gathered} 1.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | $1.2000 \mathrm{e}-004$ | 0.0000 | 0.3343 | 0.3343 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.3372 |
| Total | $\begin{gathered} 1.3000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 004 \end{gathered}$ | 1.2500e-003 | 0.0000 | $\begin{gathered} 4.4000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | $4.4000 \mathrm{e}-004$ | $\begin{aligned} & 1.2000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | 1.2000e-004 | 0.0000 | 0.3343 | 0.3343 | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 0.3372 |

## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | Exhaust PM10 | PM10 Total | $\begin{gathered} \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Off-Road | $2.5800 \mathrm{e}-$ 003 | 0.0255 | 0.0365 | ¢6.0000e-005 |  | $\begin{gathered} 1.2800 \mathrm{e}- \\ 003 \end{gathered}$ | 1.2800e-003 |  | $\begin{gathered} 1.1700 \mathrm{e}- \\ 003 \end{gathered}$ | 1.1700e-003 | 0.0000 | 5.0067 | 5.0067 | $\begin{gathered} 1.6200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 5.0472 |
| Paving | $0.000$ |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Total | $\begin{gathered} 2.5800 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0255 | 0.0365 | 6.0000e-005 |  | $\begin{gathered} 1.2800 \mathrm{e}- \\ 003 \end{gathered}$ | 1.2800e-003 |  | $\begin{gathered} 1.1700 \mathrm{e}- \\ 003 \end{gathered}$ | 1.1700e-003 | 0.0000 | 5.0067 | 5.0067 | $\begin{gathered} 1.6200 \mathrm{e}- \\ 003 \end{gathered}$ | 0.0000 | 5.0472 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{gathered} \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Archit. Coating | $0.3379$ |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | $1.9200 \mathrm{e}-$ 003 | 0.0130 | 0.0181 | 3.0000e-005 |  | $7.1000 \mathrm{e}-$ 004 | $7.1000 \mathrm{e}-004$ |  | $7.1000 \mathrm{e}-$ 004 | $7.1000 \mathrm{e}-004$ | 0.0000 | 2.5533 | 2.5533 | $1.5000 \mathrm{e}-$ 004 | 0.0000 | 2.5571 |
| Total | 0.3398 | 0.0130 | 0.0181 | 3.0000e-005 |  | $\begin{gathered} 7.1000 \mathrm{e}- \\ 004 \end{gathered}$ | 7.1000e-004 |  | $\begin{gathered} 7.1000 \mathrm{e}- \\ 004 \end{gathered}$ | 7.1000e-004 | 0.0000 | 2.5533 | 2.5533 | $\begin{gathered} 1.5000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 2.5571 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | $\begin{gathered} \text { Fugitive } \\ \text { PM10 } \end{gathered}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | $5.2000 \mathrm{e}-$ 004 | $3.80000-$ 004 | $5.0100 \mathrm{e}-003$ | $1.00000-005$ | $\begin{gathered} 1.76000 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $1.77000-003$ | $\begin{gathered} 4.7000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $4.7000 \mathrm{e}-004$ | 0.0000 | 1.3374 | 1.3374 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 1.3488 |
| Total | $\begin{gathered} 5.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.8000 \mathrm{e}- \\ 004 \end{gathered}$ | 5.0100e-003 | 1.0000e-005 | $\begin{gathered} 1.7600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 1.7700e-003 | $\begin{gathered} 4.7000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 4.7000e-004 | 0.0000 | 1.3374 | 1.3374 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 1.3488 |

## Mitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | $\begin{gathered} \text { Fugitive } \\ \text { PM10 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Archit. Coating | 0.3379 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | $1.9200 \mathrm{e}-$ 003 | 0.0130 | 0.0181 | $3.0000 \mathrm{e}-005$ |  | $7.1000 \mathrm{e}-$ 004 | 7.1000e-004 |  | $\begin{gathered} 7.1000 \mathrm{e}- \\ 004 \end{gathered}$ | $7.1000 \mathrm{e}-004$ | 0.0000 | 2.5533 | 2.5533 | $\begin{gathered} 1.5000 \mathrm{e}- \\ 004 \end{gathered}$ | 0.0000 | 2.5571 |
| Total | 0.3398 | 0.0130 | 0.0181 | 3.0000e-005 |  | $\begin{gathered} 7.1000 \mathrm{e}- \\ 004 \end{gathered}$ | 7.1000e-004 |  | $\begin{gathered} 7.1000 \mathrm{e}- \\ 004 \end{gathered}$ | 7.1000e-004 | 0.0000 | 2.5533 | 2.5533 | $\begin{aligned} & 1.5000 \mathrm{e}- \\ & 004 \end{aligned}$ | 0.0000 | 2.5571 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | Fugitive PM2.5 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
|  |  |  | 5.0100e-003 | $100000-005$ |  |  | $17700 \mathrm{e}-003$ |  |  | $47000 \mathrm{e}-004$ | 0.0000 | 13374 | 1.3374 |  |  | 13488 |
| Worker | $5.2000 \mathrm{e}-$ 004 | $3.8000 \mathrm{e}-$ 004 | 5.0100e-003: | 1.0000e-005: | $\begin{gathered} 1.7600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $1.7700 \mathrm{e}-003$ | $\begin{aligned} & 4.7000 \mathrm{e}- \\ & 004 \end{aligned}$ | $\begin{aligned} & 1.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | 4.7000e-004: | 0.0000 | 1.3374 | 1.3374 | $\begin{aligned} & 3.0000 \mathrm{e}- \\ & 005 \end{aligned}$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 1.3488 |
| Total | $\begin{gathered} 5.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 3.8000 \mathrm{e}- \\ 004 \end{gathered}$ | $5.0100 \mathrm{e}-003$ | 1.0000e-005 | $\begin{gathered} 1.7600 \mathrm{e}- \\ 003 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $1.7700 \mathrm{e}-003$ | $\begin{gathered} 4.7000 \mathrm{e}- \\ 004 \end{gathered}$ | $\begin{gathered} 1.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 4.7000e-004 | 0.0000 | 1.3374 | 1.3374 | $\begin{gathered} 3.0000 \mathrm{e}- \\ 005 \end{gathered}$ | $\begin{gathered} 4.0000 \mathrm{e}- \\ 005 \end{gathered}$ | 1.3488 |


|  | ROG | NOx | CO | SO2 | $\begin{aligned} & \text { Fugitive } \\ & \text { PM10 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM10 } \end{gathered}$ | PM10 Total | $\begin{gathered} \hline \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Mitigated | 0.3041 | 0.3180 | 3.9948 | 0.0109 | 1.2695 | $\begin{aligned} & 6.0700 \mathrm{e}- \\ & 003 \end{aligned}$ | 1.2755 | 0.3375 | $\begin{gathered} 5.6000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3431 | 0.0000 | 999.9603 | 999.9603 | 0.0486 | 0.0308 | 1,010.3480 |
| Ünmitigated | 0.3041 | 0.3180 | 3.9948 | 0.0109 | 1.2695 | $6.0700 \mathrm{e}-$ 003 | 1.2755 | 0.3375 | $\begin{gathered} 5.6000 \mathrm{e}- \\ 003 \end{gathered}$ | 0.3431 | 0.0000 | 999.9603 | 999.9603 | 0.0486 | 0.0308 | 1,010.3480 |

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## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

### 4.2 Trip Summary Information

|  | Average Daily Trip Rate |  |  | Unmitigated | Mitigated |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Condo/Townhouse | 1,019.52 | 995.76 | 849.96 | 3,389,483 | 3,389,483 |
| Total | 1,019.52 | 995.76 | 849.96 | 3,389,483 | 3,389,483 |

### 4.3 Trip Type Information

|  | Miles |  |  | Trip \% |  |  | Trip Purpose \% |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Condo/Townhouse | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | M |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Condo/Townhouse | 0.614215 | 0.040586 | 0.209252 | 0.126005 | 0.000000 | 0.000000 | 0.000000 | $0.00000{ }^{\text {\% }}$ | 0.001578: | 0.001284: | 0.005047 | 0.001028: | 0.0 |

### 5.0 Energy Detail

Historical Energy Use: N
5.1 Mitigation Measures Energy

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | $\begin{gathered} \hline \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Electricity Mitigated: |  |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 95.2640 | 95.2640 | $\begin{gathered} 8.0400 \mathrm{e}- \\ 003 \end{gathered}$ | :9.7000e-004 | 95.7555 |
| Electricity Unmitigated |  |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 95.2640 | 95.2640 | $\begin{gathered} 8.0400 \mathrm{e}- \\ 003 \end{gathered}$ | $9.7000 \mathrm{e}-004$ | $95.7555$ |

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## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| NaturalGas Mitigated | 0.0123 | 0.1050 | 0.0447 | 6.7000e-004 | $8.4900 \mathrm{e}-$ 003 | 8.4900e-003 | $8.4900 \mathrm{e}-$ 003 | 8.4900e-003 | 0.0000 | 121.6053 | 121.6053 | $2.3300 \mathrm{e}-$ 003 | 2.2300e-003 | 122.3279 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NaturalGas Unmitigated | 0.0123 | 0.1050 | 0.0447 | $6.7000 \mathrm{e}-004$ | $8.4900 \mathrm{e}-$ 003 | 8.4900e-003 | $8.4900 \mathrm{e}-$ 003 | $8.4900 \mathrm{e}-003$ | 0.0000 | 121.6053 | 121.6053 | $2.3300 \mathrm{e}-$ 003 | $2.2300 \mathrm{e}-003$ | 122.3279 |

### 5.2 Energy by Land Use - NaturaIGas Unmitigated



### 5.3 Energy by Land Use - Electricity

 Unmitigated|  | Electricity Use | Total CO2 | CH4 N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: |
| Land Use | kWh/yr |  | MT/yr |  |
| Condo/Townhouse | 537166 | 95.2640 | $8.0400 \mathrm{e}-0039.7000 \mathrm{e}-004$ | 95.7555 |
| Total |  | 95.2640 | 8.0400e-003 9.7000e-004 | 95.7555 |

Mitigated

|  | Electricity <br> Use | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | $\mathrm{kWh} / \mathrm{yr}$ |  |  |  |  |
| Condo/Townhouse | 537166 | 95.2640 | $8.0400 \mathrm{e}-003$ | $9.7000 \mathrm{e}-004$ | 95.7555 |
| Total |  |  | 9.2640 | $8.0400 \mathrm{e}-003$ | $9.7000 \mathrm{e}-004$ |

### 6.0 Area Detail

### 6.1 Mitigation Measures Area

## Gateway Heights Residential - Riverside-South Coast County, Annual

## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Mitigated | 0.7749 | 0.0355 | 1.4697 | 7.3000e-004: |  | 0.0553 | 0.0553 |  | 0.0553 | 0.0553 | 4.2439 | 23.8639 | 28.1078 | $\begin{gathered} 2.1700 \mathrm{e}- \\ 003 \end{gathered}$ | 77.8000e-004 | 28.3942 |
| Unnmitigated | 0.7749 | 0.0355 | 1.4697 | 7.3000e-004 |  | 0.0553 | 0.0553 |  | 0.0553 | 0.0553 | 4.2439 | 23.8639 | 28.1078 | $2.1700 \mathrm{e}-$ 003 | $7.8000 \mathrm{e}-004$ | 28.3942 |

### 6.2 Area by SubCategory

Unmitigated

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{gathered} \text { Fugitive } \\ \text { PM2.5 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM2.5 } \end{aligned}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Architectural Coating | 0.0338 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products $\qquad$ | 0.3903 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.3173 | 0.0226 | 0.3557 | $6.7000 \mathrm{e}-004$ |  | 0.0492 | 0.0492 |  | 0.0492 | 0.0492 | 4.2439 | 22.0446 | 26.2885 | $\begin{gathered} 4.2000 \mathrm{e}- \\ 004 \end{gathered}$ | $7.8000 \mathrm{e}-004$ | 26.5311 |
| Landscaping | 0.0336 | 0.0128 | 1.1140 | ${ }^{6.00000-005}$ |  | $\begin{gathered} .1700 \mathrm{e}- \\ 003 \end{gathered}$ | 6.1700e-003 |  | $\begin{gathered} 6.1700 \mathrm{e}- \\ 003 \end{gathered}$ | $6.1700 \mathrm{e}-003$ | 0.0000 | 1.8193 | 1.8193 | $1.7500 \mathrm{e}-$ 003 | 0.0000 | 1.8631 |
| Total | 0.7749 | 0.0355 | 1.4697 | 7.3000e-004 |  | 0.0553 | 0.0553 |  | 0.0553 | 0.0553 | 4.2439 | 23.8639 | 28.1078 | $\begin{gathered} 2.1700 \mathrm{e}- \\ 003 \end{gathered}$ | 7.8000e-004 | 28.3942 |

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

## Mitigated

|  | ROG | NOX | CO | SO2 | $\begin{gathered} \text { Fugitive } \\ \text { PM10 } \end{gathered}$ | $\begin{aligned} & \text { Exhaust } \\ & \text { PM10 } \end{aligned}$ | PM10 Total | $\begin{aligned} & \text { Fugitive } \\ & \text { PM2.5 } \end{aligned}$ | $\begin{gathered} \text { Exhaust } \\ \text { PM2.5 } \end{gathered}$ | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SubCategory | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| Architectural Coating | 0.0338 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.3903 |  |  |  |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | ${ }^{0} 0.0000$ |
| Hearth | 0.3173 | 0.0226 | 0.3557 | 6,7000e-004 |  | 0.0492 | 0.0492 |  | 0.0492 | 0.0492 | 4.2439 | 22.0446 | 26.8885 | $\begin{gathered} 4.2000 \mathrm{e}- \\ 004 \end{gathered}$ | 7.8000e-004 | 26.5311 |
| Landscaping | 0.0336 | 0.0128 | 1.1140 | $6.00000-005$ |  | 6.17000 e 003 | $6.17000-003$ |  | 6.17000e- 003 | $6.17000-003$ | 0.0000 | 1.8193 | 1.8193 | $1.75000 \mathrm{e}-$ 003 | 0.0000 | 1.8631 |
| Total | 0.7749 | 0.0355 | 1.4697 | 7.3000e-004 |  | 0.0553 | 0.0553 |  | 0.0553 | 0.0553 | 4.2439 | 23.8639 | 28.1078 | $\begin{gathered} 2.1700 \mathrm{e}- \\ 003 \end{gathered}$ | 7.8000e-004 | 28.3942 |

### 7.0 Water Detail

### 7.1 Mitigation Measures Water

|  | Total CO2 | CH4 | N2O | CO2e |
| :---: | :---: | :---: | :---: | :---: |
| Category | MT/yr |  |  |  |
| Mitigated | 27.2221 | 0.2314 | $\begin{gathered} 5.6700 \mathrm{e}- \\ 003 \end{gathered}$ | 34.6966 |
| Unmitigated | 27.2221 | 0.2314 | $\begin{gathered} 5.67000- \\ 003 \end{gathered}$ | 34.6966 |

### 7.2 Water by Land Use

Unmitigated


Mitigated


### 8.1 Mitigation Measures Waste

## Category/Year



### 8.2 Waste by Land Use

Unmitigated

|  | Waste <br> Disposed | Total CO2 | CH4 | N2O | CO2e |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use | tons | $\mathrm{MT} / \mathrm{yr}$ |  |  |  |  |  |
|  |  |  |  | 0.0000 | 24.9842 |  |  |
| Condo/Townhouse | 49.68 | 10.0846 | 0.5960 | 0.0 |  |  |  |
| Total |  |  | $\mathbf{1 0 . 0 8 4 6}$ | $\mathbf{0 . 5 9 6 0}$ | $\mathbf{0 . 0 0 0 0}$ |  |  |

## Mitigated

## Gateway Heights Residential - Riverside-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied


### 9.0 Operational Offroad

| Equipment Type | Number | HourslDay | DaysYear | Horse Power | Load Factor | Fuel Type |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

### 10.0 Stationary Equipment

Fire Pumps and Emergency Generators

| Equipment Type | Number |
| :---: | :---: |
| Boilers |  |
| Equipment Type | Number |
| User Defined Equipment |  |
| Equipment Type | Number |

11.0 Vegetation

## Appendix B

Biological Resources Report, Jurisdictional Delineation, Rare Plant Survey Report, Burrowing Owl Survey Report, and Determination of Biologically Equivalent or Superior Preservation (DBESP) Report

3615 MAIN STREET, SUITE 103
RIVERSIDE, CALIFORNIA 92501

October 21, 2022

Shizao Zheng<br>1378 West Zhorgshan Road<br>Ningbo City, Zhejiang Province<br>China

Subject: Biological Resources Letter Report and MSHCP Consistency for the Gateway Heights Project, City of Moreno Valley, Riverside County, California

Dear Mr. Zheng:
This biological resources habitat assessment and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) consistency analysis letter report describes the existing biological conditions of the proposed Gateway Heights Project (project) site and provides an assessment of potential biological impacts. This report was initially submitted in 2019 but underwent a redesign including a revised project name, description, footprint, and impact analysis, all of which have been updated in this report. The proposed project and potential impacts to special-status biological resources are analyzed in the context of the California Environmental Quality Act (CEQA) and the MSHCP. This report describes the project site, the general biological reconnaissance survey, the focused burrowing owl (Athene cunicularia) surveys special-status biological resources present or potentially present on site, potential constraints to development that may be posed by biological resources on the project site, and recommended mitigation. This report also provides an MSHCP consistency assessment including the following requirements of the MSHCP (relevant MSHCP sections are identified in parentheses):

- Riparian/riverine, vernal pool, and fairy shrimp requirements (Section 6.1.2)
- Species survey requirements (Section 6.3.2)
- Urban/wildlife interface guidelines (Section 6.1.4)


## 1 Project Location

The 32.8-acre project site is comprised of Assessor's Parcel Number 256-150-001 and 256-040-009, as well as rights-of-way, and is located north of Jennings Court and east of Morton Road in Riverside County (Figure 1, Project Location; figures can be found in Attachment A, Figures). The project site occurs within U.S. Geological Survey 7.5minute Riverside East quadrangle map, Section 34 of Township 2 South, Range 4 West. The approximate center of the property is at longitude $117^{\circ} 17^{\prime} 39.77^{\prime \prime} \mathrm{W}$ and latitude $33^{\circ} 57^{\prime} 34.95^{\prime \prime} \mathrm{N}$.

The proposed project includes the residential development of 108 detached condominium units, parking, open space, utility lines, fuel modification zones (FMZs), and storm drain lines. The project also includes an undercrossing beneath Morton Road. The collection system will begin on the east side of Morton Road and consist of a concrete lined drop in the channel bottom and concrete headwall structure to result in no increase to water surface elevation. As a result of negotiations with adjacent landowners, two alternatives for the outlet structure are proposed. In Alternative 1, the outlet structure will cross Morton Road directly across the street from the proposed

Project into an existing channel. (Figure 2A, Alternative 1 Site Plan) In Alternative 2, the outfall structure will travel south along Morton Road for approximately 170 feet before depositing into an existing channel on the west side of Morton Road south of its intersection with Jennings Court (Figure 2B, Alternative 2 Site Plan). The headwall and concrete spillway will extend for approximately 40 feet. To aid in reducing downstream erosion, a rip rap apron will extend for an additional 40 feet.

## 2 Methods

### 2.1 Literature Review

For this biological resources letter report, "special-status" species are those that are (1) listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act; (2) listed or candidates for listing as threatened or endangered under the California Endangered Species Act; (3) a state fully protected species; (4) a California Department of Fish and Wildlife Species of Special Concern; (5) a species listed on the California Native Plant Society's Inventory of Rare and Endangered Plants with a California Rare Plant Rank of 1B or 2B; or (6) an MSHCP species not adequately conserved and species for which the MSHCP has additional surveys requirements for the project site. Special-status vegetation communities are those identified as high priority for inventory in the Natural Communities List (CDFW 2018) by a state rarity ranking of S1, S2, or S3.

Special-status biological resources present or potentially present on the project site were identified through a literature search using the following sources: U.S. Fish and Wildlife Service's Critical Habitat and Occurrence Data (USFWS 2019); California Department of Fish and Wildlife's California Natural Diversity Database (CDFW 2019b); the California Native Plant Society's online Inventory of Rare and Endangered Plants (CNPS 2019); and the Calflora database, which compiles observation and plant data from both private and public institutions, including the Consortium of California herbaria (Calflora 2019). Searches were completed for the following U.S. Geological Survey quadrangles (which include the quadrangle within which the study area is located and the eight surrounding quadrangles): Fontana, San Bernardino South, Redlands, Riverside West, Riverside East, Sunnymead, Lake Matthews, Steele Peak, and Perris.

Previous reports for the property were reviewed including Delineation of Jurisdictional Waters and Wetlands (Attachment B) and Planning Commission Staff Report (City of Moreno Valley 2007).

### 2.2 Field Reconnaissance

Dudek Biologists Anna Cassady and Britney Strittmater conducted a general biological survey of the project site including a 500-foot buffer, collectively referred to as the study area, on February 22, 2019, from 6:40 a.m. to 12:30 p.m. Private properties within the study area were surveyed visually with binoculars from the project site boundary. The survey was conducted when weather conditions were favorable, with no cloud cover, wind speeds from 3 to 10 miles per hour, and temperatures ranging from $40^{\circ} \mathrm{F}$ to $53^{\circ} \mathrm{F}$. All native and naturalized plant species encountered within the study area were identified and recorded. The potential for special-status plant and wildlife species to occur within the study area was evaluated based on the vegetation communities, soils present, and surrounding features. Vegetation communities and land covers on site were mapped directly in the field onto a 200-foot-scale ( 1 foot = 200 feet) aerial photograph-based field map of the study area. A formal jurisdictional delineation was conducted on February 22, 2019. The methodology and results are provided under a separate cover; therefore,
they are not further discussed within this report. Dudek Biologist Tracy Park conducted a biological survey of the study area associated with Alternative 2 on September 21, 2022, from 1:30 p.m. to 3:25 p.m.

Latin and common names for plant species with a California Rare Plant Rank follow the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS 2019). For plant species without a California Rare Plant Rank, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2019), and common names follow the U.S. Department of Agriculture's Natural Resources Conservation Service Plants Database (USDA 2019a). Natural vegetation communities were mapped in the field using the Vegetation Alliances of Western Riverside County (Klein and Evens 2006). Land cover types were described in accordance with Draft Vegetation Communities of San Diego County (Oberbauer et al. 2008). Latin and common names of animals follow Crother (2012) for reptiles and amphibians, the American Ornithologists' Union (AOU 2018) for birds, Wilson and Reeder (2005) for mammals, the North American Butterfly Association (NABA 2016) for butterflies, and Moyle (2002) for fish.

During the February 22, 2019, general biological survey of the site, two ponded features (i.e., ruts) were observed. Therefore, an additional site visit for these two features was conducted by Dudek biologist Anna Cassady on March 13, 2019. This visit was conducted to confirm if these features held water after 7 days.

Dudek used geographic information system software to map biological resources and provide figures.

### 2.3 Burrowing Owl Survey Methods

To meet requirements in the MSHCP, a habitat assessment (Step I) was conducted during the February 22, 2019, visit to identify suitable habitat for burrowing owl (Athene cunicularia) within the project site and a 500-foot buffer. This assessment was conducted in accordance with the Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area (RCA 2006). Due to private properties, the 500-foot buffer was visually inspected with binoculars.

Due to the presence of suitable habitat, from March through May 2019, Dudek biologist Anna Cassady conducted a focused burrow survey (Step II-A) and focused burrowing owl surveys (Step II-B) in accordance with the Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area (RCA 2006). Table 1 lists the dates and conditions of these surveys. The area surveyed on foot was limited to the project site boundary as entry was not granted for adjacent parcels. All buffer areas were surveyed visually.

The focused burrow survey consisted of pedestrian transects spaced approximately 30 meters (approximately 100 feet) apart to allow for $100 \%$ visual coverage of the project site. For a 500 -foot buffer, only visual surveys were conducted as access to the privately owned parcels had not been granted. All burrows suitable for burrowing owl were mapped using GPS and then digitized using ArcGIS.

Dudek conducted a total of four focused burrowing owl surveys during the burrowing owl breeding season (March 1-August 31). The burrowing owl survey area was based on mapped suitable habitat and presence of suitable burrows. This area totaled 14.1 acres of the project site and 32.4 acres within the study area. The surveys were conducted when conditions were suitable for detecting owls (i.e., no rain, high winds [ $>20 \mathrm{mph}$ ], dense fog, or temperatures over $90^{\circ} \mathrm{F}$ ).

## Table 1. Survey Information

| Date | Sunrise | Hours | Survey Type | Conditions (temperature, cloud <br> cover, wind) |
| :--- | :---: | :--- | :--- | :--- |
| $3 / 26 / 19$ | $6: 45$ a.m. | 6:30 a.m.-8:50 a.m. | BUOW 1, Burrow <br> Mapping | $50^{\circ} \mathrm{F}-65^{\circ} \mathrm{F}, 0 \%-20 \% \mathrm{cc}, 0-1$ <br> mph winds |
| $4 / 9 / 19$ | 6:30 a.m. | 6:15 a.m.-8:00 a.m. | BUOW 2 | $58^{\circ} \mathrm{F}-60^{\circ} \mathrm{F}, 0 \%-5 \% \mathrm{cc}, 0-1 \mathrm{mph}$ <br> winds |
| $4 / 23 / 19$ | $6: 05$ a.m. | $6: 15$ a.m.-7:35 a.m. | BUOW 3 | $50^{\circ} \mathrm{F}-53^{\circ} \mathrm{F}, 0 \% \mathrm{cc}, 0-1 \mathrm{mph}$ <br> winds |
| $5 / 13 / 19$ | 5:49 a.m. | $6: 00$ a.m.-7:00 a.m. | BUOW 4 | $58^{\circ} \mathrm{F}, 100 \% \mathrm{cc}, 0-1 \mathrm{mph}$ winds |

Notes: ${ }^{\circ} \mathrm{F}={ }^{\circ}$ Fahrenheit; BUOW = burrowing owl; cc = cloud cover; mph = miles per hour

### 2.4 Survey Limitations

Access was not available within the 500-foot buffer within the southern portion due to private property. The 500buffer within the north, east, and west was surveyed visually using binoculars. Therefore, vegetation mapping, habitat assessments, and the focused burrowing owl surveys were conducted from the project site or other public roads, in addition to being complimented with the use of aerial signatures of vegetation communities occurring within the proposed project footprint.

The reconnaissance survey was conducted during the late winter season, which resulted in detection and identification of most perennial plant species that may potentially occur in the area. Due to the timing of the surveys, annual and cryptic perennials may not have been detectable. Conditions were suitable for detection of most wildlife species (i.e., no cloud cover, $40^{\circ} \mathrm{F}-53^{\circ} \mathrm{F}$ temperatures, and moderate winds) and of winter migratory birds. However, timing of the survey limited the observations of neotropical breeding birds and colder temperatures may have limited the observations of reptiles.

Due to high rainfall over the winter, areas originally determined to be suitable for burrowing owl became marginal throughout the duration of the focused burrowing owl survey period. This was due to high grass and forb growth throughout the spring that led to dense cover that lowered the quality of the habitat for burrowing owl. These areas were still surveyed where accessible; however, areas with no visible ground were typically excluded.

## 3 Results

### 3.1 Site Description

The project site is characterized as open, vacant lands situated at the southwestern foothills of Box Springs Mountain. Based on aerial imagery (Google Earth 2019), the central and southern portions of the site have been frequently disced, as recently as October 2016. This is presumed to be for weed abatement and fire prevention. Elevations range from approximately 1,600 to 2,200 feet above mean sea level. The project site is surrounded by undeveloped land to the north, east, and west with residential developments to the south. Numerous erosional features with deep incised banks occur throughout the study area and are the result of sheet flow off Box Springs Mountain. Numerous dirt roads bisect the project site and contain deep, eroded segments. Morton Road bisects
the southwestern portion of the study area. Representative photographs of the project site are included in Attachment B, Site Photographs.

Based on a review of historical topographic maps (Historic Aerials 2019), residences were built along a dirt access road in the northeastern portion of the project site sometime between 1942 and 1955. It is unclear when the residences were removed; however, the dirt road remains, along with eucalyptus trees, which are assumed to have been planted around the residences.

## $3.2 \quad$ Soils

Five soil types are mapped within the study area: Cieneba Sandy Loam ( $15 \%$ to $50 \%$ slopes); Cieneba Rocky Sandy Loam ( $15 \%$ to $50 \%$ slopes); Fallbrook fine sandy loam, shallow ( $8 \%$ to $15 \%$ slopes); Monserate Sandy Loam ( $8 \%$ to $15 \%$ slopes); and Rockland (USDA 2019b). The spatial distribution of these soils is depicted in Figure 2, Soils.

- Cieneba Series consists of very shallow, somewhat excessively drained soils formed in material weathered from granitic rock. These soils typically occur on hills and mountains (USDA 2019b). This soil series occurs in the central and western portions of the study area in between the Rockland and Monserate Series.
- Fallbrook Series consists of deep, well-drained soils formed in material weathered from granitic rock. These soils typically occur on hills (USDA 2019b). This soil series occurs in the southern portion of the study area in between the Monserate and Rockland Series.
- Monserate Series consists of moderately well drained soils formed in alluvium from granitic rocks. These soils typically occur within alluvial fans and terraces (USDA 2019b). This soil series dominates the southern portion of the study area and is located south of the Cajon Series.
- Rockland consists of well-drained soils formed in loamy colluvium from landslides on slopes of stream valleys and ground moraines (USDA 2019b). This soil series dominates the northern and eastern portions of the study area.


### 3.3 Vegetation Communities and Land Covers

Three vegetation communities and two land cover types were documented within the study area: brittlebush scrub, California annual grassland, eucalyptus woodland, disturbed habitat, and urban/developed. Figure 3, Biological Resources, illustrates the distribution of vegetation communities and land covers, and Table 1 provides a summary of each vegetation community and land cover's extent within the study area.

## Table 1. Vegetation Communities and Land Covers within the Study Area

| Vegetation Community/Land Cover | Acreage |
| :--- | :---: |
| Vegetation Communities |  |
| Brittlebush Alliance | 67.9 |
| California Annual Grassland Alliance | 18.6 |
| Eucalyptus Alliance | 1.8 |
| Non-Natural Land Covers | 6.0 |
| Disturbed Habitat | 16.4 |
| Urban/Developed | OCTOBER 2022 |

# Table 1. Vegetation Communities and Land Covers within the Study Area 

| Vegetation Community/Land Cover |  | Acreage |
| :--- | ---: | ---: | ---: |

## Note:

* Acreage may not total due to rounding.


### 3.3.1 Brittlebush Alliance

The brittlebush (Encelia farinosa) vegetation alliance is an open-to-intermittent shrub layer where brittlebush dominates or co-dominates at a low-to-moderate cover. The shrub layer often occurs in two separate strata: low shrubs at 0-2 meters tall and tall shrubs at 1-5 meters tall. A variety of native or non-native species may make up the herb layer (Klein and Evens 2006).

Within the study area, brittlebush is located in the northern portion of the study area at the base of Box Springs Mountain. This area contains numerous rocky outcrops. This community also occurs within the foothills in the central portion of the study area at slightly lower covers. This species was dominant in the shrub layer and included a lower cover of shrubs including California sagebrush (Artemisia californica) and black sage (Salvia mellifera). The herbaceous layer included various non-native grasses and a mixture of annual herbs such as redstem stork's bill (Erodium cicutarium) and shortfruit stork's bill (Erodium brachycarpum).

### 3.3.2 California Annual Grassland Alliance

As defined by Klein and Evens (2006), California annual grassland alliance is usually dominated by an open-tocontinuous herbaceous layer of native or non-native species at 0-1 meters tall, where emergent shrubs occur infrequently at 0.5-5 meters tall. Herbaceous non-native grasses may include compact brome (Bromus madritensis), ripgut brome (B. diandrus), slender oat (Avena barbata), or common Mediterranean grass (Schismus barbatus), with other herbaceous species such as slender Russian thistle (Salsola tragus), prickly lettuce (Lactuca serriola), and redstem stork's bill.

California annual grassland occupies the central and southern portions of the study area. This vegetation community is comprised primarily of weedy species including, but not limited to, brome species (Bromus spp.), short-podded mustard (Hirschfeldia incana), Tournefort's mustard (Brassica tournefortii), common Mediterranean grass, common fiddleneck (Amsinckia intermedia), distant phacelia (Phacelia distans), shining pepperweed (Lepidium nitidum), Indian hedgemustard (Sisymbrium orientale), miniature lupine (Lupinus bicolor), winecup clarkia (Clarkia purpurea), California poppy (Eschscholzia californica), redstem stork's bill, and shortfruit stork's bill. Scattered emergent brittlebush is located along the northern portions of the community; however, due to the low cover in these areas, it did not warrant its own vegetation community.

### 3.3.3 Eucalyptus Alliance

The eucalyptus alliance is dominated by eucalyptus (Eucalyptus spp.) in the tree canopy, forming an open-tointerment tree layer at 10-15 meters tall. Typically, more than one eucalyptus species comprises this alliance. Other emergent trees may include coast live oak (Quercus agrifolia) or non-native trees and shrubs such as date palm (Phoenix dactylifera), peppertree (Schinus spp.), and tamarisk (Tamarix spp.) at lower covers.

Within the study area, this alliance occurs within the northeastern portion of the study area and is dominated by various eucalyptus species. Scattered giant reed (Arundo donax), poison oak (Toxicodendron diversilobum), and laurel sumac (Malosma laurina) occur within the understory at low covers. A couple scattered California sycamores (Platanus racemosa) and a single Fremont cottonwood (Populus fremontii) were present but did not create a continuous canopy or high enough cover to warrant their own community. This area occurs at a topographic change in the slope of the Box Springs Mountain that appears to allow the water table to be close enough to the surface to support this vegetation; however, there was no evidence of wetland hydrology and, as described, plant species consisted of scattered individuals that did not create a continuous canopy.

### 3.3.4 Urban/Developed

Although not recognized by the Vegetation Alliances of Western Riverside County, urban/developed is defined by Oberbauer et al. (2008) as areas that have been constructed on or disturbed so severely that native vegetation is no longer supported. Urban/developed lands includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials.

Urban/developed land takes the form of rural residential development that is located within the 500-foot buffer to the south and paved roads including Morton Road, Jennings Court, and Penunuri Place, which all occur within the 500 -foot buffer. A very small portion of Morton Road occurs within the proposed project site.

### 3.3.5 Disturbed Habitat

The classification of disturbed habitat is due to the predominance of bare ground, non-native plant species, and other disturbance-tolerant plant species. Oberbauer et al. (2008) describes disturbed habitat as areas that have been physically disturbed by previous human activity and are no longer recognizable as a native or naturalized vegetation association, but that continue to retain a soil substrate. Typically, vegetation, if present, is nearly exclusively composed of non-native annual plant species.

Within the study area, disturbed land encompasses the dirt access roads occurring within the western portion of the project site and within the western and southwestern portions of the 500-foot buffer. While the disturbed land within the study area was composed primarily of bare ground, plant species observed within this land cover include redstem stork's bill and common Mediterranean grass.

## $3.4 \quad$ Floral Diversity

A total of 56 species of native or naturalized plants, 34 native (61\%) and 22 non-native (39\%), were recorded within the study area. This relatively low plant diversity reflects the study area's small size and the timing of the site visit, which was conducted in late winter, which would have precluded the detection of spring and summer blooming annuals. In addition, the study area was surveyed from public roads, which inherently constrains the ability to inventory all plant species. Plant species observed within the study area are listed in Attachment C, Vascular Plant Species.

## $3.5 \quad$ Wildlife

A total of 32 bird species were detected within the study area, including western meadowlark (Sturnella neglecta), bushtit (Psaltriparus minimus), house finch (Haemorhous mexicanus), western kingbird (Tyrannus verticalis), redtailed hawk (Buteo jamaicensis), Anna's hummingbird (Calypte anna), American crow wren (Corvus
brachyrhynchos), coastal California gnatcatcher (Polioptila californica californica), mourning dove (Zenaida macroura), Bewick's wren (Thryomanes bewickii), and California towhee (Melozone crissalis). No active bird nests were observed within the study area during the reconnaissance survey or the focused burrowing owl surveys; however, the native scrub vegetation and eucalyptus within the study area surrounding the project site provides habitat for nesting birds and raptors. No amphibian species were observed and no amphibian species are expected to occur. Two reptile species was observed during the survey: common side-blotched lizard (Uta stansburiana) and granite spiny lizard (Sceloporus orcutti). Three mammal species were detected during the survey: mule deer (Odocoileus hemionus), California ground squirrel (Spermophilus (Otospermophilus) beecheyi), and desert cottontail (Sylvilagus audubonii). Wildlife species observed within the study area are listed in Attachment D, Wildlife Species.

### 3.6 Special-Status Plant Species

Attachment E, Special-Status Plant Species Detected or Potentially Occurring in the Study Area, lists special-status plant species that have been documented in the U.S. Geological Survey 7.5-minute Riverside East quadrangle and the eight surrounding quadrangles (CDFW 2019; CNPS 2019). For each species listed, a determination was made regarding the potential for the species to occur in the study area based on information gathered during the field reconnaissance, including the location of the site, habitats present, current site conditions, and past and present land use. Listed species with a potential to occur and non-listed special-status species with a moderate or higher potential to occur are discussed herein.

No special-status plant species were detected within the study area. Two non-listed special-status species, Plummer's mariposa lily (Calochortus plummerae) and Parry's spineflower (Chorizanthe parryi var. parryi) have a moderate potential to occur within the study area; however, these species are fully covered species under the MSHCP (RCA 2017).

### 3.7 Special-Status Wildlife Species

Attachment F, Special-Status Wildlife Species Detected or Potentially Occurring in the Study Area, lists special-status wildlife species that have been documented in the U.S. Geological Survey 7.5-minute Riverside East quadrangle and the eight surrounding quadrangles (CDFW 2019). For each species listed, a determination was made regarding potential use of the project site based on information gathered during the field reconnaissance, known habitat preferences, and knowledge of the species' relative distributions in the area. Listed species with a potential to occur and non-listed specialstatus species with a moderate or higher potential to occur are discussed herein.

The federally listed threatened coastal California gnatcatcher was incidentally observed foraging during the February 2019 site visit; however, this species is a fully covered species under the MSHCP. The federally listed endangered San Bernardino kangaroo rat (Dipodomys merriami parvus) has a low potential to occur in both the project site and study area; however, this species is fully covered under the MSCHP. The federally listed endangered and state-listed threatened Stephens' kangaroo rat (Dipodomys stephensi) has a moderate potential to occur in both the project site and the study area; however, this species is a fully covered species under the MSHCP. The project is also within the Stephens' Kangaroo Rat Habitat Conservation Plan, which provides take authorization for Stephens' kangaroo rat within its boundaries. The state fully protected whitetailed kite (Elanus leucurus) has a low potential to nest and moderate potential to forage within the study area; however, this species is fully covered under the MSCHP. Two non-listed species have a high potential to occur
within the study area: red diamond rattlesnake (Crotalus ruber) and Blainville's horned lizard (Phrynosoma blainvillii). Three non-listed species have a moderate potential to occur within the study area: San Diego banded gecko (Coleonyx variegatus abbotti), burrowing owl, and loggerhead shrike (Lanius ludovicianus). All five of these species are covered by the MSHCP. The MSHCP has additional survey requirements for burrowing owl that are discussed in more detail below.

### 3.7.1 Burrowing Owl Habitat Assessment and Focused Survey Results

The proposed project is located within the MSHCP Burrowing Owl Habitat Assessment Area. In accordance with the MSHCP Burrowing OwI Survey Instructions (RCA 2006), a habitat assessment (step I of the survey instructions) was conducted for this species.

The burrowing owl is a California Species of Special Concern. With a relatively wide-ranging distribution throughout the west, burrowing owl is considered a habitat generalist (Lantz et al. 2004). In California, burrowing owl is a yearlong resident of open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyonjuniper and ponderosa pine habitats (Zeiner et al. 1990). Preferred habitat is generally typified by short, sparse vegetation with few shrubs; level to gently sloping topography; and well-drained soils (Haug et al. 1993).

The presence of burrows is the most essential component of burrowing owl habitat, as they are required for nesting, roosting, cover, and caching prey. In California, western burrowing owl most commonly lives in burrows created by California ground squirrels. Burrowing owl may occur in human-altered landscapes such as agricultural areas, ruderal grassy fields, vacant lots, and pastures if the vegetation structure is suitable (i.e., open and sparse), useable burrows are available, and foraging habitat is close (Gervais et al. 2008). Debris piles, riprap, culverts, and pipes can also be used for nesting and roosting.

The nearest documented occurrence of burrowing owl is approximately 3.5 miles south of the study area. This occurrence was documented in 2009 (CDFW 2019).

The project site is vacant, consisting of open habitat comprised of California annual grassland, brittlebush, and disturbed habitat. The brittlebush alliance within the northern portion of the site is not suitable for burrowing owl due to the steep topography and dense shrub cover. The California annual grassland provides open habitat with moderate- to high-quality potential foraging habitat for burrowing owl. In addition, California ground squirrels are present within the project site and may provide suitable burrows (i.e., greater than 4 inches in diameter) for burrowing owl. In addition, rocky outcrops and large erosional features do occur within portions of the study area within the brittlebush alliance. These rocky outcrops and erosional features contain interstitial space marginally suitable for the nesting of burrowing owl, and adjacent grasslands are present for potential foraging. Therefore, burrowing owl has a moderate potential to occur within the study area due to suitable habitat present.

As described in Section 2.3 of this document, focused burrowing owl surveys were conducted between March and May 2019. No burrowing owls or signs of burrowing owls (e.g., feathers, whitewash, pellets) were observed within the project site. The result of the focused burrow survey is depicted on Figure 4, Burrowing Owl Focused Survey Results.

### 3.8 Nesting Birds

The project site provides potential nesting habitat for commonly occurring birds such as Anna's hummingbird or house finch. The project site did contain large trees (e.g., eucalyptus) suitable for raptor nesting. One nest was observed within the eucalyptus alliance stand; however, this nest appeared to be old and was not active. No additional nests were observed within the study area during the survey; however, the site visit was conducted just outside of the known nesting season of many species.

### 3.9 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that function as stepping stones for wildlife dispersal. The study area and the surrounding environment to the north, east, and west contain open scrub habitat associated with Box Springs Mountain that likely functions as open habitat, but does not function as a corridor for wildlife. Additionally, the area is not identified as a wildlife movement corridor by the MSHCP.

## 4 Western Riverside County MSHCP Consistency Analysis

The project site is located in the MSHCP Reche Canyon/Badlands Area Plan and must comply with relevant sections of the MSHCP. The project site is not within an MSHCP Criteria Cell (Figure 5, Western Riverside MSHCP Plan Area); therefore, no Reserve Assembly requirements would apply to the project site. The project site is not located within MSCHP Section 6.1.3 Narrow Endemic Species Survey Area or MSHCP Section 6.3.2 Additional Survey Needs and Procedures for Criteria Area Plant Species, Mammals, or Amphibians; therefore, additional survey requirements for these would not apply to the project site and are not further discussed. The project's compliance with the relevant sections of the MSHCP is discussed below.

### 4.1 MSHCP Section 6.1.2 Riparian/Riverine Resources

The MSHCP defines riparian/riverine areas as "lands which contain habitat dominated by trees, shrubs, persistent emergent, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year." The MSHCP further clarifies those areas "demonstrating characteristics as described above which are artificially created are not included in these definitions" (County of Riverside 2003).

The study area contains two ephemeral drainages (Drainage 1 and Drainage 2) and two associated tributaries (Tributary 1 and Tributary 2) (Figure 6, Western Riverside MSHCP Biological Resources). These features convey water ultimately connecting to Box Springs Canyon Wash, which has surface connection ultimately flowing to the Santa Ana River. Because these features convey water to downstream resources, they would be considered riverine resources as defined by the MSHCP. There are approximately 0.29 acres of MSHCP riverine resources within the study area.

The study area contains two additional upland swales and five erosional features. These features originate from natural topography of Box Springs Mountain; runoff conveyed by these features ultimately sheetflows and
dissipates. These features do not rely on a fresh water source and do not convey flows to downstream riverine resources; therefore, these are not a riverine resource as defined by the MSHCP.

The project site supports a few scattered individuals of California sycamore, Fremont cottonwood, and mulefat (Baccharis salicifolia) as observed during the February 2019 field visit. This riparian vegetation is small in its extent, lacks understory or closed-canopy features, lacks continuity with higher quality habitat, and is not contiguous; therefore, it is not sufficient to support riparian bird species such as least Bell's vireo (Vireo bellii pusillus), southwestern willow flycatcher (Empidonax traillii extimus), or yellow-billed cuckoo (Coccyzus americanus). These scattered individuals are not considered a riparian resource as defined by the MSHCP.

### 4.1.1 Vernal Pools and Fairy Shrimp Habitat

The MSHCP defines vernal pools as the following (County of Riverside 2003):
[S]easonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics, and the definition of the watershed supporting vernal pool hydrology, must be made on a case-by-case basis. Such determinations should consider the length of the time the area exhibits upland and wetland characteristics and the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, and drainage characteristics, uses to which it has been subjected, and weather and hydrologic records.

Fairy shrimp habitat also includes ephemeral pools and other features such as road ruts or stock ponds.
No vernal pool-indicator plant species were identified within the area and no vernal pools were observed within the study area. Soils mapped in the region are Cieneba Sandy Loam, Cieneba Rocky Sandy Loam, Monserate Sandy Loam, Fallbrook sandy loam, and Rockland. These series are all considered well to moderately well draining and therefore are not known to retain ponded water. However, two topographic low points contained standing water and ponding as observed during the February 22, 2019, site visit. Moreno Valley received approximately 3.79 inches of rain in the month of February 2019 due to larger storm events resulting in 1.39 inches of rain recorded on February 14 and 1.10 inches of rain recorded on February 15, and smaller events resulting in 0.21 inches of rain recorded on February 21 and 0.08 inches of rain recorded on February 22, 2019 (NRCS 2019). An ephemeral pond needs to hold water for at least 7 days for it to be suitable for fairy shrimp (USFWS 2015). Due to the rain events occurring less than 7 days prior to the February 22, 2019, field visit it was determined a subsequent visit should be conducted to determine if the ponds held water for at least 7 days. Approximately 0.10 inches of rain was recorded on March 6, 0.43 inches of rain was recorded on March 7, and 0.13 inches of rain was recorded on March 8, 2019 (NRCS 2019). Furthermore, the National Oceanic and Atmospheric Administration recorded 0.14 inches of rain between March 11 and 13, 2019 (NOAA 2019). The onset of significant rain events (i.e., 0.10 inches or more) beginning March 6, 2019, was adequate in order to determine if these feature held water as a result of this initial rain event and subsequent rain events after. Therefore, an additional site visit was conducted on March

13, 2019, to confirm if the two ponded areas observed on February 22, 2019, had held water for 7 days. The two topographic low points did not contain standing water or ponding during the March 13, 2019, site visit. Therefore, based on the facts that these features did not hold water for 7 days and that the soils present are considered well to moderately well draining and not known to retain ponded water, the study area was determined to not support habitat for Riverside fairy shrimp (Streptocephalus woottoni).

### 4.2 MSHCP Section 6.3.2 Additional Survey Area Needs and Procedures

Section 6.3.2 of the MSHCP establishes habitat assessment requirements for certain species of plants, birds, mammals, and amphibians. The project site is located in a required habitat assessment area for burrowing owl. As discussed above under Section 3.7, Special-Status Wildlife Species, of this report, the habitat assessment did identify potential burrowing owl habitat, including open areas that provide line of sight and suitable burrowing owl burrows. As such, Step II (focused surveys, census, and mapping) was conducted with negative results; however, pre-construction surveys will be required.

### 4.3 MSHCP Section 6.1.4 Urban/Wildlife Interface Guidelines

According to the MSHCP, the Urban/Wildlands Interface Guidelines are intended to address indirect effects associated with locating development in proximity to the MSHCP Conservation Area (County of Riverside 2003, pp. $6-42$ ). The project site is not within any conserved areas; however, the Henry Conservation Easement is north of the site within Criteria Cell 637 (Figure 5). Furthermore, ephemeral drainages within the study area flow to Box Springs Canyon Wash, which ultimately flows to the Santa Ana River based on surface connectivity. Due to the proposed project being located adjacent to proposed conservation and having connectivity to areas described for conservation, the Urban/Wildlife Interface Guidelines are applicable.

## 5 Impacts Analysis and Recommendations

This section addresses potential impacts to special-status biological resources that could result from implementation of the proposed project. This section follows the CEQA checklist for biological resources as identified below. For the impacts analysis, the two alternatives of the project site plans were overlaid with biological resources (Figure 7, Project Impacts). Table 2 summarizes the total area of impact used in the impact analysis.

## Significance Thresholds

The following are the significance thresholds for biological resources provided in the CEQA Appendix $G$ Environmental Checklist, which states that project activities could potentially have a significant affect if they:

1. Impact-BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS (Threshold Bio-1).
2. Impact-BIO-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS (Threshold Bio-2).
3. Impact-BIO-3: Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (Threshold Bio-3).
4. Impact-BIO-4: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites (Threshold Bio-4).
5. Impact-BIO-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (Threshold Bio-5).
6. Impact-BIO-6: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan (Threshold Bio-6).

Table 2. Impacts to Vegetation Communities and Land Covers within the Project Site

| Vegetation Community/Land Cover | Alternative 1 Impact <br> Acreage | Alternative 2 Impact <br> Acreage |
| :--- | :---: | :---: | :---: |
| Vegetation Communities | 3.56 | 3.56 |
| Brittlebush Alliance | 7.65 | 7.65 |
| California Annual Grassland Alliance | 0.19 | 0.19 |
| Eucalyptus Alliance |  |  |
| Non-Natural Land Covers | 2.84 | 2.85 |
| Disturbed Habitat | 0.02 | 0.04 |
| Urban/Developed | 14.26 | 14.30 |

* Acreage may not total due to rounding.


### 5.1 Impact-Bio-1: Special-Status Species

### 5.1.1 Special-Status Plants

No special-status plant species were detected within the study area; however, two non-listed special-status plant species have a moderate potential to occur within the project site: Plummer's mariposa lily and Parry's spineflower. Plummer's mariposa lily and Parry's spineflower are fully covered under the MSCHP; therefore, compliance with the MSHCP offsets potential direct and indirect impacts to these species.

### 5.1.2 Special-Status Wildlife

One federally listed threatened species (coastal California gnatcatcher) was detected within the project site; however, this species is a fully covered species under the MSHCP. Therefore, compliance with the MSHCP offsets potential direct and indirect impact to this species.

One federally listed endangered wildlife species (San Bernardino kangaroo rat) has a low potential to occur within the study area and one federally listed endangered and state-listed threatened wildlife species (Stephen's kangaroo rat) has a moderate potential to occur within the study area. San Bernardino kangaroo and Stephen's kangaroo rat are fully covered under the MSCHP; therefore, compliance with the MSHCP offsets potential direct and indirect
impacts to these species. Furthermore, the project is also within the Stephen's Kangaroo Rate Habitat Conservation Plan, which provides take authorization for Stephen's kangaroo rat within its boundaries.

One state fully protected wildlife species (white-tailed kite) has a low potential to nest and moderate potential to forage within the study area. This species is fully covered under the MSCHP; therefore, compliance with the MSHCP offsets potential indirect impacts to this species. There is no take authorization of fully protected species; therefore, impacts to nesting white-tailed kite would be significant. Nests would be avoided as described in Section 5.4.1. With implementation of MM-BIO-2 (Nesting Birds), no significant impacts to nesting white-tailed kite would occur.

In addition, two non-listed special-status species (San Diego banded gecko and loggerheaded shrike) have moderate potential to occur within the study area. Two other non-listed special-status species (red diamond rattlesnake and Blainville's horned lizard) have a high potential to occur within the study area. All of these species are fully covered under the MSCHP; therefore, compliance with the MSHCP offsets potential direct and indirect impacts to this species.

### 5.1.2.1 Burrowing Owl

The focused burrowing owl surveys concluded that burrowing owls were absent from the project site; however, burrowing owl could move into the project site prior to initiation of construction activities. Direct impacts to burrowing owl would be significant if they occupy the site (Impact-BIO-1). Additionally, if burrowing owl occupy surrounding habitat within 500 feet of construction activities, indirect impacts could be significant. To avoid potential for significant impacts to burrowing owl during construction activities and to remain consistent with the MSHCP, a pre-construction burrowing owl survey should be conducted and avoidance measures implemented if burrowing owl are present (MM-BIO-1, Burrowing Owl Pre-Construction Surveys).

### 5.2 Impact-Bio-2: Riparian and Special Status Vegetation Communities

There are no special-status vegetation communities as defined by the California Department of Fish and Wildlife within the project site; therefore, the project would not result in direct or indirect impacts to special-status vegetation communities (Impact-Bio-2). The project would result in impacts to riverine resources as defined by the MSHCP and as summarized in Table 3. Impacts to riverine resources are further discussed in Section 4.1, MSHCP Section 6.1.2 Riparian/Riverine Resources, of this report.

Table 3. Permanent Impacts to MSHCP Riverine Resources within the Project Site

| Feature | Vegetation Community <br> and/or Land Cover | Alternative 1 MSHCP <br> Riverine Resources <br> (Acres/Linear Feet) * | Alternative 2 MSHCP <br> Riverine Resources <br> (Acres/Linear Feet) * |
| :--- | :--- | :---: | :---: |
|  | Brittlebush (Encelia <br> farinosa) Alliance | - | - |
|  | California Annual <br> Grassland Alliance | $0.01 / 38$ | $0.01 / 76$ |
|  | Eucalyptus (Eucalyptus <br> spp.) Alliance | - | $<0.01 / 24$ |
|  |  |  |  |

Table 3. Permanent Impacts to MSHCP Riverine Resources within the Project Site

| Feature | Vegetation Community and/or Land Cover | Alternative 1 MSHCP <br> Riverine Resources <br> (Acres/Linear Feet) * | Alternative 2 MSHCP <br> Riverine Resources <br> (Acres/Linear Feet) * |
| :---: | :---: | :---: | :---: |
|  | Disturbed Habitat | - | - |
|  | Urban/Developed | - | - |
| Drainage 1 MSHCP Riverine Total |  | 0.01/38 | 0.01/100 |
| Tributary 1 | Brittlebush Alliance | 0.02/307 | 0.02/307 |
|  | California Annual Grassland Alliance | 0.01/284 | 0.01/284 |
|  | Eucalyptus Alliance | <0.01/82 | <0.01/82 |
| Tributary 1 MSHCP Riverine Total |  | 0.03/674 | 0.03/674 |
| Drainage 2 | Brittlebush Alliance | - | - |
|  | Disturbed Habitat | - | - |
| Drainage 2 MSHCP Riverine Total |  | - |  |
| Tributary 2 | Brittlebush Alliance | - | - |
| Tributary 2 MSHCP Riverine Total |  | - |  |
|  | Grand Total* | 0.04/712 | 0.05/774 |

Notes: MSHCP = Multiple Species Habitat Conservation Plan

* Acreage may not total due to rounding.


### 5.3 Impact-Bio-3: Jurisdictional Waters

Impacts to jurisdictional waters are discussed under separate cover (Dudek 2022).

### 5.4 Impact-BIO-4: Migratory Birds and Wildlife Corridor/ Nursery Sites

### 5.4.1 Nesting Birds

Project construction could result in direct and indirect impacts to nesting birds, including the loss of nests, eggs, and fledglings (Impact-BIO-4) if ground-disturbing activities occur during the nesting season (generally February 15 through August 31). Construction activities during this time may result in reduced reproductive success and may violate the federal Migratory Bird Treaty Act and California Fish and Game Code. If construction (including any ground-disturbing activities) occurs during the nesting season, a nesting bird survey must be conducted by a qualified biologist prior to grading activities. If nesting birds are observed within or adjacent to the construction activities, avoidance of active bird nests should occur as determined by the qualified biologist to ensure compliance with these regulations. With implementation of MM-BIO-2 (Nesting Birds), no significant impacts to nesting birds would occur.

### 5.4.2 Wildlife Corridors and Nursery Sites

The project site currently does not function as a wildlife corridor and does not support any wildlife nursery sites. As a result, implementation of the proposed project would not result in impacts to these resources (Impact-Bio-4).

### 5.5 Impact-Bio-5: Other Local Ordinances

There are no applicable local ordinances related to biological resources; therefore, the project would be consistent with local ordinances.

### 5.6 Impact-Bio-6: Habitat Conservation Plans

The project site overlaps both the MSHCP and the Stephens' Kangaroo Rat Habitat Conservation Plan and must be consistent with each of these plans for compliance with Impact-Bio-6.

### 5.6.1 Western Riverside Multiple Species Habitat Conservation Plan

The project site is within the MSHCP Plan Area and must comply with applicable sections of the MSHCP as well as pay the applicable MSHCP Development Mitigation Fee.

### 5.6.1.1 MSHCP Section 6.1.2 Riparian/Riverine Resources

As described in Section 4.1 of this letter report, the project site supports riverine resources as defined by the MSHCP. The proposed project would result in the permanent loss of approximately 0.04 acres (Alternative 1) or 0.05 acres (Alternative 2) of MSHCP riverine resources. To remain consistent with the MSHCP, the project must prepare a Determination of Biologically Equivalent or Superior Preservation identifying avoidance, minimization, and mitigation measures for impacts to riverine resources. With implementation of MM-BIO-3 (Determination of Biologically Equivalent or Superior Preservation), the project is consistent with Section 6.1.2 of the MSHCP.

### 5.6.1.2 MSHCP Section 6.1.4 Urban/Wildlife Interface Guidelines

The project is located adjacent to a proposed conservation area and has connectivity to areas described for conservation; therefore, the Urban/Wildlife Interface Guidelines are applicable. Each of the Urban/Wildlife Interface Guidelines are further discussed below.

- Drainage/Toxics: The proposed project includes the construction of a debris basin and water quality basin. Furthermore, the project will include the development of a stormwater pollution prevention plan. With implementation of these measures, the project would be consistent with these requirements of the MSHCP and no further actions are required.
- Lighting/Noise: The project is located immediately north of existing residential development and adjacent to Morton Road. The project will incorporate a setback consisting of open space within the northern portion of the project site. Therefore, night lighting and noise will not impact existing or future MSHCP Conservation Areas and the project would be consistent with these requirements of the MSHCP.
- Barriers: The project does not include fencing or other barriers that would impede wildlife. Furthermore, the project site does not function as a corridor for wildlife. Additionally, the area is not identified as a wildlife movement corridor by the MSHCP; therefore, the project would be consistent with these requirements of the MSHCP.
- Grading/Land Development: No manufactured slopes extend within existing or planned Conservation Areas; therefore, the project would be consistent with these requirements of the MSHCP.
- Invasives: Invasive species provided in MSHCP Table 6-2 are not to be used in development or restoration plan activities for projects adjacent to conservation areas. As described in MM-BIO-4, the project shall not use invasive species as defined in the MSHCP Table 6-2 within its landscape plan. With implementation of this measure, the project would be consistent with this requirement of the MSHCP.
- Fuel Modification: Weed abatement and fuel modification zones do not encroach into existing or planned Conservation Areas; therefore, the project would be consistent with these requirements of the MSHCP.

With the project design features and mitigation measures, including the development of a debris basin and water quality basin, development of a stormwater pollution prevention plan, and implementation of MM-BIO-4, the project is consistent with Section 6.1.4 of the MSHCP.

### 5.6.1.3 MSHCP Section 6.3.2 Additional Survey Needs and Procedures

The project does support burrowing owl habitat and burrowing owl have the potential to occupy the site in the future. With implementation of MM-BIO-1, which includes burrowing owl pre-construction surveys, and avoidance and minimization measures if applicable, the project would be consistent with the MSHCP burrowing owl requirements.

### 5.6.2 Stephens' Kangaroo Rat Habitat Conservation Plan

The project site is within the Stephens' Kangaroo Rat Habitat Conservation Plan boundary. With payment of the Stephens' Kangaroo Rat Habitat Conservation Plan Development Mitigation Fee, the proposed project would be consistent with the Stephens' Kangaroo Rat Habitat Conservation Plan.

## 6 Avoidance, Minimization, and Mitigation Measures

MM-BIO-1 Burrowing Owl Pre-Construction Surveys
A pre-construction survey shall be conducted for burrowing owl in accordance with the Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area (RCA 2006). In accordance with these instructions, this survey would occur within 30 days prior to ground-disturbance activities. A minimum of one survey site visit within the described time frame prior to disturbance is required to confirm presence or absence of owls on the site. Pre-construction surveys shall be conducted by a qualified biologist. If burrowing owl are present within the survey area, take of active nests shall be avoided as determined by a qualified biologist.

MM-BIO-2 Nesting Birds.

To maintain compliance with the Migratory Bird Treaty Act and California Fish and Game Code, if ground-disturbing and/or vegetation clearance activities are scheduled to occur during the avian nesting season (typically February 15 through August 31), a pre-construction nesting bird survey shall be conducted by a qualified biologist within the project site and a 500 -foot buffer around the project site. Surveys shall be conducted within 3 days prior to initiation of activity and shall be conducted between dawn and noon.

If an active nest is detected during the nesting bird survey, avoidance buffers shall be implemented as determined by a qualified biologist. The buffer shall be of a distance to ensure avoidance of adverse effects to the nesting bird by accounting for topography, ambient conditions, species, nest location, and activity type. All nests shall be monitored as determined by the qualified biologist until nestlings have fledged and dispersed or it is confirmed that the nest has been unsuccessful or abandoned.

## MM-BIO-3 Determination of Biologically Equivalent or Superior Preservation

Prior to initiating construction activities, the applicant shall prepare and have reviewed by the wildlife agencies a Determination of Biologically Equivalent or Superior Preservation (DBESP) for impacts to riverine habitat in compliance with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Section 6.1.2, Protection of Species Associated with Riparian/Riverine areas and Vernal Pools. The DBESP will ensure replacement of any lost functions and values of riparian/riverine habitat as it relates to riverine resources, and will include the following:

- Definition of the project area;
- A written project description, demonstrating why an avoidance alternative is not possible;
- A written description of biological information available for the project site, including the results of resource mapping;
- Quantification of unavoidable impacts to riparian/riverine areas, including direct and indirect effects;
- A written description of project design features and mitigation measures that reduce indirect effects, such as edge treatments, landscaping, elevation difference, minimization, and/or compensation through restoration or enhancement; and
- A finding demonstrating that, although the proposed project would not avoid impacts, with proposed design and compensation measures the project would be biologically equivalent or superior to that which would occur under an avoidance alternative without


## MM-BIO-4 General Avoidance and Minimization Measures

The following avoidance and minimization measures shall be implemented during proposed project construction activities:

- Construction limits along the northern boundary of the proposed project shall be clearly flagged so that adjacent native vegetation is avoided.
- Staging and storage areas for spoils, equipment, materials, fuels, lubricants, and solvents shall be located within the designated impact area or adjacent developed areas.
- Invasive species identified in Table 6-2 of the Western Riverside County Multiple Species Habitat Conservation Plan shall not be used in development landscape plans or restoration plan activities.


## 7 Conclusions

The proposed has the potential to impact three special-status biological resources: burrowing owl, Parry's spineflower, and riverine habitat. With implementation of the avoidance, minimization, and mitigation measures described in this report, the project would be consistent with the MSHCP and would result in less than significant impacts to biological resources under CEQA.

If you have any questions regarding this biological resources letter report, please feel free to contact me at acassady@dudek.com or at 951.300.1088.

Sincerely,


Att.: Attachment A - Figures
Attachment B - Site Photographs
Attachment C - Vascular Plant Species
Attachment D - Wildlife Species
Attachment E - Special-Status Plant Species Detected or Potentially Occurring in the Study Area
Attachment F - Special-Status Wildlife Species Detected or Potentially Occurring in the Study Area

8 References

AOU (American Ornithologists' Union). 2018. "Checklist of North and Middle American Birds." Accessed October 2018. http://checklist.aou.org/taxa.

Calflora. 2019. The Calflora Database. Berkeley, California: Calflora. Accessed February 2019. http://www.calflora.org.
CDFW (California Department of Fish and Wildlife). 2018. Natural Communities List Arranged Alphabetically by Life Form. January 24, 2018. Accessed February 2019. https://nrm.dfg.ca.gov/FileHandler.ashx? DocumentID=153398\&inline.

CDFW. 2019. California Natural Diversity Database (CNDDB). RareFind, Version 5. Sacramento, California: CDFW, Biogeographic Data Branch. Accessed February 2019. https://www.dfg.ca.gov/biogeodata/cnddb /mapsanddata.asp.

City of Moreno Valley 2007. "Planning Commission Staff Report." Prepared by Albert A. Webb Associates. December 20, 2007.

CNPS (California Native Plant Society). 2019. Inventory of Rare and Endangered Plants. Online ed. Version 8-02. Sacramento, California: CNPS. Accessed February 2019. http://www.rareplants.cnps.org.

County of Riverside. 2003. Western Riverside County Multiple Species Habitat Conservation Plan. County of Riverside, Transportation and Land Management Agency, Riverside County Integrated Project. MSHCP adopted June 17, 2003. Accessed February 2019. http://www.rctlma.org/mshcp.

Crother, B.I. 2012. Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding, edited by J.J. Moriarty. 7th ed. Society for the Study of Amphibians and Reptiles (SSAR); Herpetological Circular, no. 39. August 2012. Accessed March 2018. http://home.gwu.edu/~rpyron/publications/Crother_et_al_2012.pdf.

Dudek. 2022. Jurisdictional Waters Delineation Update Report for the Gateway Heights Project, City of Moreno Valley, Riverside County, California. Prepared for Shizao Zheng. October 2022.

Google Earth. 2019. Aerial photograph. 1:200 scale.
Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. "Burrowing owl (Athene cunicularia)." In California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California, edited by W.D. Shuford and T. Gardali, 218-226. Studies of Western Birds no. 1. California: Western Field Ornithologists (Camarillo), and California Department of Fish and Game (Sacramento). February 4, 2008. http://www.dfg.ca.gov/wildlife /nongame/ssc/birds.html.

Haug, E.A., B.A. Millsap, and M.S. Martell. 1993. "The Burrowing Owl (Speotyto cunicularia)." In The Birds of North America, edited by A. Poole and F. Gill. Philadelphia, Pennsylvania: The Academy of Natural Sciences, and Washington, D.C.: The American Ornithologists' Union.

Historic Aerials. 2019. www.historicaerials.com.
Jepson Flora Project. 2019. "Jepson eFlora." The Jepson Herbarium. Accessed January 3, 2019. http://ucjeps.berkeley.edu/IJM.html.

Klein, A., and J. Evens. 2006. Vegetation Alliances of Western Riverside County, California. Final report prepared for the California Department of Fish and Game Habitat Conservation Division. Sacramento, California: California Native Plant Society. Published August 2005; revised April 2006. Accessed February 2019. www.cnps.org/cnps/vegetion/pdf/wriv_vegetation_ cnpsfinalreport_April2006.pdf.

Lantz, S.J., H. Smith, and D.A. Keinath. 2004. Species Assessment for Western Burrowing Owl (Athene cunicularia hypugaea) in Wyoming. Prepared for the U.S. Department of Interior and Bureau of Land Management.

Moyle, P.B. 2002. Inland Fishes of California. Revised and expanded. Berkeley and Los Angeles, California, and London, England: University of California Press.

NABA (North American Butterfly Association). 2016. "Checklist of North American Butterflies Occurring North of Mexico." Adapted from North American Butterfly Association (NABA) Checklist and English Names of North American Butterflies. 2nd ed. Morristown, New Jersey: NABA. December 29, 2016. Accessed October 2018. http://naba.org/pubs/enames2_3.html.

NOAA (National Oceanic and Atmospheric Administration). 2019. "Weather Conditions For: Riverside/March Air Force Base, CA. KRIV (NWS/FAA - SGX)." Accessed March 13, 2019. https://www.wrh.noaa.gov/mesowest /getobext.php?wfo=sgx\&sid=KRIV\&num=72\&raw=0.

NRCS (Natural Resources Conservation Service). 2019. "AgACIS for Riverside County." Accessed February and March 2019. http://agacis.rcc-acis.org/?fips=06065.

Oberbauer, T., M. Kelly, and J. Buegge. 2008. Draft Vegetation Communities of San Diego County. March 2008. Accessed February 2019. http://www.sdcanyonlands.org/pdfs/veg_comm_sdcounty_2008_doc.pdf.

RCA (Resource Conservation Authority). 2006. Burrowing OwI Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area. March 29, 2006. Accessed February 2019. http://rctlma.org/Portals/1/EPD/consultant/ burrowing_owl_survey_ instructions.pdf.

RCA. 2017. Western Riverside County Multiple Species Habitat Conservation Plan Annual Report 2017 for the Period January 1, 2017 through December 31, 2017. 2017.

USDA (U.S. Department of Agriculture). 2019a. "California." State PLANTS Checklist. Accessed February 2019. http://plants.usda.gov/dl_state.html.

USDA. 2019b. Web Soil Survey. August 21, 2017. Accessed February 2019. http://websoilsurvey.nrcs.usda.gov.
USFWS (United States Fish and Wildlife Service). 2015. "Survey Guidelines for the Listed Large Branchiopods." Sacramento, California: USFWS. May 31, 2015. Accessed February 2019. https://www.fws.gov/cno /es/FinalSurveyGuidelinesforListedLargeBranchiopods.pdf

USFWS. 2019. Critical Habitat for Threatened and Endangered Species [digital GIS data]. September 28, 2018. Washington, DC: U.S. Fish \& Wildlife Service. Accessed February 2019. https://fws.maps.arcgis.com /home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

Wilson, D.E., and D.M. Reeder. 2005. Mammal Species of the World: A Taxonomic and Geographic Reference. 3rd ed. (MSW3 database). Accessed October 2018. http://www.bucknell.edu/msw3.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990. California's Wildlife: Volume III. Mammals. Sacramento, California: California Department of Fish and Game.

## Attachment A

Figures


SOURCE: Bing Maps 2021
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Alternative 2 Impact

- Fuel Modification Permanent Impacts

Vegetation Communities and Land Cover Types
BBS - Brittlebush
EUC - Eucalyptus
NNG - California Annual Grassland Alliance
DH - Disturbed Habitat
DEV - Urban/Developed
Special-Status Wildlife Observations
$\checkmark$ Coastal California gnatcatcher


## Attachment B Photo Documentation



Location 1: View of brittlebush alliance within northern portion of the project site, facing southwest.


Location 3: View of eucalyptus alliance within northeastern portion of the project site, facing northeast.


Location 2: View of rocky outcrops within the brittlebush alliance within northern portion of the project site, facing northeast.


Location 4: View of disturbed habitat (i.e., dirt roads) and erosional features within road, facing south.


Location 5: View of California annual grassland from central portion of the project site, facing west.


Location 7: View of deeply incised erosional feature within southwestern portion of the project site, facing northeast.


Location 6: View of ephemeral drainage within eastern portion of the project site, facing north.


Location 8: View of ponding within the southern portion of the project site on February 22, 2019. A site visit on March 13, 2019 after adequate rains and was confirmed to not hold water for 7 days.

## Attachment C <br> Vascular Plant Species

## Eudicots

## Vascular Species

ADOXACEAE-MUSKROOT FAMILY<br>Sambucus nigra ssp. caerulea-blue elderberry

ANACARDIACEAE-SUMAC OR CASHEW FAMILY
Malosma laurina-laurel sumac
Rhus ovata-sugarbush

* Schinus molle-Peruvian peppertree

Toxicodendron diversilobum-poison oak
ASTERACEAE-SUNFLOWER FAMILY
Artemisia californica-California sagebrush
Baccharis salicifolia-mulefat
Corethrogyne filaginifolia-sand-aster
Deinandra fasciculata-clustered tarweed
Encelia farinosa-brittle bush
Helianthus annuus-common sunflower
Pseudognaphalium californicum-ladies' tobacco

* Sonchus oleraceus-common sowthistle

BORAGINACEAE-BORAGE FAMILY
Amsinckia intermedia-common fiddleneck
Pectocarya linearis-sagebrush combseed
Phacelia distans-distant phacelia
Phacelia minor-wild canterbury bells
Plagiobothrys collinus-Cooper's popcornflower

## BRASSICACEAE-MUSTARD FAMILY

* Brassica tournefortii-Tournefort's mustard
* Hirschfeldia incana-shortpod mustard

Lepidium nitidum-shining pepperweed

* Sisymbrium orientale-Indian hedgemustard


## CACTACEAE-CACTUS FAMILY

Cylindropuntia californica var. parkeri-brownspined pricklypear Opuntia littoralis-coast prickly pear

## CHENOPODIACEAE-GOOSEFOOT FAMILY

* Chenopodium murale-nettleleaf goosefoot
* Salsola tragus-prickly Russian thistleCONVOLVULACEAE-MORNING-GLORY FAMILY
Calystegia macrostegia-island false bindweed
CUCURBITACEAE-GOURD FAMILYMarah macrocarpa-Cucamonga manroot
EUPHORBIACEAE-SPURGE FAMILY
Croton setiger-dove weedStillingia linearifolia-queen's-root
FABACEAE-LEGUME FAMILY
Lupinus bicolor-miniature lupine
* Parkinsonia aculeata-Jerusalem thorn
GERANIACEAE-GERANIUM FAMILY
* Erodium brachycarpum-shortfruit stork's bill
* Erodium cicutarium-redstem stork's bill
LAMIACEAE-MINT FAMILY
Salvia columbariae-chia
Salvia mellifera-black sage
MALVACEAE-MALLOW FAMILY
* Malva parviflora-cheeseweed mallow
MYRTACEAE-MYRTLE FAMILY
* Eucalyptus camaldulensis-river redgum
* Eucalyptus globulus-Tasmanian bluegum
NYCTAGINACEAE-FOUR O'CLOCK FAMILY
Mirabilis laevis-desert wishbone-bush
ONAGRACEAE-EVENING PRIMROSE FAMILYClarkia purpurea-winecup clarkiaEpilobium canum-hummingbird trumpetEulobus californicus-California suncup
PAPAVERACEAE-POPPY FAMILYEschscholzia californica-California poppy

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PLANTAGINACEAE-PLANTAIN FAMILY
* Plantago lanceolata-narrowleaf plantain
PLATANACEAE-PLANE TREE, SYCAMORE FAMILY
    Platanus racemosa-California sycamore
POLYGONACEAE-BUCKWHEAT FAMILY
    Eriogonum fasciculatum var. polifolium-California buckwheat
SALICACEAE-WILLOW FAMILY
    Salix lasiolepis-arroyo willow
ZYGOPHYLLACEAE-CALTROP FAMILY
* Tribulus terrestris-puncturevine
Monocots
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## Vascular Species

## ARECACEAE-PALM FAMILY

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* Washingtonia robusta-Washington fan palm
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* Washingtonia robusta-Washington fan palm
POACEAE-GRASS FAMILY
* Arundo donax-giant reed
* Avena barbata-slender oat
* Bromus diandrus-ripgut brome
* Bromus madritensis-compact brome
* Hordeum murinum-mouse barley
* Schismus barbatus-common Mediterranean grass

```
* signifies introduced (non-native) species

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\section*{Attachment D \\ Wildlife Species}

\section*{Bird}

\section*{Blackbirds, Orioles and Allies}

\author{
ICTERIDAE-BLACKBIRDS \\ Icterus bullockii-Bullock's oriole \\ Icterus cucullatus-hooded oriole \\ Sturnella neglecta-western meadowlark \\ \section*{Bushtits} \\ \section*{AEGITHALIDAE-LONG-TAILED TITS AND BUSHTITS \\ \\ Psaltriparus minimus-bushtit} \\ \section*{Cardinals, Grosbeaks and Allies} \\ \section*{CARDINALIDAE-CARDINALS AND ALLIES} \\ Passerina amoena-lazuli bunting \\ Pheucticus melanocephalus-black-headed grosbeak \\ Piranga ludoviciana-western tanager
}

\section*{Falcons}

\section*{FALCONIDAE-CARACARAS \& FALCONS}

Falco sparverius-American kestrel

\section*{Finches}

FRINGILLIDAE-FRINGILLINE AND CARDUELINE FINCHES AND ALLIES
Haemorhous mexicanus-house finch
Spinus psaltria-lesser goldfinch

\section*{Flycatchers}

TYRANNIDAE-TYRANT FLYCATCHERS
Tyrannus verticalis-western kingbird
Tyrannus vociferans-Cassin's kingbird

\section*{Hawks}

\section*{ACCIPITRIDAE-HAWKS, KITES, EAGLES, AND ALLIES}

Accipiter cooperii-Cooper's hawk
Buteo jamaicensis-red-tailed hawk

\section*{Hummingbirds}

\section*{TROCHILIDAE-HUMMINGBIRDS}

Calypte anna-Anna's hummingbird

\section*{Jays, Magpies and Crows}

\section*{CORVIDAE-CROWS AND JAYS \\ Corvus brachyrhynchos-American crow \\ Corvus corax-common raven}

\section*{Mockingbirds and Thrashers}

MIMIDAE-MOCKINGBIRDS AND THRASHERS
Mimus polyglottos-northern mockingbird
Toxostoma redivivum-California thrasher

\section*{New World Quail}

ODONTOPHORIDAE-NEW WORLD QUAIL
Callipepla californica-California quail

\section*{Old World Warblers and Gnatcatchers}

SYLVIIDAE-SYLVIID WARBLERS
Polioptila californica californica-coastal California gnatcatcher

\section*{Pigeons and Doves}

COLUMBIDAE-PIGEONS AND DOVES
Zenaida macroura-mourning dove

\section*{Swallows}
HIRUNDINIDAE-SWALLOWSStelgidopteryx serripennis-northern rough-winged swallow
Wood Warblers and Allies
PARULIDAE-WOOD-WARBLERSCardellina pusilla-Wilson's warblerSetophaga coronata-yellow-rumped warbler
Woodpeckers
PICIDAE-WOODPECKERS AND ALLIESDryobates nuttallii-Nuttall's woodpecker
Wrens
TROGLODYTIDAE-WRENSSalpinctes obsoletus-rock wrenThryomanes bewickii-Bewick's wren
New World Sparrows
PASSERELLIDAE-NEW WORLD SPARROWSMelozone crissalis-California towheePipilo maculatus-spotted towheeSpizella atrogularis-black-chinned sparrow
Zonotrichia leucophrys-white-crowned sparrow
Mammal
Hares and Rabbits
LEPORIDAE-HARES AND RABBITSSylvilagus audubonii-desert cottontail

\section*{Squirrels}

\section*{SCIURIDAE-SQUIRRELS}

Spermophilus (Otospermophilus) beecheyi-California ground squirrel

\section*{Ungulates}

\author{
CERVIDAE-DEERS \\ Odocoileus hemionus-mule deer
}

\section*{Reptile}

\author{
Lizards
}

\section*{PHRYNOSOMATIDAE-IGUANID LIZARDS}

Sceloporus orcutti-granite spiny lizard
Uta stansburiana-common side-blotched lizard

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\section*{Attachment E}

\section*{Special-Status Plant Species Detected or Potentially Occurring in the Study Area}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & Status (Federal/State/CRPR) & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline Abronia villosa var. aurita & chaparral sandverbena & None/None/1B. 1 & None & Chaparral, Coastal scrub, Desert dunes; sandy/annual herb/(Jan)Mar-Sep/ 245-5250 & Low potential to occur. The site is located within the species' known elevation range and suitable coastal scrub is present; however, the nearest occurrence is approximately 11.5 miles southeast of the site (CDFW 2019). Furthermore, no genera of Abronia was detected during the late February 2019 site visit. \\
\hline Allium munzii & Munz's onion & FE/ST/1B. 1 & Narrow Endemic Plant Species & Chaparral, Cismontane woodland, Coastal scrub, Pinyon and juniper woodland, Valley and foothill grassland; mesic, clay/perennial bulbiferous herb/Apr-May/ 970-3510 & Not expected to occur. The site is located within the species' known elevation range and suitable vegetation is present; however, the site lacks suitable clay soils to support this species. This species is restricted to clay soils with the exception of one population document to occur in association with pyroxenite outcrops (County Riverside 2003). The nearest occurrence is approximately 11 miles southwest of the site (CDFW 2019). \\
\hline Ambrosia pumila & San Diego ambrosia & FE/None/1B. 1 & Narrow Endemic Plant Species & Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools; sandy loam or clay, often in disturbed areas, sometimes alkaline/perennial & Not expected to occur. The site is outside of the species' known elevation range. The nearest occurrence is approximately 8 miles west \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State/CRPR)
\end{tabular} & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline & & & & rhizomatous herb/Apr-Oct/ 65-1360 & of the site (CDFW 2019). \\
\hline Arenaria paludicola & marsh sandwort & FE/SE/1B. 1 & None & Marshes and swamps (freshwater or brackish); sandy, openings/perennial stoloniferous herb/May-Aug/ 5-560 & Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present. \\
\hline Astragalus hornii var. hornii & Horn's milk-vetch & None/None/1B. 1 & None & Meadows and seeps, Playas; lake margins, alkaline/annual herb/May-Oct/195-2790 & Not expected to occur. No suitable vegetation or alkaline soils present. \\
\hline Atriplex coronata var. notatior & San Jacinto Valley crownscale & FE/None/1B. 1 & Criteria Area Survey Plant Species & Playas, Valley and foothill grassland (mesic), Vernal pools; alkaline/annual herb/ Apr-Aug/455-1640 & Not expected to occur. The site is located within the species' known elevation rang and grasslands are present; however, this species is restricted to highly alkaline, silty-clay soils in association with Traver-Domino-Willow soil association (County of Riverside 2003) which are absent. \\
\hline Atriplex pacifica & South Coast saltscale & None/None/1B. 2 & None & Coastal bluff scrub, Coastal dunes, Coastal scrub, Playas/ annual herb/Mar-Oct/0-460 & Not expected to occur. The site is outside of the species' known elevation range. \\
\hline Atriplex parishii & Parish's brittlescale & None/None/1B. 1 & Criteria Area Survey Plant Species & Chenopod scrub, Playas, Vernal pools; alkaline/annual herb/June-Oct/80-6235 & Not expected to occur. No suitable vegetation or alkaline soils present. \\
\hline Atriplex serenana var. davidsonii & Davidson's saltscale & None/None/1B. 2 & Criteria Area Survey Plant Species & Coastal bluff scrub, Coastal scrub; alkaline/annual herb/Apr-Oct/30-655 & Not expected to occur. The site is outside of the species' known elevation range. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State/CRPR)
\end{tabular} & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline Berberis nevinii & Nevin's barberry & FE/SE/1B. 1 & Criteria Area Survey Plant Species & Chaparral, Cismontane woodland, Coastal scrub, Riparian scrub; sandy or gravelly/perennial evergreen shrub/(Feb)Mar-June/ 225-2705 & Not expected to occur. The site is located within the species' known elevation range, coastal scrub is present, and the nearest occurrence is approximately 4.2 miles west of the site (CDFW 2019); however, species is associated with coarse rocky soils in chaparral and gravelly wash margins in alluvial scrub (County of Riverside 2003) which are absent. Furthermore, this conspicuous evergreen shrub would likely have been detected during the February 2019 site visit. \\
\hline Brodiaea filifolia & thread-leaved brodiaea & FT/SE/1B. 1 & Criteria Area Survey Plant Species & Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools; often clay/perennial bulbiferous herb/Mar-June/ 80-3675 & Not expected to occur. The site is located within the species' known elevation range and coastal scrub and grasslands are present; however, this species is associated with clay, or alkaline silty-clay soils (County of Riverside 2003) which are absent. The nearest occurrence is approximately 12.2 miles southeast of the site (CDFW 2019). \\
\hline Calochortus plummerae & Plummer's mariposa lily & None/None/4.2 & Covered \({ }^{2}\) & Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous & Moderate potential to occur. The site is located within the species' known elevation \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State/CRPR)
\end{tabular} & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline & & & & forest, Valley and foothill grassland; granitic, rocky/ perennial bulbiferous herb/ May-July/325-5575 & range, suitable vegetation is present and rocky soils derived from granitic sources are present. The nearest occurrence is less than 1 miles north of the site (CDFW 2019). \\
\hline Carex comosa & bristly sedge & None/None/2B. 1 & None & Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland/ perennial rhizomatous herb/May-Sep/0-2050 & Not expected to occur. The site is located within the species' known elevation range and grasslands are present; however, the nearest occurrence is approximately 6.6 miles north of the site and is from 1882 and has been extirpated (CDFW 2019). No other occurrences are recorded within the vicinity (i.e., CNDDB nine-quad search). \\
\hline Centromadia pungens ssp. laevis & smooth tarplant & None/None/1B. 1 & Criteria Area Survey Plant Species & Chenopod scrub, Meadows and seeps, Playas, Riparian woodland, Valley and foothill grassland; alkaline/annual herb/Apr-Nov/0-2100 & Not expected to occur. The site is located within the species' known elevation range and grasslands are present; however, this species is known to occur on primarily alkaline soils (County of Riverside 2003) which are absent. The nearest occurrence is approximately 2.2 miles south of the site (CDFW 2019). \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State/CRPR)
\end{tabular} & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline Chloropyron maritimum ssp. maritimum & salt marsh bird'sbeak & FE/SE/1B. 2 & None & Coastal dunes, Marshes and swamps (coastal salt)/annual herb (hemiparasitic)/
May-Oct(Nov)/O-100 & Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present. \\
\hline Chorizanthe parryi var. parryi & Parry's spineflower & None/None/1B. 1 & Covered \({ }^{2}\) & Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland; sandy or rocky, openings/ annual herb/Apr-June/ 900-4005 & Moderate potential to occur. The site is located within the species' known elevation range, suitable vegetation and soils are present, and the nearest occurrence is less than 1 miles north of the site (CDFW 2019). \\
\hline Chorizanthe polygonoides var. longispina & long-spined spineflower & None/None/1B. 2 & Covered & Chaparral, Coastal scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; often clay/annual herb/ Apr-July/95-5020 & Not expected to occur. The site is located within the species' known elevation range and suitable vegetation is present; however, this species is often associated with clay soils which are absent. The nearest occurrence is approximately 9.3 miles southwest of the site (CDFW 2019). \\
\hline Cuscuta obtusiflora var. glandulosa & Peruvian dodder & None/None/2B. 2 & None & Marshes and swamps (freshwater)/annual vine (parasitic)/July-Oct/45-920 & Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present. \\
\hline Cylindropuntia californica var. californica & snake cholla & None/None/1B. 1 & None & Chaparral, Coastal scrub/ perennial stem succulent/ Apr-May/95-490 & Not expected to occur. The site is outside of the species' known elevation range. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State/CRPR)
\end{tabular} & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline Dodecahema leptoceras & slender-horned spineflower & FE/SE/1B. 1 & Narrow Endemic Plant Species & Chaparral, Cismontane woodland, Coastal scrub (alluvial fan); sandy/annual herb/Apr-June/655-2495 & Not expected to occur. The site is located within the species' known elevation range and suitable soils are present; however, species is associated with alluvial fans. The coastal scrub present is not affiliated with an alluvial fan. The nearest occurrence is approximately 6.6 miles north of the site (CDFW 2019). \\
\hline Dudleya multicaulis & many-stemmed dudleya & None/None/1B. 2 & Narrow Endemic Plant Species & Chaparral, Coastal scrub, Valley and foothill grassland; often clay/perennial herb/ Apr-July/45-2590 & Not expected to occur. The site is located within the species' known elevation range and suitable vegetation is present; however, this species is known to occur on clay soils (County of Riverside 2003) which are absent. The nearest occurrence is approximately 12.4 miles west of the site (CDFW 2019). \\
\hline Eriastrum densifolium ssp. sanctorum & Santa Ana River woollystar & FE/SE/1B. 1 & Covered & Chaparral, Coastal scrub (alluvial fan); sandy or gravelly/ perennial herb/Apr-Sep/
295-2000 & Not expected to occur. The site is located within the species' known elevation range; however, the site is not located within an alluvial fan and alluvial coastal scrub is not present. The nearest occurrence is approximately 5.6 miles north of the site, associated with the Santa Ana River (CDFW 2019). \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State/CRPR)
\end{tabular} & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline Galium californicum ssp. primum & Alvin Meadow bedstraw & None/None/1B. 2 & Covered \({ }^{2}\) & Chaparral, Lower montane coniferous forest; granitic, sandy/perennial herb/ May-July/4425-5575 & Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present. \\
\hline Helianthus nuttallii ssp. parishii & Los Angeles sunflower & None/None/1A & None & Marshes and swamps (coastal salt and freshwater)/ perennial rhizomatous herb/ Aug-Oct/30-5005 & Not expected to occur. No suitable vegetation present. \\
\hline Horkelia cuneata var. puberula & mesa horkelia & None/None/1B. 1 & None & Chaparral (maritime), Cismontane woodland, Coastal scrub; sandy or gravelly/ perennial herb/Feb-July(Sep)/ 225-2655 & Low potential to occur. The site is located within the species' known elevation range and coastal scrub and suitable soils are present; however, the nearest occurrence is approximately 9.5 miles northwest of the site (CDFW 2019). Although a focused survey was not conducted, the February 2019 site visit was conducted during the species' known blooming period and no genera of Horkelia were observed. \\
\hline Imperata brevifolia & California satintail & None/None/2B. 1 & None & Chaparral, Coastal scrub, Mojavean desert scrub, Meadows and seeps (often alkali), Riparian scrub; mesic/ perennial rhizomatous herb/Sep-May/0-3985 & Not expected to occur. The site is located within the species' known elevation range and coastal scrub is present; however, the site lacks alkali soils and the nearest occurrence is approximately 10.8 miles northeast of the site (CDFW 2019). \\
\hline
\end{tabular}
\begin{tabular}{l|l|l|l|l|l} 
& & & & \begin{tabular}{l} 
Primary Habitat \\
Associations/Life \\
Form/Blooming Period/ \\
Elevation Range (feet)
\end{tabular} \\
\begin{tabular}{lll} 
Scientific Name \\
\begin{tabular}{l} 
Lasthenia glabrata \\
ssp. coulteri
\end{tabular} & Common Name
\end{tabular} & \begin{tabular}{l} 
Coulter's goldfields \\
(Federal/State/CRPR)
\end{tabular} & None/None/1B.1 & \begin{tabular}{l} 
MSHCP
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State/CRPR)
\end{tabular} & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline & & & & Vernal pools/annual herb/ Apr-June/95-2150 & known to occur on salinealkaline soils (County of Riverside 2003) which are absent. \\
\hline Phacelia stellaris & Brand's star phacelia & None/None/1B. 1 & Narrow Endemic Plant Species & Coastal dunes, Coastal scrub/ annual herb/Mar-June/ 0-1310 & Not expected to occur. The site is outside of the species' known elevation range. \\
\hline Pseudognaphalium leucocephalum & white rabbit-tobacco & None/None/2B. 2 & None & Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; sandy, gravelly/perennial herb/ (July)Aug-Nov(Dec)/0-6890 & Low potential to occur. The site is located within the species' known elevation range and suitable vegetation and soils are present; however, the nearest occurrence is approximately 16.4 miles northwest of the site (CDFW 2019). \\
\hline Ribes divaricatum var. parishii & Parish's gooseberry & None/None/1A & None & Riparian woodland/perennial deciduous shrub/Feb-Apr/ 210-985 & Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present. \\
\hline Senecio aphanactis & chaparral ragwort & None/None/2B. 2 & None & Chaparral, Cismontane woodland, Coastal scrub; sometimes alkaline/annual herb/Jan-Apr(May)/45-2625 & Low potential to occur. The site is located within the species' known elevation range and suitable vegetation is present; however, this species is often associated with alkaline soils which are absent. The nearest occurrence is approximately 1.5 miles north of the site (CDFW 2019). \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State/CRPR)
\end{tabular} & MSHCP & Primary Habitat Associations/Life Form/Blooming Period/ Elevation Range (feet) & Potential to Occur \\
\hline Sidalcea neomexicana & salt spring checkerbloom & None/None/2B. 2 & None & Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas; alkaline, mesic/ perennial herb/Mar-June/ 45-5020 & Low potential to occur. The site is located within the species' known elevation range and suitable vegetation is present; however, this species is often associated with alkaline soils which are absent. The nearest occurrence is approximately 9.2 miles north of the site (CDFW 2019). \\
\hline Sphenopholis obtusata & prairie wedge grass & None/None/2B. 2 & None & Cismontane woodland, Meadows and seeps; mesic/ perennial herb/Apr-July/ 980-6560 & Not expected to occur. No suitable vegetation present. \\
\hline Symphyotrichum defoliatum & San Bernardino aster & None/None/1B. 2 & None & Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps, Valley and foothill grassland (vernally mesic); near ditches, streams, springs/perennial rhizomatous herb/July-Nov(Dec)/5-6695 & Low potential to occur. The site is located within the species' known elevation range and suitable vegetation is present; however, the site lacks vernally mesic conditions. The nearest occurrence is approximately 9.8 miles east of the site (CDFW 2019). \\
\hline Trichocoronis wrightii var. wrightii & Wright's trichocoronis & None/None/2B. 1 & Narrow Endemic Plant Species & Meadows and seeps, Marshes and swamps, Riparian forest, Vernal pools; alkaline/annual herb/May-Sep/15-1425 & Not expected to occur. The site is outside of the species' known elevation range and there is no suitable vegetation present. \\
\hline
\end{tabular}

\section*{Federal}

FE: Federally listed as endangered
FT: Federally listed as threatened

\section*{State}

SE: State listed as endangered
ST: State listed as threatened

\section*{CRPR: California Rare Plant Rank}

1B: Plants rare, threatened, or endangered in California and elsewhere
2B: Plants rare, threatened, or endangered in California, but more common elsewhere

\section*{Threat Rank}
0.1 - Seriously threatened in California (more than \(80 \%\) of occurrences threatened/high degree and immediacy of threat)
0.2 - Moderately threatened in California ( \(20 \%-80 \%\) occurrences threatened/moderate degree and immediacy of threat)
0.3 - Not very threatened in California (less than 20\% of occurrences threatened/low degree and immediacy of threat or no current
threats known)
MSHCP: Western Riverside County Multiple Species Habitat Conservation Plan
2 These species will be considered to be Covered Species Adequately Conserved when conservation requirements identified in species-specific conservation objectives have been met (MSHCP Table 9-3).

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\section*{Attachment F}

\section*{Special-Status Wildlife Species Detected or Potentially Occurring in the Study Area}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State)
\end{tabular} & MSHCP & Habitat & Potential to Occur \\
\hline \multicolumn{6}{|l|}{Amphibians} \\
\hline Rana muscosa & mountain yellow-legged frog & FE/SE, WL & Covered & Lakes, ponds, meadow streams, isolated pools, and open riverbanks; rocky canyons in narrow canyons and in chaparral & Not expected to occur. The study area does not support suitable aquatic habitat to support this species. \\
\hline Spea hammondii & western spadefoot & None/SSC & Covered & Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley-foothill woodlands, pastures, and other agriculture & Low potential to occur. The study area supports grasslands and coastal scrub; however, lacks vernal pools to support this species. Small areas of ponding where observed; however, the survey was conducted immediately following a moderate precipitation event. The nearest occurrence is approximately 2.5 miles east of the site (CDFW 2019). \\
\hline \multicolumn{6}{|l|}{Reptiles} \\
\hline Actinemys marmorata & western pond turtle & None/SSC & Covered & Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter. & Not expected to occur. The study area does not support suitable aquatic habitat for this species. \\
\hline Anniella stebbinsi & southern California legless lizard & None/SSC & None & Coastal dunes, stabilized dunes, beaches, dry washes, valleyfoothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and moist sandy or loose, loamy soils & Low potential to occur. Sparse vegetation and loamy soils are present. The nearest occurrence is approximately 2.5 miles northeast of the site (CDFW 2019). \\
\hline Arizona elegans occidentalis & California glossy snake & None/SSC & None & Commonly occurs in desert regions throughout Southern California. Prefers open sandy areas with scattered brush. Also found in rocky areas. & Low potential to occur. Open areas with scattered brush and rocky areas are present; however, commonly occur in desert regions. The nearest occurrence is approximately 3.3 miles west of the site (CDFW 2019). \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State)
\end{tabular} & MSHCP & Habitat & Potential to Occur \\
\hline Aspidoscelis tigris stejnegeri & San Diegan tiger whiptail & None/SSC & Covered & Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas. & Low potential to occur. No suitable chaparral or riparian areas are present. The site supports a minimal amount of Eucalyptus woodland. The nearest occurrence is approximately 4.9 miles south of the site (CDFW 2019). \\
\hline Coleonyx variegatus abbotti & San Diego banded gecko & None/SSC & Covered & Rocky areas within coastal scrub and chaparral. & Moderate potential to occur. Suitable rocky areas within coastal scrub are present. The nearest occurrence is approximately 5.4 miles north of the site (CDFW 2019). \\
\hline Crotalus ruber & red diamondback rattlesnake & None/SSC & Covered & Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats. & High potential to occur. Suitable vegetation is present and there are numerous known occurrences within 1mile of the site, with one occurrence overlapping the southwestern portion of the site (CDFW 2019). \\
\hline Phrynosoma blainvillii & Blainville's horned lizard & None/SSC & Covered & Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley-foothill hardwood, conifer, riparian, pine-cypress, juniper, and annual grassland habitats. & High potential to occur. Suitable open areas within coastal scrub and grasslands are present. There is known occurrence that overlaps the site with two other known occurrences within 5 miles of the site (CDFW 2019). \\
\hline Salvadora hexalepis virgultea & coast patchnosed snake & None/SSC & None & Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites. & Low potential to occur. Shrubby vegetation is present; however, small mammal burrows were not detected during the February 2019 site visit. \\
\hline Thamnophis hammondii & two-striped gartersnake & None/SSC & None & Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools. & Not expected to occur. The study area does not support suitable aquatic habitat for this species. \\
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\begin{tabular}{l|l|l|l|l|l|l}
\hline \begin{tabular}{l} 
Scientific \\
Name
\end{tabular} & \begin{tabular}{l} 
Common \\
Name
\end{tabular} & \begin{tabular}{l} 
Status \\
(Federal/State)
\end{tabular} & MSHCP & Habitat & Potential to Occur
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & Status (Federal/State) & MSHCP & Habitat & Potential to Occur \\
\hline Coturnicops noveboracensis & yellow rail & BCC/SSC & None & Nesting requires wet marsh/sedge meadows or coastal marshes with wet soil and shallow, standing water & Not expected to occur. The study area does not contain aquatic habitats or suitable wetland vegetation that would support this species. \\
\hline Elanus leucurus (nesting) & white-tailed kite & None/FP & Covered & Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands. & Low potential to nest; moderate potential to forage. The study area supports a minor amount of woodlands (i.e. eucalyptus) for nesting. Open areas suitable for foraging are present. The nearest occurrence is approximately 11.7 miles east of the site (CDFW 2019). \\
\hline Empidonax traillii extimus (nesting) & southwestern willow flycatcher & FE/SE & Covered & Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration & Not expected to occur. The study area does not contain dense riparian habitats that would support this species. \\
\hline Haliaeetus leucocephalus (nesting and wintering) & bald eagle & FD, BCC/SE, FP & Covered & Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains. & Not expected to nest or forage. The study area does not support forested areas near aquatic habitat for this species to nest and/or winter. \\
\hline Icteria virens (nesting) & yellow-breasted chat & None/SSC & Covered & Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush. & Not expected to nest or forage. The project site does not contain dense riparian woodlands that would support this species. \\
\hline Lanius ludovicianus (nesting) & loggerhead shrike & None/SSC & Covered & Nests and forages in open habitats with scattered shrubs, trees, or other perches. & Moderate potential to occur. The project site supports suitable habitat (shrubs with open habitat) for this species to nest. The nearest occurrence is approximately 3 miles south of the site (CDFW 2019). \\
\hline Laterallus jamaicensis coturniculus & California black rail & BCC/FP, ST & None & Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations & Not expected to occur. The study area does not contain dense riparian habitats that would support this species. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & Status (Federal/State) & MSHCP & Habitat & Potential to Occur \\
\hline Polioptila californica californica & coastal California gnatcatcher & FT/SSC, WL & Covered & Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40\%; majority of nesting at less than 1,000 feet above mean sea level. & Observed. Two individuals were observed within brittlebush scrub within the northwestern corner of the study area during the site visit conducted on February 22, 2019. \\
\hline Setophaga petechia (nesting) & yellow warbler & BCC/SSC & Covered & Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixedconifer habitats & Not expected to occur. The study area does not contain dense riparian or other suitable habitats that would support this species. \\
\hline Vireo bellii pusillus (nesting) & least Bell's vireo & FE/SE, WL & Covered & Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season. & Not expected to nest or forage. The study area does not contain dense riparian thickets that would support this species. \\
\hline \multicolumn{6}{|l|}{Fishes} \\
\hline Catostomus santaanae & Santa Ana sucker & FT/None & Covered & Small, shallow, cool, clear streams less than 7 meters ( 23 feet) in width and a few centimeters to more than a meter (1.5 inches to more than 3 feet) in depth; substrates are generally coarse gravel, rubble, and boulder & Not expected to occur. The study area does not support aquatic habitat for this species. \\
\hline Gila orcuttii & arroyo chub & None/SSC & Covered & Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths >40 centimeters (16 inches); substrates of sand or mud & Not expected to occur. The study area does not support aquatic habitat for this species. \\
\hline Oncorhynchus mykiss irideus pop. 10 & \begin{tabular}{l}
southern \\
steelhead - \\
southern California DPS
\end{tabular} & FE/None & None & Clean, clear, cool, well-oxygenated streams; needs relatively deep pools in migration and gravelly substrate to spawn & Not expected to occur. The study area does not support aquatic habitat for this species. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & Status (Federal/State) & MSHCP & Habitat & Potential to Occur \\
\hline Rhinichthys osculus ssp. 3 & Santa Ana speckled dace & None/SSC & None & Headwaters of the Santa Ana and San Gabriel Rivers; may be extirpated from the Los Angeles River system & Not expected to occur. The study area does not support aquatic habitat for this species. \\
\hline \multicolumn{6}{|l|}{Mammals} \\
\hline Antrozous pallidus & pallid bat & None/SSC & None & Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in manmade structures and trees. & Low potential to roost, moderate potential to forage. The study area supports marginal rocky outcrops and trees for roosting. Open grassland and shrublands present for foraging. \\
\hline Chaetodipus fallax fallax & northwestern San Diego pocket mouse & None/SSC & Covered & Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper, and annual grassland. & Low potential to occur. The study area is within the elevation range for this species and supports coastal scrub and annual grassland habitat suitable for this species; however, no small mammal burrows were observed on the project site. The nearest occurrence is approximately 3.1 miles south of the site (CDFW 2018). \\
\hline Dipodomys merriami parvus & San Bernardino kangaroo rat & FE/SSC & Covered & Sparse scrub habitat, alluvial scrub/coastal scrub habitats on gravelly and sandy soils near river and stream terraces & Low potential to occur. Sparse scrub habitat; however, alluvial habitat near river and stream terraces are absent. The nearest occurrence is approximately 3.3 miles north of the site (CDFW 2018). \\
\hline Dipodomys stephensi & Stephens' kangaroo rat & FE/ST & Covered & Annual and perennial grassland habitats, coastal scrub or sagebrush with sparse canopy cover, or in disturbed areas. & Moderate potential to occur. The study area is within the elevation range for this species and supports grassland habitat suitable for this species. However, no small mammal burrows were observed on the project site. Two historic occurrences (1988) partially overlap the outer edges of the study area. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State)
\end{tabular} & MSHCP & Habitat & Potential to Occur \\
\hline Eumops perotis californicus & western mastiff bat & None/SSC & None & Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels. & Not expected to roost, moderate potential to forage. No suitable canyons or cliffs are present for roosting. Suitable habitat (coastal scrub) is present for foraging. \\
\hline Lasiurus xanthinus & western yellow bat & None/SSC & None & Valley-foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms. & Not expected to roost or forage. The study does not contain riparian habitat, desert wash, or palm habitat suitable for this species. \\
\hline Lepus californicus bennettii & San Diego black-tailed jackrabbit & None/SSC & Covered & Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, and rangelands. & Low potential to occur. The study area contains open grasslands and coastal scrub suitable for this species; however, the site is located immediately adjacent to an urbanized area. The nearest occurrence is 5.5 miles east of the site (CDFW 2019). \\
\hline Neotoma lepida intermedia & San Diego desert woodrat & None/SSC & Covered & Coastal scrub, desert scrub, chaparral, cacti, rocky areas. & Low potential to occur. The study area supports suitable coastal scrub and rock habitat for this species; however, no woodrat middens were observed within the project site and the nearest occurrence is approximately 7.8 miles south of the site (CDFW 2019). \\
\hline Nyctinomops femorosaccus & pocketed freetailed bat & None/SSC & None & Pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with dropoffs, caverns, and buildings. & Not expected to occur. The study area does not support desert riparian or desert wash habitats suitable for this species. \\
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\begin{tabular}{|c|c|c|c|c|c|}
\hline Scientific Name & Common Name & \begin{tabular}{l}
Status \\
(Federal/State)
\end{tabular} & MSHCP & Habitat & Potential to Occur \\
\hline Onychomys torridus ramona & southern grasshopper mouse & None/SSC & None & Grassland and sparse coastal scrub. & Low potential to occur. The study area supports suitable grassland and coastal habitat for this species. However, no small mammal burrows were observed on the project site. The nearest occurrence is approximately 2.7 miles south of the site (CDFW 2019). \\
\hline Perognathus longimembris brevinasus & Los Angeles pocket mouse & None/SSC & Covered & Lower-elevation grassland, alluvial sage scrub, and coastal scrub. & Low potential to occur. The study area supports suitable grassland and coastal scrub habitat for this species. However, no small mammal burrows were observed on the project site. The nearest occurrence is approximately 2.9 east of the site (CDFW 2019). \\
\hline Taxidea taxus & American badger & None/SSC & None & Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils & Low potential to occur. The study area does support sparse grassland habitat with fine sandy soils; however, no small mammal burrows were observed on the project site and the site is located immediately adjacent to an urbanized area. \\
\hline \multicolumn{6}{|l|}{Invertebrates} \\
\hline Euphydryas editha quino & quino checkerspot butterfly & FE/None & Covered & Annual forblands, grassland, open coastal scrub and chaparral; often soils with cryptogamic crusts and fine-textured clay; host plants include Plantago erecta, Antirrhinum coulterianum, and Plantago patagonica (Silverado Occurrence Complex) & Not expected to occur. The study area supports suitable habitat (coastal scrub and grasslands), but lacks cryptogamic crusts or clay soils. Additionally, no known host plants are present on the project site. The nearest occurrence is approximately 11.1 miles south of the site (CDFW 2019). \\
\hline Rhaphiomidas terminatus abdominalis & Delhi Sands flower-loving fly & FE/None & Covered & Delhi fine sandy soils and dunes, scrub and ruderal vegetation in the sand verbena series with \(<50 \%\) cover & Not expected to occur. The study area lacks Delhi fine sandy soils to support this species. \\
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\begin{tabular}{l|l|l|l|l}
\hline \begin{tabular}{l} 
Scientific \\
Name
\end{tabular} & \begin{tabular}{l} 
Common \\
Name
\end{tabular} & \begin{tabular}{l} 
Status \\
(Federal/State)
\end{tabular} & MSHCP & Habitat
\end{tabular}

3615 MAIN STREET, SUITE 103
RIVERSIDE, CALIFORNIA 92501

October 21, 2022

Shizao Zheng
1378 West Zhorgshan Road
Ningbo City, Zhejiang Province
China

\section*{Subject: Jurisdictional Waters Delineation Update Report for the Gateway Heights Project, City of Moreno Valley, Riverside County, California}

Dear Mr. Zheng:
This report documents the results of an update to a jurisdictional waters delineation for the Gateway Heights Project (project). This report was initially submitted in 2019 but has now been revised with an updated project name, footprint, and impact analysis. The 32.8-acre project site is comprised of Assessor's Parcel Numbers 256-150-001 and 256-040-009, as well as rights-of-way and is located north of Jennings Court and east of Morton Road in Riverside County (Figure 1, Project Location; figures are provided in Attachment A). The proposed project includes the residential development of 108 detached condominium units, parking, open space, utility lines, fuel modification zones, and storm drain lines. The study area consists of the proposed project and a 50 -foot buffer. The project also includes an undercrossing beneath Morton Road. The collection system will begin on the east side of Morton Road and consist of a concrete lined drop in the channel bottom and concrete headwall structure to result in no increase to water surface elevation. As a result of negotiations with adjacent landowners, two alternatives for the outlet structure are proposed. In Alternative 1, the outlet structure will cross Morton Road directly across the street from the proposed Project into an existing channel. (Figure 2A, Alternative 1 Site Plan) In Alternative 2, the outfall structure will travel south along Morton Road for approximately 170 feet before depositing into an existing channel on the west side of Morton Road south of its intersection with Jennings Court (Figure 2B, Alternative 2 Site Plan). The headwall and concrete spillway will extend for approximately 40 feet. To aid in reducing downstream erosion, a rip rap apron will extend for an additional 40 feet. Photos of the jurisdictional features are provided in Attachment B.

Development of the project site was previously proposed by Kincaid Development as Tentative Tract 33626, for which a mitigated negative declaration was prepared in accordance with the California Environmental Quality Act (CEQA) and approved by the City of Moreno Valley on December 20, 2007. A Delineation of Jurisdictional Waters and Wetlands report was prepared in October 2007 (Archer 2007) in support of the CEQA document for Tentative Tract 33626. Tentative Tract 33626 has since expired and an updated site plan and CEQA document is being prepared. This letter report serves as an update to the 2007 Delineation of Jurisdictional Waters and Wetlands report and relies upon the 2007 report, provided as Attachment C, for background and existing conditions information.

This letter report is intended to (1) describe the existing conditions of jurisdictional waters within the study area, (2) quantify impacts to jurisdictional waters that would result from implementation of the proposed project, and (3) provide a discussion of potential water resource permits required for construction of the project.

\section*{1 Methods \\ 1.1 Literature Review}

The following available resources were reviewed to assess the potential for jurisdictional waters: aerial photographs (Google Earth 2019; Historic Aerials 2019); the U.S. Geological Survey 7.5-minute topographic quadrangle (USGS 2019); a Natural Resources Conservation Service soil map (USDA 2019); U.S. Environmental Protection Agency Watershed Assessment, Tracking \& Environmental Results System (EPA 2019), which includes the National Hydrography Dataset; and the National Wetland Inventory (USFWS 2019).

The 2007 Delineation of Jurisdictional Waters and Wetlands was reviewed and relied upon for background and existing conditions information and is included within Attachment C of this report.

\subsection*{1.2 Jurisdictional Delineation}

On February 22, 2019, Dudek biologists Anna Cassady and Britney Strittmater updated a delineation of jurisdictional waters within the proposed project, including a 50-foot buffer (study area), where access was available. Dudek Biologist Tracy Park conducted a biological survey of the study area associated with Alternative 2 on September 21, 2022, from 1:30 p.m. to 3:25 p.m. The study area was surveyed on foot and was surveyed for the following types of features:
- Waters of the United States, including wetlands, under the jurisdiction of the U.S. Army Corps of Engineers (USACE), pursuant to Section 404 of the federal Clean Water Act
- Waters of the state under the jurisdiction of the California Regional Water Quality Control Board (RWQCB), pursuant to Section 401 of the federal Clean Water Act and the Porter-Cologne Water Quality Control Act, as wetlands or drainages
- Streambeds under the jurisdiction of the California Department of Fish and Wildlife (CDFW), pursuant to Section 1602 of the California Fish and Game Code

Non-wetland waters of the United States were delineated based on the presence of an ordinary high water mark (OHWM) as determined using the methodology in A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (USACE 2008a). The 2015 Clean Water Rule excludes "erosional features, including gullies, rills, and ephemeral features such as ephemeral streams that do not have bed and banks and ordinary high water mark" as "Waters of the United States" (80 FR 37053). Wetland waters of the United States were delineated based on methodology described in the 1987 Corps of Engineers Wetland Delineation Manual (USACE 1987) and the USACE Regional Supplement (USACE 2008b). Pursuant to the federal Clean Water Act, wetland waters of the United States include those supporting all three wetlands criteria described in the USACE manual: hydric soils, hydrology, and hydrophytic vegetation.

Areas regulated by the RWQCB are generally coincident with waters of the United States regulated by the USACE, but can also include isolated waters of the state that have evidence of surface water inundation pursuant to the state Porter-Cologne Water Quality Control Act. Isolated features are delineated at the OHWM, at the outer limits of hydrophytic vegetation, or at the outer rim of depressional features if relevant. The State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (State Water Resources Control Board
2019) also implements the three parameters criteria (hydric soils, hydrology, and hydrophytic vegetation) for delineating wetland waters of the state.

Streambeds are typically delineated from top of bank to top of bank or the extent of associated riparian vegetation beyond the top of bank. For shallow drainages and washes that do not support riparian vegetation, the top-of-bank measurement may be the same as the OHWM measurement.

A map of the jurisdictional waters from the Delineation of Jurisdictional Waters and Wetlands prepared by Linda Archer in 2007 was reviewed in the field (Attachment C). All features mapped were reviewed and the project footprint was walked on foot to confirm jurisdictional waters mapped matched existing conditions. Updates to the boundaries of jurisdictional waters were made based on current existing conditions. Since none of the features meet the minimum criteria for wetland vegetation or hydrology, soils were not sampled. Photos of the jurisdictional features were taken in accordance with USACE guidelines and are provided in Attachment B.

\section*{2 Results of Survey}

In 2007, as described in the Delineation of Jurisdictional Waters and Wetlands report (Attachment C), five features within the project site were determined to be jurisdictional waters: Drainage 1, Tributary 1, and Seeps 1 through 3. The 2007 report determined Drainage 1 to be waters of the United States under the jurisdiction of USACE, RWQCB, and CDFW. Tributary 1 was determined to be waters of the State under the jurisdiction of RWQCB and CDFW based on a significant nexus analysis. Three seeps were determined to be isolated waters under the jurisdiction of RWQCB. A non-jurisdictional upland swale was also mapped within the project site.

As further described below, Drainage 1 and Tributary 1 were identified within the study area during the 2019 survey and determined to be waters of the United States under the jurisdiction of USACE, RWQCB, and CDFW. The three seeps were not present at the time of the 2019 survey. Two features, Drainage 2 and Tributary 2, which were not delineated in 2007 as they were outside the impact area, were mapped during the 2019 survey as waters of the United States. Finally, several swales and erosional features were identified within the study area and determined to not be jurisdictional waters.

The 2019 limits of jurisdictional waters are provided in Figure 2, Jurisdictional Delineation. Representative photos are provided in Attachment B. Table 1 provides an acreages list of jurisdictional waters.

\subsection*{2.1 Jurisdictional Waters}

\section*{Drainage 1}

As discussed in the Delineation of Jurisdictional Waters and Wetlands report (Attachment C), Drainage 1 is an ephemeral drainage occurring along the southeastern project boundary. It originates off site in the hills to the northeast and flows southwest, meandering on and off site and ultimately flowing off site at the southwest corner of the project boundary and connecting to Box Springs Canyon Wash approximately 0.5 miles southwest of the study area. An OHWM is evident throughout most of the natural channel characterized by absence of vegetation, defined bed/bank, sediment deposition, and debris wracking. Within upstream portions of the channel the OHWM becomes obscured for short distances and includes evidence of sheet flow. Consistent with the 2007 delineation, an OHWM is not evident at the southern tip of the project, just north of Morton Road. Flows continue off site as sheetflow south along the west side of Morton Road. Flows
cross Morton Road following road-grading contours as discussed in Attachment C, ultimately connecting to Box Springs Canyon Wash, which flows to the Santa Ana River. The OHWM averages 1 to 6 feet in width.

Scattered vegetation throughout the drainage included upland species such as common Mediterranean grass (Schismus barbatus), bromes (Bromus spp.), redstem stork's bill (Erodium cicutarium), cheeseweed mallow (Malva parviflora), common fiddleneck (Amsinckia intermedia), and Tournefort's mustard (Brassica tournefortii). A single mulefat (Baccaris salififolia; Facultative [FAC]) and two California sycamores (Platanus racemosa; FAC) were observed within the downstream portions of the channel; however, these were not dominant species and did not meet the hydrophytic vegetation criteria to be considered a wetland.

Drainage 1 supports an OHWM and connects to Box Springs Canyon Wash, which ultimately flows to the Santa Ana River, which continues west, flowing into the Pacific Ocean. Based on the presence of OHWM indicators and connectivity to a waters of the United States, Drainage 1 was determined to be non-wetland waters of the United States under the jurisdiction of the USACE and RWQCB, and a streambed under the jurisdiction of CDFW.

\section*{Tributary 1}

Tributary 1, a tributary to Drainage 1, is an unvegetated ephemeral drainage. In 2007, this feature was observed to originate on site immediately south of the eucalyptus (Eucalyptus spp.) alliance. However, the 2019 delineation observed OHWM indicators approximately 120 feet northeast of the eucalyptus alliance. Due to the steep topography, the remainder of this feature was mapped based on topography to the northeastern end of the project boundary. This feature appears to originate off site in the hills to the northeast, flowing northeast to southwest and connecting to Drainage 1 within the southern portion of the project site. An intermittent OHWM is evident throughout most of the natural channel based on bed/bank, absence of vegetation, sediment deposition, and some shelving. There is an area where the OHWM became obscured for a short distance just south of the eucalyptus alliance where it appears some disturbance has occurred resulting in a dirt path. This area includes evidence of sheet flow; however, the OHWM becomes more defined within the brittlebush (Encelia farinosa) alliance immediately south. Due to this feature being mapped for a shorter distance in 2007, it appears to have become more defined over time. The OHWM averages 1 to 4 feet in width. Scattered vegetation throughout the drainage included upland species such as bromes, redstem stork's bill, and common fiddleneck.

Tributary 1 supports an OHWM and connects to Box Springs Canyon Wash, which ultimately flows to the Santa Ana River, which continues west, flowing into the Pacific Ocean. As previously mentioned, the 2007 delineation determined Tributary 1 to be a waters of the state under the jurisdiction of RWQCB and CDFW, based on this feature being a second order tributary with no significant nexus. Since the 2007 delineation, changes have been implemented with respect to processing of jurisdictional determination. This delineation report is being prepared consistent with a Preliminary Jurisdictional Determination that does not include a significant nexus analysis. Therefore, based on the presence of OHWM indicators and connectivity to waters of the United States, Tributary 1 was determined to be non-wetland waters of the United States under the jurisdiction of the USACE and RWQCB, and a streambed under the jurisdiction of CDFW.

\section*{Drainage 2}

This feature was not mapped during the 2007 delineation due to it being outside of the development footprint. Drainage 2 is an ephemeral drainage located within the northwestern portion of the study area. This feature appears to originate to the northeast, outside of the study area, within Box Springs Mountain. Flows continue southwest outside of the study area for approximately 820 feet, continuing to flow as sheetflow west along Morton Road. Flows cross Morton Road and
continue to flow west 0.45 miles under the railroad tracks through a culvert into Box Springs Canyon Wash. An OHWM is evident throughout most of the natural channel based on absence of vegetation, defined bed/bank, sediment deposition, shelving, and debris wracking. The OHWM averages 1 to 5 feet in width. The banks of the streambed were incised banks between 2 and 3 feet in height. Dominant vegetation outside of the OHWM included brittlebush.

Drainage 2 supports an OHWM and connects to Box Springs Canyon Wash, which ultimately flows to the Santa Ana River, which continues west, flowing into the Pacific Ocean. Based on the presence of OHWM indicators and connectivity to waters of the United States, Drainage 1 was determined to be potential non-wetland waters of the United States under the jurisdiction of the USACE and RWQCB, and a streambed under the jurisdiction of CDFW.

\section*{Tributary 2}

This feature was not mapped during the 2007 delineation. Tributary 2 is located within the northwestern portion of the study area, originating from runoff from Box Springs Mountain. This feature is an unvegetated ephemeral drainage flowing northeast to southwest, originating off site and conveying flows to Drainage 2 within the northwest portion of the study area. The northern portion of this feature appears more erosional with deeply incised vertical banks approximately 3 feet in height; however, an intermittent OHWM is evident throughout most of the natural channel due to absence of vegetation, defined bed/bank, sediment deposition, and some debris wracking. There is an area where the OHWM became obscured for a short distance just west of the project site where it sheetflows across the dirt road; however, the OHWM becomes more defined within the brittlebush alliance immediately west. The OHWM averages 3 feet in width. Vegetation observed outside of the OHWM included brittlebush.

Tributary 2 supports an OHWM and connects to Box Springs Canyon Wash, which ultimately flows to the Santa Ana River, which continues west, flowing into the Pacific Ocean. Based on the presence of OHWM indicators and connectivity to waters of the United States, Tributary 2 was determined to be potential non-wetland waters of the United States under the jurisdiction of the USACE and RWQCB, and a streambed under the jurisdiction of CDFW.

\subsection*{2.2 Non-Jurisdictional Features}

\section*{Upland Swales}

An upland swale was mapped and discussed in the Delineation of Jurisdictional Waters and Wetlands report (Attachment C). This upland swale, hereafter referred to as Upland Swale 1, is described as a round-bottom feature with no OHWM. This feature appears to have become more incised and erosional since the 2007 delineation, with incised vertical banks approximately 2 to 3 feet in height. Runoff from a disturbed trail/road to the north appears to be contributing to the erosional nature of this feature and runoff conveyed by this feature terminates as sheetflow before reaching Tributary 1. Dense vegetation growth along the banks obscures this feature; this vegetation is comprised of brittlebush, common fiddleneck, and Tournefort's mustard. Based on its characteristics as an erosional feature, this feature is not considered jurisdictional waters under USACE, RWQCB, or CDFW.

Upland Swale 2 was not mapped during the 2007 delineation. This feature is a round-bottom topographic feature and does not contain OHWM indicators; therefore, this feature is not considered to be jurisdictional waters under USACE, RWQCB, or CDFW.

\section*{Erosional Features}

The study area contains five erosional features. Erosional Features 1, 2, 3, and 4 are located within the central portion of the study area and appear to be associated with the natural topography of the site in conjunction with the dirt roads present; they appear to flow northeast to southwest. These features are deeply incised with vertical shelves averaging 2 to 3 feet in height. Erosional Feature 5 is located within the northwestern portion of the study area. Runoff from Box Springs Mountain appears to be contributing to this feature, directing flows northeast to southwest. It is approximately 1 foot wide with vertical shelves average 2 feet in height.

Erosional features are not considered to be jurisdictional waters under USACE, RWQCB, or CDFW.

\section*{Seeps}

Three seeps were identified during the 2007 jurisdictional delineation, two within the project site and one off site. The jurisdictional delineation update did not locate any of these features during the February 2019 site visit. The approximate locations of the seeps were investigated and no saturation, standing water, or hydrophytic vegetation such as cattails (Typha spp.) or arroyo willow (Salix laseolepis) were observed. It is presumed that due to the time elapsed since the 2007 delineation and extended drought conditions, these areas are no longer supporting a high enough groundwater table to support hydrophytic vegetation or hydrology. Furthermore, the area received above average rainfall, with 3.78 inches of rain in February 2019. Specifically, the Riverside weather station located just southwest of the Interstate 215 and State Route 60 interchange received 1.10 inches on February 15, 2019, and 1.39 inches on February 14, 2019 (NRCS 2019). Based on this, it would have been evident if any depressions capable of retaining water were present. Therefore, it assumed the three seeps identified in 2007 are no longer present.

\subsection*{2.3 Jurisdictional Delineation Conclusion}

The results of the updated jurisdictional delineation concluded there are approximately 0.29 acres of potential non-wetland waters of the United States under the jurisdiction of USACE and the RWQCB, and a streambed under the jurisdiction of CDFW. Table 1 summarizes the total acreage of these features within the study area. The features are depicted on Figure 2.

\section*{Table 1. Summary of Jurisdictional Waters within the Study Area}
\begin{tabular}{l|l|l|c} 
& \begin{tabular}{l} 
Vegetation \\
Community and/or \\
Land Cover
\end{tabular} & \begin{tabular}{l} 
Non-Wetland Waters of the United \\
States and State \\
(USACE/RWQCB/CDFW) \\
(Acres/Linear Feet)
\end{tabular} & \\
\hline \multirow{4}{*}{ Drainage 1 } & \begin{tabular}{l} 
Brittlebush (Encelia \\
farinosa) Alliance
\end{tabular} & \(0.01 / 210\) & \begin{tabular}{l} 
Total Acreage/ Linear \\
Feet*
\end{tabular} \\
\cline { 2 - 4 } & \begin{tabular}{l} 
California Annual \\
Grassland Alliance
\end{tabular} & \(0.12 / 1,316\) & \(0.01 / 210\) \\
\cline { 2 - 4 } & \begin{tabular}{l} 
Eucalyptus (Eucalyptus \\
spp.) Alliance
\end{tabular} & \(0.01 / 188\) & \(0.12 / 1,316\) \\
\cline { 2 - 4 } & & \(0.01 / 188\) \\
\hline
\end{tabular}

Table 1. Summary of Jurisdictional Waters within the Study Area
\begin{tabular}{|c|c|c|c|}
\hline Feature & Vegetation Community and/or Land Cover & Non-Wetland Waters of the United States and State (USACE/RWQCB/CDFW) (Acres/Linear Feet) & Total Acreage/ Linear Feet* \\
\hline \multirow[t]{3}{*}{Tributary 1} & Brittlebush Alliance & 0.08/1,054 & 0.08/1,054 \\
\hline & California Annual Grassland Alliance & 0.02/415 & 0.02/415 \\
\hline & Eucalyptus Alliance & 0.01/250 & 0.01/250 \\
\hline \multicolumn{3}{|r|}{Tributary 1 USACE/RWQCB/CDFW Total} & 0.11/1,720 \\
\hline \multirow[t]{2}{*}{Drainage 2} & Brittlebush Alliance & 0.03/406 & 0.03/406 \\
\hline & Disturbed Habitat & <0.01/17 & <0.01/17 \\
\hline \multicolumn{3}{|r|}{Drainage 2 USACE/RWQCB/CDFW Total} & 0.03/423 \\
\hline \multirow[t]{3}{*}{Tributary 2} & Brittlebush Alliance & 0.01/112 & 0.01/112 \\
\hline & \multicolumn{2}{|r|}{Tributary 2 USACE/RWQCB/CDFW Total} & 0.01/112 \\
\hline & & Grand Total* & 0.29/4,014 \\
\hline
\end{tabular}

\section*{Notes:}
* Acreage may not total due to rounding.

USACE = U.S. Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife.

\section*{3 Impacts}

The proposed project would construct a new residential development that would result in permanent impacts from construction of new residential homes and associated infrastructure. All potentially jurisdictional waters within the impact footprint were considered permanently impacted. No temporary impacts would result from the proposed project.

The permanent impacts to potential jurisdictional waters are summarized in Table 2 and depicted on Figure 3, Project Impacts. According to the draft Project Specific Water Quality Management Plan (Sikand Engineering Associates 2019), flows from Tributary 1, in addition to runoff from Box Springs Mountain, will be directed to a debris basin located within the northern portion of the proposed development. Stormwater within the project site will be directed and discharged into a water quality basin at the southwest corner of the project site.

The project also includes a 100-foot fuel modification zone that will protect most of the development units. In areas where the fuel modification zone encroaches on jurisdictional waters, the fuel modification zone would be modified to avoid direct impacts to these resources (Dudek 2021).

Table 2. Permanent Impacts to Jurisdictional Waters within the Project Site


Table 2. Permanent Impacts to Jurisdictional Waters within the Project Site
\begin{tabular}{|c|c|c|c|}
\hline Feature & Vegetation Community and/or Land Cover & Alternative 1 Non-Wetland Waters of the United States and State (USACE/RWQCB/ CDFW) (Acres/Linear Feet) * & Alternative 2 Non-Wetland Waters of the United States and State (USACE/RWQCB/ CDFW) (Acres/Linear Feet) * \\
\hline & California Annual Grassland Alliance & 0.01/38 & 0.01/76 \\
\hline & Eucalyptus (Eucalyptus spp.) Alliance & - & <0.01/24 \\
\hline & Disturbed Habitat & - & - \\
\hline & Urban/Developed & - & - \\
\hline \multicolumn{2}{|l|}{Drainage 1 USACE/RWQCB/CDFW Total} & 0.01/38 & 0.01/100 \\
\hline \multirow[t]{3}{*}{Tributary 1} & Brittlebush Alliance & 0.02/307 & 0.02/307 \\
\hline & California Annual Grassland Alliance & 0.01/284 & 0.01/284 \\
\hline & Eucalyptus Alliance & <0.01/82 & <0.01/82 \\
\hline \multicolumn{2}{|l|}{Tributary 1 USACE/RWQCB/CDFW Total} & 0.03/674 & 0.03/674 \\
\hline \multirow[t]{2}{*}{Drainage 2} & Brittlebush Alliance & - & - \\
\hline & Disturbed Habitat & - & - \\
\hline \multicolumn{2}{|l|}{Drainage 2 USACE/RWQCB/CDFW Total} & - & - \\
\hline Tributary 2 & Brittlebush Alliance & - & - \\
\hline \multicolumn{2}{|l|}{Tributary 2 USACE/RWQCB/CDFW Total} & - & - \\
\hline & Grand Total* & 0.04/712 & 0.05/774 \\
\hline \multicolumn{2}{|l|}{USACE = U.S. Army Corps of Engineers; RWQCB Wildlife.} & Regional Water Quality Control Boa & d; CDFW = California Department of Fish \\
\hline
\end{tabular}

\section*{4 Conclusion}

The proposed project includes the residential development of Gateway Heights and other project activities would impact jurisdictional waters.

The USACE requires a permit pursuant to Section 404 of the Clean Water Act (404 permit) prior to discharging fill into waters of the United States. Impacts associated with residential development projects are covered under Nationwide Permit 29, so long as impacts do not exceed 0.5 acres of waters of the United States. A pre-construction notification to the USACE is required for use of Nationwide Permit 29. A Water Quality Certification is required from the RWQCB pursuant to Section 401 of the Clean Water Act (401 Certification) for any federal action, including a

404 permit; therefore, an application for a 401 Certification must be submitted to the RWQCB. A notification of a Streambed Alteration Agreement to CDFW is also required prior to modification of jurisdictional streambeds. Mitigation will be required for permanent loss of waters or functions and values of waters.

Should you have any questions regarding this report or require additional information, please do not hesitate to contact me at 951.300.1088 or acassady@dudek.com.

Sincerely,


Att.: Attachment A - Figures
Attachment B - Site Photos
Attachment C - Delineation of Jurisdictional Waters and Wetlands

\section*{5 References}

Dudek. 2021. "Gateway Heights Project Fire Hazard Analysis and Approach. October 19, 2021.

EPA (U.S. Environmental Protection Agency). 2019. "Watershed Assessment, Tracking \& Environmental Results (WATERS)." Last updated December 15, 2017. Accessed February 2019. https://www.epa.gov /waterdata/viewing-waters-data-using-google-earth.

Google Earth. 2019. Aerial photograph. 1:200 scale.
Historic Aerials. 2019. www.historicaerials.com.

NRCS (Natural Resources Conservation Service). 2019. "AgACIS for Riverside County." Accessed February 2019. http://agacis.rcc-acis.org/?fips=06065.

Sikand Engineering Associates. 2019. Project Specific Water Quality Management Plan. Draft. Prepared for Shizao Zheng. Revised September 15, 2018.

State Water Resources Control Board. State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Final Draft. Sacramento, California: State Water Resources Control Board. February 22, 2019.

USDA (U.S. Department of Agriculture). 2019. Web Soil Survey. USDA, Natural Resources Conservation Service. Last updated August 21, 2017. Accessed February 2019. http://websoilsurvey.nrcs.usda.gov.

USACE (U.S. Army Corps of Engineers). 1987. Corps of Engineers Wetland Delineation Manual. Online ed. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi:
U.S. Army Engineer Waterways Experiment Station. January 1987. Accessed February 2019. http://www.fedcenter.gov/Bookmarks/index.cfm?id=6403\&pge_id=1606.

USACE. 2008a. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual. Cold Region Research and Environmental Laboratory, ERDC/CRREL TR-08-12. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center. August 2008.

USACE. 2008b. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Environmental Laboratory, ERDC/EL TR-08-28. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center. September 2008. Accessed February 2019. http://www.usace.army.mil/CECW /Pages/reg_supp.aspx.

USFWS (U.S. Fish and Wildlife Service). 2019. "National Wetland Inventory." Last updated October 17, 2018. Accessed February 2019. http://www.fws.gov/wetlands/Data/Mapper.html.

USGS (U.S. Geological Survey). 2019. National Hydrography Dataset. https://www.usgs.gov/core-science-systems /ngp/national-hydrography.

\section*{Attachment A \\ Figures}

\section*{Attachment B Site Photos}

\section*{Attachment C} Delineation of Jurisdictional Waters and Wetlands

July 6, 2021

Jason Ackerman
Ackerman Law PC

\section*{VIA EMAIL \\ Jason.ackerman@ackermanlawpc.com}

3200 E. Guasti Road, Suite 100
Ontario, California 91761
Subject: Results of Special Status Plant Surveys for the Gateway Heights Project in the City of Moreno Valley, Riverside County, California

Dear Mr. Ackerman:
This Letter Report presents the findings of special status plant surveys conducted in 2021 for the Gateway Heights Project (hereinafter referred to as "the Project"). The Project is located in an area that does not require focused surveys for Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) Criteria Area or Narrow Endemic plant species. Pursuant to Mitigation Measure BIO-2 in the Biological Resources Letter Report and MSHCP Consistency for Tentative Tract 37557, City of Moreno Valley, Riverside County, California (Dudek 2019), focused surveys are required for Plummer's mariposa-lily (Calochortus plummerae) and Parry's spineflower (Chorizanthe parryi var. parryi). .

\section*{PROJECT LOCATION AND DESCRIPTION}

The Project site is located approximately one mile north of the interchange between State Route 60 (SR-60) and Interstate 2015 (I-215) in the City of Moreno Valley in Riverside County, California (Figure 1). It is approximately 110 feet north of Jennings Court and immediately east of Morton Road. It is bounded on the north and west property lines by the Riverside County jurisdictional border. It is comprised of Tax Assessor Parcel Number 256-150-001. The Project site is depicted on the U.S. Geological Survey's (USGS') Riverside East 7.5-minute quadrangle at Township 2 South, Range 4 West, Section 34 (Figure 2).

The Project involves construction of a total of 108 detached condominium units on 17.30 acres of the 32.70 -acre Project site. The dwelling units would be organized in thirteen "clusters" of between eight and ten units each. The Project also includes a 3.1-acre park, detention basins, internal roads, public utilities, and a 100 -foot-wide fuel modification zone along the northern and eastern boundaries of the Project site. The remaining 15.40 acres of the Project site would be rezoned to Open Space and dedicated as conservation land.

\section*{ENVIRONMENTAL SETTING}

Topography consists of relatively steep slopes in the northeast half of the Project site with gentler slopes in the southwest corner. Elevations range from approximately 1,590 feet above mean sea level ( msl ) in the southwest corner to 2,080 feet above msl in the northeast corner. Several erosional features with deeply incised banks occur throughout the Project site and are the result of sheet flow off Box Springs Mountain. Soils mapped on the Project site include

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Cieneba sandy loam, 15 to 50 percent slopes, eroded; Cieneba rocky sandy loam, 15 to 50 percent slopes, eroded; Fallbrook fine sandy loam, shallow, 8 to 15 percent slopes, eroded; Monserate sandy loam, 8 to 15 percent slopes, eroded; and rockland (USDA NRCS 2021).

Vegetation on the Project site include brittlebush scrub, California annual grassland, and eucalyptus woodland; disturbed and urban/developed areas also occur (Dudek 2019). The eucalyptus woodland contains trees that are greater than 15 feet tall. Land uses in the vicinity consist of residential development to the south and undeveloped open space to the north, east, and west, including the Box Springs Mountain Park and Reserve.

\section*{METHODS}

According to the Riverside County Regional Conservation Authority MSHCP Information Mapping Application, focused plant surveys are not required for Criteria Area or Narrow Endemic plant species on the Project site. As part of their literature review for the biological resources letter report, Dudek performed a literature search to identify special status plant species reported from the vicinity of the Project site that may require avoidance, minimization, or mitigation measures if present on the Project site. Sources reviewed include the USGS Fontana, San Bernardino South, Redlands, Riverside West, Riverside East, Sunnymead, Lake Matthews, Steele Peak, and Perris 7.5 -minute quadrangles in the California Native Plant Society's Inventory of Rare and Endangered Plants, the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database, and the CalFlora Database (Dudek 2019).

Based on the literature review, two species have been reported in the Project vicinity that have moderate or higher potential to occur: Parry's spineflower and Plummer's mariposa-lily. Suitable habitat for both species is present on the Project site.

Rainfall received in the winter and spring determines the germination of many annual and perennial herb species. The region received approximately 3.5 inches of precipitation between May 2020 and April 2021 (data taken from Perris - Menifee - South Coast Valleys Station 240) (CIMIS 2021). The average annual precipitation in the region is 12.44 inches (data taken from Elsinore, CA US Station) (NOAA 2021). Plummer's mariposa-lily was observed blooming in early and mid-June 2021 along the Santa Ana River in San Bernardino County and in eastern Los Angeles County, respectively. Since this species was observed blooming, it can be inferred that on-site conditions were suitable for growth of this species during the field surveys. A reference population of Parry's spineflower in Fontana was checked on April 20; no individuals (vegetative or blooming) were observed. Because the species was not observed at the reference population, it cannot be determined whether on-site conditions were suitable for germination and growth at the time of the field surveys.

Botanical surveys conducted by Psomas in 2021 were floristic in nature and generally followed the protocols created by the CDFW (CDFW 2018). The botanical survey area included all suitable habitat within the proposed project footprint, including a 100 -foot buffer (Figure 3). Surveys were conducted by Psomas Senior Biologist Allison Rudalevige on April 20 and June 7, 2021. The surveys covered approximately 20 acres and the total number of person-hours spent surveying was 2.5 hours.

A systematic survey was conducted by walking meandering transects through the survey area. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for later identification. Plants were identified using taxonomic keys, descriptions, and illustrations in Jepson Flora Project (2020) and Baldwin et al. (2012) to the taxonomic level necessary to determine whether they are a special status species. Nomenclature of plant taxa conform to the Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2021) for special status species and the Jepson eFlora (Jepson Flora

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Project 2020) for all other taxa. A list of all plant species observed during special status plant surveys is included in Attachment A.

\section*{SURVEY RESULTS}

Table 1 identifies the special status plants reported from the literature review with moderate or high potential to occur, along with their status, their potential to occur on the Project site, and the survey results.

One special status plant species, paniculate tarplant (Deinandra paniculata), a species with a CRPR of 4.2, was observed on the Project site.

TABLE 1

\section*{SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROJECT SITE VICINITY}
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multirow[b]{2}{*}{Species} & \multicolumn{3}{|c|}{Status} & \multirow[b]{2}{*}{Species Background*} & \multirow[t]{2}{*}{Nearest Reported Location} & \multirow[t]{2}{*}{Potential to Occur/Results of Focused Surveys} \\
\hline & USFWS & CDFW & CRPR & & & \\
\hline Calochortus plummerae Plummer's mariposa-lily & - & - & 4.2 & \begin{tabular}{l}
Perennial bulbiferous herb found in granitic or rocky soil of chaparral, cismontane \\
woodland, coastal scrub, lower \\
montane coniferous forest, and valley and foothill grassland at elevations between 330 and 5,580 feet above msl. Blooming \\
Period: May - July.
\end{tabular} & Reported approximately 1 mile north of the Project site (CCH 2021). & Not expected to occur. Suitable habitat is present but species not observed during focused surveys occurring at a time when reference populations were blooming. \\
\hline Chorizanthe parryi var. parryi Parry's spineflower & - & - & 1B. 1 & Annual herb found in sandy or rocky openings of chaparral, cismontane woodland, coastal sage scrub, and valley and foothill grasslands at elevations between 900 and 4,005 feet above msl; Blooming Period: April - June. & Reported approximately 1 mile north of the Project site (CCH 2021). & Limited potential to occur. Suitable habitat is present but species not observed during focused surveys. (Note: the species was not observed at a reference population that was checked during the typical blooming period for the species). \\
\hline
\end{tabular}

July 6, 2021
Page 4
TABLE 1
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROJECT SITE VICINITY
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multirow[b]{2}{*}{Species} & \multicolumn{3}{|c|}{Status} & \multirow[b]{2}{*}{Species Background*} & \multirow[t]{2}{*}{Nearest Reported Location} & \multirow[t]{2}{*}{Potential to Occur/Results of Focused Surveys} \\
\hline & USFWS & CDFW & CRPR & & & \\
\hline Deinandra paniculata paniculate tarplant & - & - & 4.2 & Annual herb found in coastal scrub, valley and foothill grassland, and vernal pools, usually in vernally mesic or sandy soil at elevations between 80 and 3,085 feet above msl. Blooming Period: April November (occasionally in March). & Reported less than \(1 / 2\) mile south of the Project site (CCH 2021). & Observed during focused surveys. Approximately 350 individuals observed in ruderal openings along the disturbed area in the southwestern portion of the survey area. Approximately 20 percent vegetative, 50 percent blooming, and 30 percent fruiting. Associated with California encelia (Encelia californica), shortpod mustard (Hirschfeldia incana), and red brome (Bromus rubens). \\
\hline
\end{tabular}

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank; msl: mean sea level.
* Source: CNPS 2021

LEGEND:
CRPR
1B Plants Rare, Threatened, or Endangered in California and elsewhere
4 Plants of limited distribution - A Watch List

\section*{CRPR Threat Code Extensions}
. 1 Seriously threatened in California (over \(80 \%\) of occurrences threatened; high degree and immediacy of threat)
. 2 Fairly threatened in California (20-80\% of occurrences threatened; moderate degree and immediacy of threat)

\section*{CONCLUSIONS}

One special status plant species, paniculate tarplant, was observed on the Project site. This species is not covered by the MSHCP. As a species with a CRPR of 4.2, it is considered to be of limited distribution and on a "watch list". Multiple occurrences of this species are present within the Project region (CCH 2021). Species with a CRPR of 4.2 are not generally considered constraints on development and no mitigation would be required for impacts on this species.

Plummer's mariposa-lily and Parry's spineflower were not observed on the Project site during focused surveys. There is always a small chance for false negative survey results as species may not be detectable at the time of the surveys. Reference populations and regional rainfall amounts are monitored to ensure the scientific adequacy of focused surveys. Given the drought conditions during the 2020/2021 wet season, observations made at reference populations are important for determining whether survey results are valid. Plummer's mariposa-lily were observed blooming at reference populations, so conditions on the Project site during the surveys were likely suitable to detect this species, if present. The negative focused

Jason Ackerman
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Page 5
survey results indicate that this species is absent from the Project site. Parry's spineflower, however, was not detected at a reference population. Therefore, the negative survey results do not reliably confirm the species' absence from the Project site.

Per the guidelines of the MSHCP, both Plummer's mariposa-lily and Parry's spineflower were originally designated by the Regional Conservation Authority (RCA) as covered species not adequately conserved. They are considered adequately conserved when certain species-specific conservation objectives have been met. For Plummer's mariposa-lily, the requirement is six localities with at least 500 individuals each preserved within the MSHCP Conservation Area. For Parry's spineflower, the requirement is 10 localities with at least 1,000 individuals each preserved within the MSHCP Conservation Area. The MSHCP conservation objectives for Plummer's mariposa-lily and Parry's spineflower were met in 2012 and 2013, per reporting prepared as part of the MSHCP monitoring program (RCA 2013, 2015). Because the RCA has demonstrated that the conservation objectives for both species continue to be met each year, they are considered adequately conserved and take is covered by participation in the MSHCP. Therefore, no additional measures are required.

If you have any comments or questions, please contact Steve Norton at Steve.Norton@psomas.com or 714.481.8037.

Sincerely,

\section*{PSOMAS}


Steve Norton
Project Manager


Enclosures: Figure 1 - Project Location
Figure 2 - USGS 7.5-Minute Digital Quadrangle
Figure 3 - Survey Area
Attachment A - Plant Compendium

\section*{REFERENCES}

Baldwin, B.G., D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (Eds.). 2012. The Jepson Manual: Vascular Plants of California (Second ed.). Berkeley, CA: University of California Press.

California Department of Fish and Wildlife (CDFW). 2021 (April). Special Vascular Plants, Bryophytes, and Lichens List. Sacramento, CA: CDFW, Natural Heritage Division. https://www.dfg.ca.gov/wildlife/nongame/list.html.
——— 2018 (March 20). Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. Sacramento, CA: CDFW.

California Irrigation Management Information System (CIMIS). 2021. CIMIS Monthly Report for Perris - Menifee - South Coast Valleys, Station \#240. Sacramento, CA: California Department of Water Resources, CIMIS. http://www.cimis.water.ca.gov.

California Native Plant Society (CNPS). 2019. Inventory of Rare and Endangered Plants. Species descriptions for plants listed in Table 1. Sacramento, CA: CNPS. http://www.cnps.org/inventory.

Consortium of California Herbaria (CCH). 2021. Consortium of California Herbaria. Data provided by the participants of the Consortium of California Herbaria for all plants listed in Table 1. Berkeley, CA: University of California. http://ucjeps.berkeley.edu/consortium/.

Dudek. 2019 (March). Biological Resources Letter Report and MSHCP Consistency for Tentative Tract 37557, City of Moreno Valley, Riverside County, California.

Jepson Flora Project. 2020 (December 21, Revision 8). Jepson eFlora (Taxonomy for common species in the Plant Compendium). Berkeley, CA: The Jepson Herbarium. http://ucjeps.berkeley.edu/eflora/.

National Oceanic and Atmospheric Administration (NOAA). 2021 (May 18, date accessed). Data Tools: 1981 - 2010 Normals (Elsinore CA US Station). Asheville, NC: NOAA, National Centers for Environmental Information. https://www.ncdc.noaa.gov/cdo-web/datatools/normals.

Western Riverside County Regional Conservation Authority (RCA). 2015 (May). Western Riverside County Multiple Species Habitat Conservation Plan Annual Report for the Period January 1, 2013 through December 31, 2013.
__ 2013 (June). Western Riverside County Multiple Species Habitat Conservation Plan Annual Report for the Period January 1, 2012 through December 31, 2012.
U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2021(Accessed June 29). Custom Soil Resource Report for Western Riverside Area, California - Gateway Heights. Survey Area Data v.13, May 27, 2020. Lincoln, NE: USDA NRCS.


Vicinity Map
Gateway Heights Project


Figure 1



Topographic Map
Figure 2


\section*{Survey Area}

Figure 3
Gateway Heights Project

ATTACHMENT A

\section*{PLANT COMPENDIUM}

\section*{PLANT SPECIES OBSERVED DURING SPECIAL STATUS PLANT SURVEYS}
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|c|}{Species} \\
\hline Scientific Name & Common Name \\
\hline \multicolumn{2}{|c|}{EUDICOTS} \\
\hline \multicolumn{2}{|r|}{ADOXACEAE - MUSKROOT FAMILY} \\
\hline Sambucus nigra ssp. caerulea & blue elderberry \\
\hline \multicolumn{2}{|r|}{ANACARDIACEAE - SUMAC FAMILY} \\
\hline Malosma laurina & laurel sumac \\
\hline Schinus molle* & pepper tree \\
\hline Schinus terebinthifolius* & Brazilian pepper tree \\
\hline \multicolumn{2}{|r|}{ASTERACEAE - SUNFLOWER FAMILY} \\
\hline Ambrosia psilostachya & western ragweed \\
\hline Artemisia californica & California sagebrush \\
\hline Baccharis salicifolia ssp. salicifolia & mule fat \\
\hline Centaurea melitensis* & tocalote \\
\hline Corethrogyne filaginifolia & filago-leaved sand-aster \\
\hline Cotula australis* & Australian cotula \\
\hline Deinandra paniculata & paniculate tarplant \\
\hline Encelia farinosa & brittlebush \\
\hline Ericameria pinifolia & pine-bush \\
\hline Erigeron foliosus & leafy fleabane \\
\hline Helianthus annuus & annual sunflower \\
\hline \multicolumn{2}{|r|}{BORAGINACEAE - BORAGE FAMILY} \\
\hline Amsinckia intermedia & common fiddleneck \\
\hline Amsinckia menziesii & common fiddleneck \\
\hline Pectocarya linearis ssp. ferocula & narrow-toothed pectocarya \\
\hline Phacelia distans & distant phacelia \\
\hline \multicolumn{2}{|r|}{BRASSICACEAE - MUSTARD FAMILY} \\
\hline Hirschfeldia incana* & grayish shortpod mustard \\
\hline Sisymbrium irio* & London rocket \\
\hline \multicolumn{2}{|c|}{CACTACEAE - CACTUS FAMILY} \\
\hline Cylindropuntia californica var. parkeri & cane cholla \\
\hline Opuntia littoralis & seaside prickly-pear \\
\hline \multicolumn{2}{|r|}{CHENOPODIACEAE - GOOSEFOOT FAMILY} \\
\hline Chenopodium murale* & wall-growning pigweed \\
\hline Salsola tragus* & Russian thistle \\
\hline \multicolumn{2}{|r|}{CUCURBITACEAE - GOURD FAMILY} \\
\hline Marah macrocarpa & chilicothe \\
\hline \multicolumn{2}{|r|}{EUPHORBIACEAE - SPURGE FAMILY} \\
\hline Croton setiger & turkey-mullein \\
\hline \multicolumn{2}{|c|}{FABACEAE - LEGUME FAMILY} \\
\hline Acmispon glaber & deerweed \\
\hline Parkinsonia aculeata* & Mexican palo verde \\
\hline \multicolumn{2}{|r|}{GERANIACEAE - GERANIUM FAMILY} \\
\hline Erodium cicutarium* & redstem filaree \\
\hline
\end{tabular}

\section*{PLANT SPECIES OBSERVED DURING SPECIAL STATUS PLANT SURVEYS}
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|c|}{Species} \\
\hline Scientific Name & Common Name \\
\hline \multicolumn{2}{|c|}{LAMIACEAE - MINT FAMILY} \\
\hline Marrubium vulgare* & common horehound \\
\hline Salvia mellifera & black sage \\
\hline \multicolumn{2}{|c|}{MYRTACEAE - MYRTLE FAMILY} \\
\hline Eucalyptus camaldulensis* & red gum \\
\hline Eucalyptus globulus* & blue gum \\
\hline \multicolumn{2}{|r|}{NYCTAGINACEAE - FOUR O'CLOCK FAMILY} \\
\hline Mirabilis laevis var. crassifolia & wishbone bush \\
\hline \multicolumn{2}{|r|}{PLATANACEAE - SYCAMORE FAMILY} \\
\hline Platanus racemosa & western sycamore \\
\hline \multicolumn{2}{|r|}{POLYGONACEAE - BUCKWHEAT FAMILY} \\
\hline Eriogonum fasciculatum & California buckwheat \\
\hline \multicolumn{2}{|c|}{SALICACEAE - WILLOW FAMILY} \\
\hline Populus fremontii ssp. fremontii & Fremont cottonwood \\
\hline \multicolumn{2}{|r|}{SOLANACEAE - NIGHTSHADE FAMILY} \\
\hline Datura wrightii & Wright's jimsonweed \\
\hline Nicotiana glauca* & tree tobacco \\
\hline Solanum xanti & Xantus' nightshade \\
\hline \multicolumn{2}{|c|}{MONOCOTS} \\
\hline \multicolumn{2}{|r|}{ARECACEAE - PALM FAMILY} \\
\hline Washingtonia robusta* & Mexican fan palm \\
\hline \multicolumn{2}{|c|}{POACEAE - GRASS FAMILY} \\
\hline Arundo donax* & giant reed \\
\hline Avena barbata* & slender wild oat \\
\hline Avena fatua* & wild oat \\
\hline Bromus diandrus* & ripgut grass \\
\hline Bromus rubens* & red brome \\
\hline Hordeum murinum* & wall barley \\
\hline Pennisetum setaceum* & crimson fountain grass \\
\hline Schismus barbatus* & barbed Mediterranean grass \\
\hline \multicolumn{2}{|r|}{THEMIDACEAE - BRODIAEA FAMILY} \\
\hline Dipterostemon capitatus & blue dicks \\
\hline * Non-native or invasive species & \\
\hline
\end{tabular}

July 7, 2021

Jason Ackerman
Ackerman Law PC

\section*{VIA EMAIL \\ jason.ackerman@ackermanlawpc.com}

3200 E. Guasti Road, Suite 1000
Ontario, CA 91761
Subject: Results of a Burrowing Owl Survey for the Gateway Heights Project, City of Moreno Valley, California

Dear Mr. Ackerman:
This Letter Report presents the results of a focused burrowing owl survey conducted for the Gateway Heights Project (hereinafter referred to as "the Project site"), located at Tax Assessor Parcel Number (APN) 256-150-001 in the City of Moreno Valley, Riverside County, California. The burrowing owl survey was conducted in accordance with the Burrowing Owl Survey Instructions for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Area (Riverside 2006).

\section*{PROJECT LOCATION AND DESCRIPTION}

The Project site is generally located north of the State Route 60 (SR-60) and Interstate 215 (I-215) interchange. It is specifically located approximately 110 -feet north of Jennings Court and immediately east of Morton Road in the western portion of the City of Moreno Valley (Figure 1). Although the Project is located entirely within the City of Moreno Valley, it is bounded on the northerly and westerly property lines by the Riverside County jurisdictional border. The Project site is located in Section 34 of Township 2 South, Range 4 West, Riverside East US Geologic Survey 7.5-minute quadrangle map (Figure 2). The approximate center of the Project site is at longitude \(117^{\circ} 17^{\prime} 39.77^{\prime \prime} \mathrm{W}\) and latitude \(33^{\circ} 57^{\prime} 34.95^{\prime \prime} \mathrm{N}\).

The Project involves construction of a total of 108 detached condominium units on 17.30 acres of the 32.70 -acre Project Site approximately. The dwelling units would be organized in thirteen "clusters" of between eight and ten units each. The condominium units would range from 1,400 to 1,602 square feet in interior space. The remaining 15.40 acres of the Project Site would be rezoned to Open Space (OS) and dedicated as conservation land.

\section*{ENVIRONMENTAL SETTING}

The Project site is characterized as open, vacant lands situated in the southwestern foothills of the Box Springs Mountains. Elevations in the Project site range from approximately 1,590 feet above mean sea level (amsl) in the southwest corner to 2,080 feet amsl in the northeast corner.

The Project site is surrounded by undeveloped land to the north, east, and west with residential development to the south. The Box Springs Mountain Park and Reserve is located north of the Project site, which is owned by several entities including the County of Riverside, University of California, and Western Riverside County Regional Conservation Authority.

\footnotetext{
5 Hutton Centre Drive Suite 300
Santa Ana, CA 92707
}

Mr. Ackerman
July 7, 2021
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Several erosional features with deep incised banks occur throughout the Project site and are the result of sheet flow off Box Springs Mountain.

Sometime between 1942 and 1955, the northeastern portion of the Project site was developed with residences, which were accessible from a dirt access road. Although the residences were previously removed, the dirt road remains along with eucalyptus trees, which are assumed to have been planted around the previous residences. Also, several dirt off-highway vehicle trails traverse the Project site.

\section*{REGULATORY BACKGROUND}

As a project within the jurisdiction of the MSHCP, surveys for burrowing owl are required as part of the environmental review process. The MSHCP Additional Surveys Needs and Procedures identify a specific burrowing owl survey area within the MSHCP Plan Area. The MSHCP also identifies species-specific objectives for burrowing owl, namely Species-Specific Objectives 5 and 6, both of which require burrowing owl surveys if suitable habitat occurs on a proposed project site (Dudek 2003).

\section*{SURVEY METHODS}

A survey protocol to address species-specific objectives for burrowing owl was developed for the MSHCP (Riverside 2006). This protocol identifies that surveys are to be conducted during the breeding season (March 1 through August 31) to describe if, when, and how the site is used by burrowing owls. Surveys shall be conducted in two parts: Part A includes focused burrow surveys and Part B includes focused burrowing owl surveys. Surveys should be conducted during weather that is conducive to observing owls outside their burrows and detecting burrowing owl sign. Surveys will not be accepted if they are conducted during rain, high winds ( \(>20 \mathrm{mph}\) ), dense fog, or temperatures over \(90^{\circ} \mathrm{F}\). Part B surveys should be conducted in the morning one hour before sunrise to two hours after sunrise or in the early evening two hours before sunset to one hour after sunset. Focused burrowing owl surveys will consist of site visits on four separate days. The first one may be conducted concurrent with the focused burrow survey. Pre-construction surveys shall be conducted within 30 days prior to ground disturbance to avoid direct take of burrowing owls, if any are present on the project site (MSHCP Species-Specific Objective 6).

\section*{Burrow Survey}

Psomas Biologist Cristhian Mace conducted the focused burrow survey on March 13, 2021, and updated the results of that survey during the May 3, June 3, and 18, 2021. The burrow survey and subsequent updates were conducted concurrently with the focused burrowing owl surveys. The survey area included suitable habitat on the Project site and within a 500-foot buffer area (Figure 3). The Biologist walked the survey area in transects spaced approximately 100 feet ( 30 meters) apart to achieve 100 percent visual coverage. The weather conditions during the survey were suitable for bird activity and consisted of mild temperatures (i.e., 60 to 80 degrees Fahrenheit) with wind speeds no more than 11 miles per hour, and an absence of dense fog. Furthermore, the first survey was not conducted within five days following a rain event. The focused burrow survey conditions are summarized in Table 1.

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\section*{TABLE 1.}

FOCUSED BURROW SURVEY CONDITIONS
\begin{tabular}{||l|c|c|c|c|c||}
\hline \hline \multicolumn{1}{|c|}{ Date } & Survey Type & \begin{tabular}{c} 
Time \\
Start/End
\end{tabular} & \begin{tabular}{c} 
Temperature \\
( \({ }^{\circ}\) F) \\
Start/End
\end{tabular} & \begin{tabular}{c} 
Wind Speed \\
(mph) \\
Start/End
\end{tabular} & \begin{tabular}{c} 
Cloud Cover \\
(\%) Start/End
\end{tabular} \\
\hline \(3 / 31 / 2021\) & Burrow Survey 1 & \(7: 45 \mathrm{AM}-12: 15 \mathrm{PM}\) & \(56 / 77\) & \(1-4 / 4-7\) & \(0 / 0\) \\
\hline \(5 / 13 / 2021\) & \begin{tabular}{c} 
Burrow Survey \\
Update 1
\end{tabular} & \(7: 35 \mathrm{AM}-11: 45 \mathrm{AM}\) & \(56 / 73\) & \(6-7 / 9-11\) & \(0 / 0\) \\
\hline \(6 / 3 / 2021\) & \begin{tabular}{c} 
Burrow Survey \\
Update 2
\end{tabular} & \(7: 40 \mathrm{AM}-12: 00 \mathrm{PM}\) & \(55 / 80\) & \(0-1 / 2-5\) & \(0 / 0\) \\
\hline \(6 / 18 / 2021\) & \begin{tabular}{c} 
Burrow Survey \\
Update 3
\end{tabular} & \(7: 50 \mathrm{AM}-11: 35 \mathrm{AM}\) & \(57 / 78\) & \(0-1 / 2-5\) & \(0 / 0\) \\
\hline
\end{tabular}

Any natural or man-made cavities large enough to allow a burrowing owl to enter were inspected for evidence of occupation and mapped. Evidence of occupation may include prey remains, cast pellets, whitewash, feathers, and observations of owls adjacent to burrows. Binoculars were used to inspect burrows, crevices, and potential perches such as rocks, fence posts, and other elevated structures for the presence of this species. Any active, potentially active, or inactive burrows in the survey area were recorded in the field using handheld Global Positioning System (GPS) units. An active burrow is defined as a burrow with confirmed sign of active use (i.e., burrowing owl observed or fresh scat). A potentially active burrow is defined as a burrow that is structurally suitable for burrowing owl (with or without sign). An inactive burrow is one that appears old, is collapsing, and is structurally blocked so that an animal would need to physically modify the entrance to enter it. No burrows were altered during the burrow survey effort. The dimensions of each burrow were recorded and are included in Attachment B (Table B-1). All wildlife observed were recorded in field notes and are also listed in Attachment B (Table B-2).

Burrows that were marked as potentially suitable during the survey underwent a follow-up burrowing owl survey to determine if the burrows were occupied (see methods below).

\section*{Burrowing Owl Survey}

The burrowing owl survey was conducted following Part B of the survey methods in the Western Riverside County MSHCP (Riverside 2006). The MSHCP recommends crepuscular surveys (i.e., occurring near dawn and dusk) to increase the potential of detecting an active burrowing owl. The purpose of this survey was to identify any active burrowing owl burrows within study area per the requirements in the MSHCP.

Psomas Biologist Cristhian Mace conducted the burrowing owl surveys on March 31, May 13, June 3, and 18, 2021. The survey area included a 500 -foot buffer area around the proposed development footprint (Figure 3). The Biologist walked the survey area in transects spaced approximately 100 feet ( 30 meters) apart to achieve 100 percent visual coverage. The survey area was scanned for burrowing owl or sign of their presence (e.g., pellets, scat, prey remains, whitewash, decoration) using binoculars at the start of each transect and every 328 feet ( 100 meters). The surveys were conducted between one hour before sunrise and up to two hours afterward. The weather conditions during the survey were suitable for bird activity and consisted of mild temperatures (i.e., 60 to 80 degrees Fahrenheit) with wind speeds no more than 11 miles per hour.

As stated above, any natural or man-made cavities large enough to allow a burrowing owl to enter were inspected for evidence of occupation and mapped. Evidence of occupation may include prey remains, cast

Mr. Ackerman
July 7, 2021
Page 4
pellets, whitewash, feathers, and observations of owls adjacent to burrows. Binoculars were used to inspect burrows, crevices, and potential perches such as rocks, fence posts, and other elevated structures for the presence of this species. Any active burrows with either the presence of burrowing owls or sign in the survey area were recorded in the field using handheld GPS units. No burrows were altered during the burrowing owl survey effort. All wildlife observed were recorded in field notes and are also listed in Attachment B (Table B-2). Survey conditions during the burrowing owl surveys are shown in Table 2.

TABLE 2
FOCUSED BURROWING OWL SURVEY CONDITIONS
\begin{tabular}{||c|c|c|c|c|c||}
\hline Date & Survey Type & \begin{tabular}{c} 
Time \\
Start/End
\end{tabular} & \begin{tabular}{c} 
Temperature \\
( \({ }^{\circ}\) F) \\
Start/End
\end{tabular} & \begin{tabular}{c} 
Wind Speed \\
(mph) \\
Start/End
\end{tabular} & \begin{tabular}{c} 
Cloud \\
Cover (\%) \\
Start/End
\end{tabular} \\
\hline \(3 / 31 / 2021\) & \begin{tabular}{c} 
Crepuscular BUOW \\
(Morning) Survey 1
\end{tabular} & \(5: 15 \mathrm{AM}-7: 45 \mathrm{AM}\) & \(55 / 61\) & \(0-2 / 1-4\) & \(0 / 0\) \\
\hline \(5 / 13 / 2021\) & \begin{tabular}{c} 
Crepuscular BUOW \\
(Morning) Survey 2
\end{tabular} & \(5: 15 \mathrm{AM}-7: 35 \mathrm{AM}\) & \(54 / 62\) & \(4-5 / 6-7\) & \(0 / 0\) \\
\hline \(6 / 3 / 2021\) & \begin{tabular}{c} 
Crepuscular BUOW \\
(Morning) Survey 3
\end{tabular} & \(5: 15 \mathrm{AM}-7: 40 \mathrm{AM}\) & \(53 / 63\) & \(0-1 / 0-1\) & \(0 / 0\) \\
\hline \(6 / 18 / 2021\) & \begin{tabular}{c} 
Crepuscular BUOW \\
(Morning) Survey 4
\end{tabular} & \(5: 15 \mathrm{AM}-7: 50 \mathrm{AM}\) & \(56 / 62\) & \(0-1 / 0-1\) & \(0 / 0\) \\
\hline
\end{tabular}

\section*{RESULTS}

No burrowing owl or owl sign was observed in the survey area.
Three potentially suitable burrows were recorded during the surveys, however, all were determined to be unoccupied (Figure 3). Representative photographs of the burrows are included in Attachment A.

California gnatcatcher (Polioptila californica), federally-listed Threatened species and a California Species of Special Concern, was incidentally observed during the survey. California Natural Diversity Database (CNDDB) forms for this species are included in Attachment C.

Psomas appreciates the opportunity to assist on this project. If you have any comments or questions, please contact Steve Norton at Steve.Norton@psomas.com or (714) 481-8037.

Sincerely,

\section*{PSOMAS}


Steve Norton
Senior Biologist/Project Manager, Resource Management

Enclosures: Figures 1-3
Attachment A - Site Photographs
Attachment B - Burrows and Wildlife Observed
Attachment C - CNDDB Form

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\section*{REFERENCES}

Dudek and Associates, Inc. (Dudek). 2003. Western Riverside County Multiple Species Habitat
Conservation Plan (Prepared for the Riverside County Integrated Project). Encinitas, CA: Dudek. http://www.wre-rca.org/about-rca/multiple-species-habitat-conservation-plan/.

Riverside, County of. 2006 (March 29). Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area. Riverside, CA: the County.



Topographic Map
Figure 2


\section*{Survey Area}

Gateway Heights Project

\section*{ATTACHMENT A}

\section*{SITE PHOTOGRAPHS}


Photo of unoccupied potentially suitable burrow complex (Burrow 1) located onsite.


Up-close photo of suitable entrance to unoccupied Burrow 1.


Photo of unoccupied potentially suitable burrow complex (Burrow 2) located onsite. Multiple entrances into the rocky outcrop.


Photo of the unoccupied potentially suitable Burrow 3 located in the survey buffer (offsite). Only one entrance observed.

\section*{ATTACHMENT B}

BURROWS AND WILDLIFE OBSERVED

TABLE B-1 BURROW DETAILS
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \[
\begin{aligned}
& \text { Burrow } \\
& \text { ID }
\end{aligned}
\] & No. of Entrances & Easting & Northing & Burrow Dimensions (Width [in] x Height [in] x Length [in]) & \begin{tabular}{l}
General \\
Location
\end{tabular} & Notes \\
\hline 1 & +10 & 33.957311 & -117.296287 & \[
\begin{aligned}
& 6 \times 6 \times 12 \text { to } \\
& 8 \times 10 \times 14
\end{aligned}
\] & Onsite & Dirt mound with many newly dug California ground squirrel burrows provides potential burrows. However, the ground squirrel burrow complex is actively occupied by the squirrels. Burrowing owls would not be able to occupy unless squirrels vacated the complex. \\
\hline 2 & 4 & 33.957386 & -117.295510 & \[
\begin{aligned}
& 4 \times 6 \times 10 \text { to } \\
& 10 \times 10 \times 18
\end{aligned}
\] & Onsite & Rocky outcrop with newly dug California ground squirrel burrows provides potential burrows. However, the ground squirrel burrow complex is actively occupied by the squirrels. Burrowing owls would not be able to occupy unless squirrels vacated the complex. \\
\hline 3 & 1 & 33.957008 & -117.295866 & \(10 \times 8 \times 18\) & Offsite within buffer & Water draining from backyard of private property has created a channel under a cinderblock wall creating a potential burrow. \\
\hline
\end{tabular}

\section*{TABLE B-2 WILDLIFE OBSERVED DURING SURVEYS}
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|c|}{Species} \\
\hline Scientific Name & Common Name \\
\hline \multicolumn{2}{|c|}{LIZARDS} \\
\hline \multicolumn{2}{|r|}{PHRYNOSOMATIDAE - SPINY LIZARD FAMILY} \\
\hline Sceloporus occidentalis & western fence lizard \\
\hline Uta stansburiana & common side-blotched lizard \\
\hline \multicolumn{2}{|r|}{TEIIDAE - WHIPTAIL LIZARD FAMILY} \\
\hline Aspidoscelis tigris & western whiptail \\
\hline \multicolumn{2}{|c|}{BIRDS} \\
\hline \multicolumn{2}{|r|}{ODONTOPHORIDAE - NEW WORLD QUAILS} \\
\hline Callipepla californica & California Quail \\
\hline \multicolumn{2}{|r|}{COLUMBIDAE - PIGEON AND DOVE FAMILY} \\
\hline Columba livia* & rock pigeon* \\
\hline Streptopelia decaocto* & Eurasian collared-dove* \\
\hline Zenaida macroura & mourning dove \\
\hline \multicolumn{2}{|r|}{TROCHILIDAE - HUMMINGBIRD FAMILY} \\
\hline Calypte anna & Anna's hummingbird \\
\hline Selasphorus sasin & Allen's hummingbird \\
\hline \multicolumn{2}{|c|}{CHARADRIIDAE - PLOVER FAMILY} \\
\hline Charadrius vociferus & killdeer \\
\hline \multicolumn{2}{|r|}{CATHARTIDAE - NEW WORLD VULTURE FAMILY} \\
\hline Cathartes aura & turkey vulture \\
\hline \multicolumn{2}{|c|}{ACCIPITRIDAE - HAWK FAMILY} \\
\hline Circus cyaneus & northern harrier \\
\hline Buteo jamaicensis & red-tailed hawk \\
\hline \multicolumn{2}{|c|}{FALCONIDAE - FALCON FAMILY} \\
\hline Falco sparverius & American kestrel \\
\hline \multicolumn{2}{|r|}{TYRANNIDAE - TYRANT FLYCATCHER FAMILY} \\
\hline Sayornis nigricans & black phoebe \\
\hline Sayornis saya & Say's phoebe \\
\hline Myiarchus cinerascens & ash-throated flycatcher \\
\hline Tyrannus vociferans & Cassin's kingbird \\
\hline \multicolumn{2}{|r|}{CORVIDAE - JAY AND CROW FAMILY} \\
\hline Corvus brachyrhynchos & American crow \\
\hline Corvus corax & common raven \\
\hline \multicolumn{2}{|c|}{AEGITHALIDAE - BUSHTIT FAMILY} \\
\hline Psaltriparus minimus & bushtit \\
\hline \multicolumn{2}{|c|}{TROGLODYTIDAE - WREN FAMILY} \\
\hline Salpinctes obsoletus & rock wren \\
\hline Catherpes mexicanus & canyon wren \\
\hline Troglodytes aedon & house wren \\
\hline \multicolumn{2}{|r|}{POLIOPTILIDAE - GNATCATCHER FAMILY} \\
\hline Polioptila californica & California gnatcatcher \\
\hline \multicolumn{2}{|r|}{SYLVIIDAE - SILVIID WARBLERS FAMILY} \\
\hline Chamaea fasciata & wrentit \\
\hline
\end{tabular}

\section*{TABLE B-2 WILDLIFE OBSERVED DURING SURVEYS}
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|c|}{Species} \\
\hline Scientific Name & Common Name \\
\hline \multicolumn{2}{|c|}{TURDIDAE - THRUSH FAMILY} \\
\hline Sialia mexicana & western bluebird \\
\hline \multicolumn{2}{|r|}{MIMIDAE - MOCKINGBIRD AND THRASHER FAMILY} \\
\hline Toxostoma redivivum & California thrasher \\
\hline Mimus polyglottos & northern mockingbird \\
\hline \multicolumn{2}{|c|}{STURNIDAE - STARLING FAMILY} \\
\hline Sturnus vulgaris* & European starling* \\
\hline \multicolumn{2}{|r|}{PASSERIDAE - OLD WORLD SPARROW FAMILY} \\
\hline Passer domesticus* & house sparrow* \\
\hline \multicolumn{2}{|c|}{FRINGILLIDAE - FINCH FAMILY} \\
\hline Haemorhous mexicanus & house finch \\
\hline Spinus psaltria & lesser goldfinch \\
\hline \multicolumn{2}{|r|}{PASSERELLIDAE - NEW WORLD SPARROW FAMILY} \\
\hline Aimophila ruficeps & rufous-crowned sparrow \\
\hline Melozone crissalis & California towhee \\
\hline Artemisiospiza belli & Bell's sparrow \\
\hline Melospiza melodia & song sparrow \\
\hline Zonotrichia leucophrys & white-crowned sparrow \\
\hline \multicolumn{2}{|r|}{ICTERIDAE - BLACKBIRDS AND ORIOLES} \\
\hline Icterus bullockii & Bullock's oriole \\
\hline \multicolumn{2}{|c|}{PARULIDAE - WARBLER FAMILY} \\
\hline Setophaga townsendi & Townsend's warbler \\
\hline \multicolumn{2}{|c|}{MAMMALS} \\
\hline \multicolumn{2}{|c|}{SCIURIDAE - SQUIRREL FAMILY} \\
\hline Otospermophilus beecheyi & California ground squirrel \\
\hline \multicolumn{2}{|r|}{LEPORIDAE - HARE AND RABBIT FAMILY} \\
\hline Sylvilagus audubonii & desert cottontail \\
\hline \multicolumn{2}{|c|}{CANIDAE - CANID FAMILY} \\
\hline Canis latrans & Coyote (scat) \\
\hline * non-native species & \\
\hline
\end{tabular}

\section*{ATTACHMENT C}

CALIFORNIA NATURAL DIVERSITY DATABASE FORM

\section*{CNDDB Online Field Survey Form Report}


California Natural Diversity Database Department of Fish and Wildlife 1416 9th Street, Suite 1266 Sacramento, CA 95814

Fax: 916.324.0475 cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

Source code MAC21F0002

Quad code 3311783
Occ. no.
EO index no \(\qquad\)
Map index no. \(\qquad\)

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

\section*{Scientific name: Polioptila californica californica}

\section*{Common name: coastal California gnatcatcher}

Date of field work (mm-dd-yyyy): 06-18-2021
Comment about field work date(s): Field work was conducted on four dates: 03/31/21, 05/13/21, 06/3/21, and 06/18/21
OBSERVER INFORMATION
Observer: Cristhian Mace
Affiliation: Psomas
Address: 400 E California Blvd 5, Pasadena, CA 91106
Email: cristhian.mace@psomas.com
Phone: (310) 848-7714

\section*{Other observers:}

\section*{DETERMINATION}

\section*{Keyed in:}

Compared w/ specimen at:
Compared w/ image in:
By another person: Steve Norton

\section*{Other:}

Identification explanation: The individual was identified as a male California gnatcatcher due to the presence of a black cap and black tail that was narrowly edged white on the body. The male was singing the typical "mew" call associated with the species.
Identification confidence: Very confident

\section*{Species found: Yes If not found, why not?}

Level of survey effort: The gnatcatcher was observed as the biologist was walking transects that were 100 feet apart through the project site as part of a protocol burrowing owl survey.
Total number of individuals: 1

\section*{Collection? Collection number: \\ Museum/Herbarium:}

\section*{ANIMAL INFORMATION}

How was the detection made? Heard singing then seen
Number detected in each age class:
\(\frac{1}{\text { adults }} \frac{\text { juveniles }}{\text { Age class comment: }} \mathrm{l}\)

\section*{Bird site use:}

\section*{(: NestingNon-breeding (over-wintering) L:Communal roost V: Other}

Site use description: A non-breeding male was observed foraging and singing throughout the area.
What was the observed behavior? Foraging and singing
Describe any evidence of reproduction: No evidence of reproduction was observed. The male did not display any nesting behaviors and no female or other individuals were observed within the general vicinity.

\section*{SITE INFORMATION}

Habitat description: Coastal sage scrub habitat dominated by Encelia sp. and Eriogonum fasciculatum, with Salvia mellifera and Sambucus nigra.
Slope: 15-20\%
Land owner/manager: Private
Aspect: West
Site condition + population viability: Fair
Immediate \& surrounding land use: Open space and residential
Visible disturbances: Dirt roads, trash on site, evidence of grading
Threats: Off-highway vehicles were observed accessing the site. The area is scheduled for residential development.

General comments:

\section*{MAP INFORMATION}


The mapped feature is accurate within: 5 m
Source of mapped feature: GSP
Mapping notes:
Location/directions comments:
Attachment(s):

\section*{DUDEK}

3615 MAIN STREET, SUITE 103
RIVERSIDE, CALIFORNIA 92501

October 13, 2022

\author{
Shizao Zheng \\ 1378 West Zhorgshan Road \\ Ningbo City, Zhejiang Province \\ China
}

Subject: Determination of Biologically Equivalent or Superior Preservation Report for the Gateway Heights Project, Moreno Valley, California

Dear Shizao Zheng:
In compliance with Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), a determination of biologically equivalent or superior preservation analysis is required by projects that will impact on-site riparian/riverine resources, if avoidance of these resources is not feasible (County of Riverside 2003). This determination of biologically equivalent or superior preservation letter report serves to provide the City of Moreno Valley (City) the full scope of construction and operation activities for the Gateway Heights Project (project), as well as demonstrate that the project design and proposed mitigation measures address impacts in a manner that is equivalent or superior as compared to leaving the site undeveloped. A full review of the affected resources is summarized below and is provided in the jurisdictional delineation report (Dudek 2021a) and biological resources report (Dudek 2021b), both prepared by Dudek.

\section*{1 Introduction}

\subsection*{1.1 Project Area}

The 40.1-acre study area is comprised of Assessor's Parcel Numbers 256-150-001 and 256-040-009, as well as rights-of-way, and is located north of Jennings Court and east of Morton Road in Riverside County (Figure 1, Project Location; figures can be found in Attachment A, Figures). The project site occurs within U.S. Geological Survey 7.5minute Riverside East quadrangle map, Section 34 of Township 2 South, Range 4 West. Specifically, the approximate center of the property is located at longitude \(117^{\circ} 17^{\prime} 39.77^{\prime \prime} \mathrm{W}\) and latitude \(33^{\circ} 57^{\prime} 34.95^{\prime \prime} \mathrm{N}\).

\subsection*{1.2 Project Description}

The proposed project includes the residential development of 108 detached condominium units, parking, open space, utility lines, fuel modification zones, and storm drain lines. The project also includes an undercrossing beneath Morton Road. The collection system will begin on the east side of Morton Road and consist of a concrete lined drop in the channel bottom and concrete headwall structure to result in no increase to water surface elevation. As a result of negotiations with adjacent landowners, two alternatives for the outlet structure are proposed. In Alternative 1, the outlet structure will cross Morton Road directly across the street from the proposed

Project into an existing channel. (Figure 2A, Alternative 1 Site Plan) In Alternative 2, the outfall structure will travel south along Morton Road for approximately 170 feet before depositing into an existing channel on the west side of Morton Road south of its intersection with Jennings Court (Figure 2B, Alternative 2 Site Plan). The headwall and concrete spillway will extend for approximately 40 feet. To aid in reducing downstream erosion, a rip rap apron will extend for an additional 40 feet.

\subsection*{1.3 Existing Conditions}

\subsection*{1.3.1 Site Description}

The project site is characterized as open, vacant lands situated at the southwestern foothills of Box Springs Mountain. Based on aerial imagery (Google Earth 2021), the central and southern portions of the site have been frequently disced, as recently as August 2021. This is presumed to have been intended for weed abatement and fire prevention. Discing has been conducted historically as a part of routine property management and will be halted after project construction. Any additional fuel modification will only occur within identified fuel modification zones within the property boundary. Elevations range from approximately 1,600 to 2,200 feet above mean sea level. The project site is surrounded by undeveloped land to the north, east, and west, with residential developments to the south. Numerous erosional features with deep incised banks occur throughout the study area and are the result of sheet flow off Box Springs Mountain. Numerous dirt roads bisect the project site and contain deep, eroded segments. Morton Road bisects the southwestern portion of the study area. Representative photographs of the project site are included in Attachment B, Site Photographs, in the biological resources letter report (Dudek 2021a).

Based on a review of historical topographic maps (Historic Aerials 2019), residences were built along a dirt access road in the northeastern portion of the project site sometime between 1942 and 1955. It is unclear when the residences were removed; however, the dirt road remains, along with eucalyptus trees, assumed to have been planted around the residences.

\subsection*{1.3.2 Vegetation Communities and Land Covers}

Dudek Biologists Anna Cassady and Britney Strittmater conducted a general biological survey of the project site including a 50-foot buffer, collectively referred to as the study area, on February 22, 2019, from 6:40 a.m. to 12:30 p.m. Dudek Biologist Tracy Park conducted a biological survey of the study area associated with Alternative 2 on September 21, 2022, from 1:30 p.m. to 3:25 p.m. Natural vegetation communities were mapped in the field using the Vegetation Alliances of Western Riverside County (Klein and Evens 2006). Land cover types were described in accordance with Draft Vegetation Communities of San Diego County (Oberbauer et al. 2008). Three vegetation communities and two land cover types were documented within the study area: brittlebush scrub, California annual grassland, eucalyptus woodland, disturbed habitat, and urban/developed. Figure 3, Vegetation, illustrates the distribution of vegetation communities and land covers, and Table 1 provides a summary of each vegetation community and land cover's extent within the study area.

\section*{Table 1. Vegetation Communities and Land Covers within the Study Area}

\section*{Acreage}

Vegetation Communities

\section*{Table 1. Vegetation Communities and Land Covers within the Study Area}
\begin{tabular}{l|c}
\hline Vegetation Community/Land Cover & Acreage \\
\hline Brittlebush Alliance & 22.5 \\
\hline California Annual Grassland Alliance & 11.0 \\
\hline Eucalyptus Alliance & 1.6 \\
\hline Non-Natural Land Covers & \\
\hline Disturbed Habitat & 3.7 \\
\hline Urban/Developed & Total*
\end{tabular}
* Acreage may not total due to rounding.

\subsection*{1.3.2.1 Brittlebush Alliance}

The brittlebush (Encelia farinosa) vegetation alliance is an open-to-intermittent shrub layer where brittlebush dominates or co-dominates at a low-to-moderate cover. The shrub layer often occurs in two separate strata: low shrubs at 0-2 meters tall and tall shrubs at 1-5 meters tall. A variety of native or non-native species may make up the herb layer (Klein and Evens 2006).

Within the study area, brittlebush is located in the northern portion of the study area at the base of Box Springs Mountain. This area contains numerous rocky outcrops. This community also occurs within the foothills in the central portion of the study area at slightly lower covers. This species was dominant in the shrub layer and included a lower cover of shrubs including California sagebrush (Artemisia californica) and black sage (Salvia mellifera). The herbaceous layer included various non-native grasses and a mixture of annual herbs such as redstem stork's bill (Erodium cicutarium) and shortfruit stork's bill (Erodium brachycarpum).

\subsection*{1.3.2.2 California Annual Grassland Alliance}

As defined by Klein and Evens (2006), California annual grassland alliance is usually dominated by an open-tocontinuous herbaceous layer of native or non-native species at 0-1 meters tall, where emergent shrubs occur infrequently at 0.5-5 meters tall. Herbaceous non-native grasses may include compact brome (Bromus madritensis), ripgut brome (B. diandrus), slender oat (Avena barbata), or common Mediterranean grass (Schismus barbatus), with other herbaceous species such as slender Russian thistle (Salsola tragus), prickly lettuce (Lactuca serriola), and redstem stork's bill.

California annual grassland occupies the central and southern portions of the study area. This vegetation community is comprised primarily of weedy species including, but not limited to, brome species (Bromus spp.), short-podded mustard (Hirschfeldia incana), Tournefort's mustard (Brassica tournefortii), common Mediterranean grass, common fiddleneck (Amsinckia intermedia), distant phacelia (Phacelia distans), shining pepperweed (Lepidium nitidum), Indian hedgemustard (Sisymbrium orientale), miniature lupine (Lupinus bicolor), winecup clarkia (Clarkia purpurea), California poppy (Eschscholzia californica), redstem stork's bill, and shortfruit stork's bill. Scattered emergent brittlebush is located along the northern portions of the community; however, due to the low cover in these areas, it did not warrant its own vegetation community.

\subsection*{1.3.2.3 Eucalyptus Alliance}

The eucalyptus alliance is dominated by eucalyptus (Eucalyptus spp.) in the tree canopy, forming an open-tointerment tree layer at 10-15 meters tall. Typically, more than one eucalyptus species comprises this alliance. Other emergent trees may include coast live oak (Quercus agrifolia) or non-native trees and shrubs such as date palm (Phoenix dactylifera), peppertree (Schinus spp.), and tamarisk (Tamarix spp.) at lower covers.

Within the study area, this alliance occurs within the northeastern portion of the study area and is dominated by various eucalyptus species. Scattered giant reed (Arundo donax), poison oak (Toxicodendron diversilobum), and laurel sumac (Malosma laurina) occur within the understory at low covers. A couple scattered California sycamores (Platanus racemosa) and a single Fremont cottonwood (Populus fremontii) were present but did not create a continuous canopy or high enough cover to warrant their own community. This area occurs at a topographic change in the slope of the Box Springs Mountain that appears to allow the water table to be close enough to the surface to support this vegetation; however, there was no evidence of wetland hydrology and, as described, plant species consisted of scattered individuals that did not create a continuous canopy.

\subsection*{1.3.2.4 Urban/Developed}

Although not recognized by the Vegetation Alliances of Western Riverside County, urban/developed is defined by Oberbauer et al. (2008) as areas that have been constructed on or disturbed so severely that native vegetation is no longer supported. Urban/developed lands includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials.

Urban/developed land takes the form of rural residential development that is located within the 50-foot buffer to the south and paved roads including Morton Road, Jennings Court, and Penunuri Place. A very small portion of Morton Road occurs within the project site.

\subsection*{1.3.2.5 Disturbed Habitat}

The classification of disturbed habitat is due to the predominance of bare ground, non-native plant species, and other disturbance-tolerant plant species. Oberbauer et al. (2008) describes disturbed habitat as areas that have been physically disturbed by previous human activity and are no longer recognizable as a native or naturalized vegetation association, but that continue to retain a soil substrate. Typically, vegetation, if present, is nearly exclusively composed of non-native annual plant species.

Within the study area, disturbed land encompasses the dirt access roads occurring within the western portion of the project site and within the western and southwestern portions of the 50-foot buffer. While the disturbed land within the study area was composed primarily of bare ground, plant species observed within this land cover include redstem stork's bill and common Mediterranean grass.

\title{
2 Riparian/Riverine Impacts and Mitigation (per MSHCP Section 6.1.2)
}

\subsection*{2.1 Methods}

\section*{Literature Review}

The following available resources were reviewed to assess the potential for MSHCP riparian/riverine resources: aerial photographs (Google Earth 2019; Historic Aerials 2019); the U.S. Geological Survey 7.5-minute topographic quadrangle (USGS 2019); a Natural Resources Conservation Service soil map (USDA 2019b); U.S. Environmental Protection Agency Watershed Assessment, Tracking \& Environmental Results System (EPA 2019), which includes the National Hydrography Dataset; and the National Wetland Inventory (USFWS 2019).

\section*{Field Delineation}

On February 22, 2019, Dudek Biologists Anna Cassady and Britney Strittmater conducted a reconnaissance-level biological field survey and a delineation of jurisdictional waters including a 50 -foot buffer of the project site. Dudek Biologist Tracy Park conducted a delineation of jurisdictional waters of the study area associated with Alternative 2 on September 21, 2022, Each survey was conducted on foot using visual and aural cues to document species incidence and site conditions.

The MSHCP defines riparian/riverine areas as "lands which contain habitat dominated by trees, shrubs, persistent emergent, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year." The MSHCP further clarifies those areas "demonstrating characteristics as described above which are artificially created are not included in these definitions" (County of Riverside 2003).

Given this definition, the maximum extent of streambed, as defined by the California Department of Fish and Wildlife, was used to aid in the delineation of MSHCP riparian/riverine resources. During the delineation of jurisdictional waters, Dudek delineated streambeds from the top of bank and/or the extent of the associated riparian vegetation.

\subsection*{2.2 Results/Impacts}

\subsection*{2.2.1 Results}

The study area contains two ephemeral drainages (Drainage 1 and Drainage 2) and two associated tributaries (Tributary 1 and Tributary 2) (Figure 4, MSHCP Riparian/Riverine). These features originate off site within the hills of Box Springs to the northeast and flow southwest through the project site. These features contained an inconsistent bed and bank, at times traversing the site via sheet flow. However, all features appeared to convey water towards Box Springs Canyon Wash, which has surface connection ultimately flowing to the Santa Ana River. Because these features convey water to downstream resources, they are considered riverine resources as defined by the MSHCP. There are approximately 0.29 acres of MSHCP riverine resources within the study area, as shown in Table 2.

The study area contains two additional upland swales and five erosional features. These features originate from natural topography of Box Springs Mountain or as a result of dirt roads and trails that intersect the project site. Runoff conveyed by these features ultimately sheet flows and dissipates. These features do not rely on a fresh water source and do not convey flows to downstream riverine resources; therefore, these are not considered riverine resources as defined by the MSHCP.

The project site supports a few scattered individuals of California sycamore, Fremont cottonwood, and mulefat (Baccharis salicifolia) as observed during the February 2019 field visit. This riparian vegetation is small in its extent, lacks understory or closed-canopy features, lacks continuity with higher quality habitat, and is not contiguous; therefore, these scattered individuals are not considered a riparian resource as defined by the MSHCP.

Table 2. MSHCP Riverine Resources within the Project Site
\begin{tabular}{|c|c|c|c|}
\hline Feature & Vegetation Community and/or Land Cover & \begin{tabular}{l}
MSHCP Riverine \\
Resources (Acres/Linear Feet)
\end{tabular} & Total Acreage/ Linear Feet* \\
\hline \multirow[t]{3}{*}{Drainage 1} & Brittlebush (Encelia farinosa) Alliance & 0.01/210 & 0.01/210 \\
\hline & California Annual Grassland Alliance & 0.12/1,316 & 0.12/1,316 \\
\hline & Eucalyptus (Eucalyptus spp.) Alliance & 0.01/188 & 0.01/188 \\
\hline \multicolumn{3}{|r|}{Drainage 1 MSHCP Riverine Total} & 0.15/1,714 \\
\hline \multirow[t]{3}{*}{Tributary 1} & Brittlebush Alliance & 0.08/1,054 & 0.08/1,054 \\
\hline & California Annual Grassland Alliance & 0.02/415 & 0.02/415 \\
\hline & Eucalyptus Alliance & 0.01/250 & 0.01/250 \\
\hline \multicolumn{3}{|r|}{Tributary 1 MSHCP Riverine Total} & 0.11/1,720 \\
\hline \multirow[t]{2}{*}{Drainage 2} & Brittlebush Alliance & 0.03/406 & 0.03/406 \\
\hline & Disturbed Habitat & <0.01/17 & <0.01/17 \\
\hline \multicolumn{3}{|r|}{Drainage 2 MSHCP Riverine Total} & 0.03/423 \\
\hline Tributary 2 & Brittlebush Alliance & 0.01/112 & 0.01/112 \\
\hline \multicolumn{3}{|r|}{Tributary 2 MSHCP Riverine Total} & 0.01/112 \\
\hline \multicolumn{3}{|r|}{Grand Total*} & 0.29/4,014 \\
\hline
\end{tabular}

Notes: MSHCP = Multiple Species Habitat Conservation Plan
* Acreage may not total due to rounding.

\subsection*{2.2.2 Impacts}

The project would result in direct impacts to riverine resources as defined by the MSHCP, as summarized in Table 3 and as depicted in Figure 5, Impacts. The project would avoid Drainage 2 and Tributary 2, as the edge of the development footprint is located approximately 20 feet away from the drainages at its nearest point and over 100 feet away at its furthest point. A deed restriction will be placed over the avoided features prior to issuance of a grading permit. The project component that is adjacent to the drainage is cut and fill slopes that are adjacent to the buildings and associated driveways. The distance and the nature of the project components near the drainages are both
expected to reduce indirect effects to these features. Nevertheless, further information regarding how the project intends to avoid indirect impacts to these features is provided below in Section 2.3.

The project also includes a 100-foot fuel modification zone that will protect most of the development units. In areas where the fuel modification zone encroaches on MSHCP riverine features, the fuel modification zone would be modified to avoid direct impacts to these resources. The avoided Drainage 2 and Tributary 2 in the upper portion of the southeastern property line are comprised of large boulders and limited vegetation, thereby acting as a protective barrier without added maintenance needs (Dudek 2021c). The deed restriction will identify buffer areas for avoided riverine features where native vegetation removal is precluded and weed abatement and fuel modification (if needed) will be conducted using hand tools. This buffer will be up to 50 feet, as depicted in Figure 6 , Avoided Riverine Buffers. In areas where the riverine features are adjacent to project features, such as is the case with Drainage 1, a smaller buffer (minimum 25 feet) will be used due to the construction of Street A, which will be located between 8 and 75 feet from Drainage 11. Despite the use of a smaller buffer, indirect impacts to Drainage 1 are not expected because Street A will act as a buffer for Drainage 1, as Street A and its associated landscaping will separate Drainage 1 from the residential community. In addition, associated runoff from Street A will be directed to a water quality basin that will filter the water before it leaves the site. Fuel modification activities will not occur between Street A and Drainage 1; all fuel modification activities associated nearby Drainage 1 are only proposed at the upstream reach, as is depicted in Figure 5, Impacts. As stated previously, fuel modification will avoid all riverine features and no native vegetation removal will occur adjacent to Drainage 1. Further information regarding how the project intends to avoid indirect impacts to these features is provided below in Section 2.3.

Impacts to Drainage 1 and Tributary 1 will occur from project development (Figure 5, Impacts). The project proposes to underground flows from Tributary 1 within a storm drain system that will intersect the project site before daylighting through a proposed outlet into Drainage 1. In existing condition, the terminus of Drainage 1 sheet flows south on Morton Road before flowing into Box Springs Canyon Wash. The proposed project intends to build a culvert that will contain the flows and prevent additional erosion to Morton Road. The terminus of Drainage 1 within the project site will be converted to a riprap-reinforced culvert that will convey flows beneath Morton Road and downstream to Box Springs Canyon Wash.

\section*{Table 3. Permanent Impacts to MSHCP Riverine Resources within the Project Site}
\begin{tabular}{l|l|c|c} 
& \begin{tabular}{l} 
Vegetation Community \\
and/or Land Cover
\end{tabular} & \begin{tabular}{l} 
Alternative 1 MSHCP \\
Reature \\
(Acres/Linear Feet) *
\end{tabular} & \begin{tabular}{l} 
Alternative 2 MSHCP \\
Riverine Resources \\
(Acres/Linear Feet) *
\end{tabular} \\
\hline \multirow{3}{*}{ Drainage 1 } & \begin{tabular}{l} 
Brittlebush (Encelia \\
farinosa) Alliance
\end{tabular} & - & - \\
\cline { 2 - 4 } & \begin{tabular}{l} 
California Annual \\
Grassland Alliance
\end{tabular} & \(0.01 / 38\) & \(0.01 / 76\) \\
\cline { 2 - 4 } & \begin{tabular}{l} 
Eucalyptus (Eucalyptus \\
spp.) Alliance
\end{tabular} & - & \(<0.01 / 24\) \\
& & &
\end{tabular}

\footnotetext{
\({ }^{1}\) Note that the placement of Street A adjacent to Drainage 1 was imposed by the City fire marshal as a part of fire risk safety requirements.
}

\title{
Table 3. Permanent Impacts to MSHCP Riverine Resources within the Project Site
}
\begin{tabular}{|c|c|c|c|}
\hline Feature & Vegetation Community and/or Land Cover & Alternative 1 MSHCP Riverine Resources (Acres/Linear Feet) * & Alternative 2 MSHCP Riverine Resources (Acres/Linear Feet) * \\
\hline & Disturbed Habitat & - & - \\
\hline & Urban/Developed & - & - \\
\hline \multicolumn{2}{|r|}{Drainage 1 MSHCP Riverine Total} & 0.01/38 & 0.01/100 \\
\hline \multirow[t]{3}{*}{Tributary 1} & Brittlebush Alliance & 0.02/307 & 0.02/307 \\
\hline & California Annual Grassland Alliance & 0.01/284 & 0.01/284 \\
\hline & Eucalyptus Alliance & <0.01/82 & <0.01/82 \\
\hline \multicolumn{2}{|r|}{Tributary 1 MSHCP Riverine Total} & 0.03/674 & 0.03/674 \\
\hline \multirow[t]{2}{*}{Drainage 2} & Brittlebush Alliance & - & - \\
\hline & Disturbed Habitat & - & - \\
\hline \multicolumn{2}{|r|}{Drainage 2 MSHCP Riverine Total} & - & \\
\hline Tributary 2 & Brittlebush Alliance & - & - \\
\hline \multicolumn{2}{|r|}{Tributary 2 MSHCP Riverine Total} & - & \\
\hline & Grand Total* & 0.04/712 & 0.05/774 \\
\hline
\end{tabular}

Notes: MSHCP = Multiple Species Habitat Conservation Plan
* Acreage may not total due to rounding.

\subsection*{2.3 Mitigation and Equivalency}

\section*{Direct Effects}

The proposed project will impact 0.04 acres (Alternative 1) or 0.05 acres (Alternative 2) of MSHCP riverine resources. In its existing condition, the riverine habitat within the project site supports groundwater recharge, sediment transport, and nutrient cycling. It also serves as a hydrological connection to downstream resources. Due to the narrow width and minimal vegetation within the features on site, value as wildlife habitat is limited; however, water conveyance through these features can contribute to wildlife habitat downstream in Box Springs Canyon Wash, particularly for the area plan's planning species: Bell's sage sparrow (Artemisiospiza belli), cactus wren (Campylorhynchus brunneicapillus), loggerhead shrike (Lanius ludovicianus), rufous-crowned sparrow (Aimophila ruficeps), and bobcat (Lynx rufus). Box Springs Canyon Wash is not conserved or described for conservation; however, it does connect to the Santa Ana River, approximately 4.5 miles downstream, presumably through a series of storm drains following the terminus of Box Springs Canyon Wash in Quail Run Park. Given that the proposed project design will retain the hydrological connectivity downstream through the use of detention basins and culverts, many of the hydrological functions and values, including sediment transport and contribution to downstream wildlife habitat, will remain following project implementation. Groundwater recharge and nutrient cycling will be slightly
reduced due to the undergrounding of parts of Tributary 1 and the installation of riprap at the terminus of Drainage 1 ; however, some elements of these functions will remain following project implementation.

The Applicant proposes to compensate for impacts to MSHCP riverine areas by providing a 1:1 ratio of reestablishment credit at Riverpark Mitigation Bank, or at a \(2: 1\) ratio of rehabilitation credits if re-establishment credits are not available. Re-establishment within Riverpark consists of the re-creation of alkali playa wetland habitat in areas where it once historically existed. Furthermore, re-establishment credits result in a return of hydrology, as well as plantings with riparian plant species. A purchase of credits at Riverpark is expected to create contiguous habitat that will provide wildlife habitat and support groundwater recharge, sediment transport, and nutrient cycling. Due to its location within the Plan Area, this habitat is expected to provide habitat for MSHCP planning species, including some of those listed in the Area Plan for this project. Given that implementation of the proposed project is expected to preserve hydrological functions and values, the reestablishment of both hydrology and species is expected to be equivalent preservation. Furthermore, the planting of riparian species serves as a functional lift as compared to what will be lost as a result of the project because the features lost as a result of the proposed project are unvegetated.

While the Applicant intends to purchase mitigation credits from Riverpark Mitigation Bank, if credits at Riverpark Mitigation Bank are not available prior to grading, the Applicant will compensate for impacts at a 2:1 ratio at offsite land within the MSHCP Plan Area for the purpose of in-perpetuity preservation, through the purchase of mitigation credits at an established off-site Mitigation Bank or In-lieu Fee Program, or as otherwise determined through coordination with the resource agencies. Mitigation proposed on land acquired for the purpose of inperpetuity mitigation (that would not be part of an agency-approved Mitigation Bank or In-lieu Fee Program) shall include the preservation, rehabilitation, reestablishment, and/or creation of similar habitat within the Santa Ana Watershed pursuant to a Habitat Mitigation and Monitoring Plan. The Habitat Mitigation and Monitoring Plan shall be prepared prior to any impacts and it shall provide details as to the implementation of mitigation, maintenance, future monitoring, and management. The goal of the mitigation shall be to preserve, rehabilitate, reestablish, or create similar habitat with equal or greater function and value than the affected habitat. The Habitat Mitigation and Monitoring Plan would be provided to the following agencies for their review and approval, prior to any project ground disturbance: City, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and Regional Water Quality Control Board.

\section*{Indirect Effects}

While the proposed project intends to avoid direct effects to all of Drainage 2 and Tributary 2, and partially avoid direct effects to Drainage 1 and Tributary 1, there is potential for indirect effects both from project construction and project operations. Indirect effects can consist of unintended runoff that can lead to toxicants or invasive species spreading downstream, noise and light effects that can negatively affect planning species, or edge effects that can lead to proliferation of non-native species at the interface of native and human-modified habitats.

To combat these indirect effects, the proposed project will implement the Urban/Wildlife Interface Guidelines. Each of the Urban/Wildlife Interface Guidelines are further discussed below.
- Drainage/Toxics: The proposed project includes the construction of a debris basin and water quality basin. Furthermore, the project will include the development of a stormwater pollution prevention plan. With implementation of these measures, the project would be consistent with these requirements of the MSHCP
and no further actions are required. During project construction, the following best management practices will be implemented in order to avoid unintended drainage into avoided riverine features and other off-site areas:
- Construction limits shall be clearly flagged so that adjacent native vegetation and riverine features are avoided.
- Silt fencing and straw waddles will be employed at the edge of construction boundaries, including cut and fill slopes, in order to prevent unintended runoff from draining off-site.
- Construction work and operations areas shall be kept clean of debris, such as trash and construction materials. Fully covered trash receptacles that are animal-proof will be installed and used during construction to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. Trash contained within the receptacles will be removed at least once a week from the proposed project site.
- Staging and storage areas for spoils, equipment, materials, fuels, lubricants, and solvents shall be located within the designated impact area or adjacent developed areas, away from riverine features.
- Lighting/Noise: The project is located immediately north of existing residential development and adjacent to Morton Road. The project will incorporate a setback consisting of open space within the northern portion of the project site. Therefore, night lighting and noise will not impact existing or future MSHCP Conservation Areas and the project would be consistent with these requirements of the MSHCP.
- Barriers: The project does not include fencing or other barriers that would impede wildlife. Furthermore, the project site does not function as a corridor for wildlife. Additionally, the area is not identified as a wildlife movement corridor by the MSHCP; therefore, the project would be consistent with these requirements of the MSHCP.
- Grading/Land Development: No manufactured slopes extend within existing or planned Conservation Areas; therefore, the project would be consistent with these requirements of the MSHCP.
- Invasives: Invasive species provided in MSHCP Table 6-2 are not to be used in development or restoration plan activities for projects adjacent to conservation areas. As described in MM-BIO-4 of the biological resources report (Dudek 2021b), the project shall not use invasive species as defined in the MSHCP Table \(6-2\) within its landscape plan. With implementation of this measure, the project would be consistent with this requirement of the MSHCP.
- Fuel Modification: Weed abatement and fuel modification zones do not encroach into existing or planned Conservation Areas; therefore, the project would be consistent with these requirements of the MSHCP.

\section*{3 Conclusion}

The proposed project will directly impact 0.04 acres (Alternative 1 ) or 0.05 acres (Alternative 2 ) of MSHCP riverine resources. The proposed mitigation of a purchase of re-establishment credits at a \(1: 1\) ratio will provide biological equivalency for the resources lost. Furthermore, the implementation of the MSHCP Urban/Wildlife Interface Guidelines will avoid indirect impacts to MSHCP riverine resources.

If you have any questions regarding this determination of biologically equivalent or superior preservation letter report, please feel free to contact me at acassady@dudek.com or at 951.300.1088.

Sincerely,


\section*{4 References}

County of Riverside. 2003. Western Riverside County Multiple Species Habitat Conservation Plan. County of Riverside, Transportation and Land Management Agency, Riverside County Integrated Project. MSHCP adopted June 17, 2003. Accessed February 2019. http://www.rctlma.org/mshcp.

Dudek. 2019. Jurisdictional Waters Delineation Update Report for Gateway Heights, City of Moreno Valley, Riverside County, California. Prepared for Shizao Zheng. March 2019.

Dudek. 2021a. Jurisdictional Waters Delineation Update Report for the Gateway Heights Project. December 17, 2021.

Dudek. 2021b. Biological Resources Letter Report and MSHCP Consistency for the Gateway Heights Project. December 17, 2021.

Dudek. 2021c. "Gateway Heights Project Fire Hazard Analysis and Approach. October 19, 2021.

EPA (U.S. Environmental Protection Agency). 2019. "Watershed Assessment, Tracking \& Environmental Results (WATERS)." Last updated December 15, 2017. Accessed February 2019. https://www.epa.gov/ waterdata/viewing-waters-data-using-google-earth.Google Earth. 2019. Aerial photograph. 1:200 scale.

Historic Aerials. 2019. www.historicaerials.com.
Klein, A., and J. Evens. 2006. Vegetation Alliances of Western Riverside County, California. Final report prepared for the California Department of Fish and Game Habitat Conservation Division. Sacramento, California: California Native Plant Society. Published August 2005; revised April 2006. Accessed February 2019. www.cnps.org/cnps/vegetion/pdf/wriv_vegetation_ cnpsfinalreport_April2006.pdf.

Oberbauer, T., M. Kelly, and J. Buegge. 2008. Draft Vegetation Communities of San Diego County. March 2008. Accessed February 2019. http://www.sdcanyonlands.org/pdfs/veg_comm_sdcounty_2008_doc.pdf.

USDA. 2019b. Web Soil Survey. August 21, 2017. Accessed February 2019. http://websoilsurvey.nrcs.usda.gov.

USFWS. 2019. Critical Habitat for Threatened and Endangered Species [digital GIS data]. September 28, 2018. Washington, DC: U.S. Fish \& Wildlife Service. Accessed February 2019. https://fws.maps.arcgis.com/ home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

USGS (U.S. Geological Survey). 2019. National Hydrography Dataset. https://www.usgs.gov/core-science-systems /ngp/national-hydrography.

\section*{Attachment A}

Figures



Packet Pg. 794

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\hline Project Boundary \\
Study Area (50-foot Buffer) \\
MSHCP Features \\
MSHCP Riverine Resource \\
Non-MSHCP Features \\
Erosional Features (1-5) \\
Upland Swales (1-2) \\
Culvert \\
Vegetation Communities and Land Cover \\
Types \\
BBS - Brittlebush Alliance \\
EUC - Eucalyptus Alliance \\
NNG - California Annual Grassland Alliance \\
DH - Disturbed Habitat \\
DEV - Urban/Developed \\
\end{tabular}

\(\square\) Alternative 1 Impacts
Alternative 2 Impacts
Fuel Modification Permanent Impacts MSHCP Features

\section*{Non-MSHCP Features}

Erosional Features (1-5)
Upland Swales (1-2)
© Culvert
Vegetation Communities and Land Cover Types
BBS - Brittlebush Alliance
EUC - Eucalyptus Alliance
NNG - California Annual Grassland Alliance
DH - Disturbed Habitat
DEV - Urban/Developed


SOURCE: Bing Maps 2022

\section*{- Project Boundary \\ Jurisdictional Delineation Study Area}

Project Footprint (Alternative 1)
Project Footprint (Alternative 2)
Fuel Modification Permanent Impacts
Riverine Buffer
MSHCP Riverine
- Avoided MSHCP Riverine

Riverine Not Avoided in Alternative 2


\section*{Appendix C}

\section*{Cultural Reports}

1016 E. Cooley Drive, Suite A/B
Colton, CA 92324
December 18, 2018

\author{
Shizao Zheng \\ 1378 West Zhongshan Road \\ Ningbo City, Zhejiang Province \\ People's Republic of China \\ Re: Update to Previous Cultural Resources Studies \\ Tentative Tract Map No. 37557, Assessor's Parcel No. 256-150-001 \\ City of Moreno Valley, Riverside County, California CRM TECH Project \#3411
}

Dear Mr. Zheng:
At your request, CRM TECH conducted a historical/archaeological resources records search, historical background research, and a field inspection on Assessor's Parcel No. 256-150-001 (Tentative Tract Map No. 37557, formerly Tentative Tract Map No. 33626) in the northwestern portion of the City of Moreno Valley, Riverside County, California. The subject property consists of approximately 36 acres of vacant land located to the north of the intersection of Morton Road and Jennings Court, in the northwest quarter of Section 34, T2S R4W, San Bernardino Baseline and Meridian (Figs. 1, 2). This letter presents a summary of the methods, results, and final conclusions of these research procedures.

\section*{Background}

As you know, the project area was previously the subject of a standard Phase I cultural resources survey completed by CRM TECH in 2007 (Smallwood et al. 2007; see attachment). The scope of that study also included a records search, historical research, and a systematic field survey, along with consultation with Native American representatives. As a result of the survey, two archaeological sites, 33-015937 (CA-RIV-8274/H) and 33-015938 (CA-RIV-8275), and a prehistoric isolate, 33-015967, were identified and recorded within the project boundaries (ibid.:1011). In order to evaluate their qualifications as "historical resources," as defined by the California Environmental Quality Act (CEQA), archaeological testing was recommended on the two sites (ibid.:14-15). The isolate was not considered a potential "historical resource" due to its lack of contextual integrity (ibid.:14).

Later that year, Sites 33-015937 and 33-015938 were treated with a testing program, which included surface collection of artifacts and the excavation of shovel test pits, standard archaeological units, and mechanical trenches (Sander and Daly 2007:10; see attachment). In the meantime, focused historical research was also completed on Site 33-015937 (Daly 2007a; 2007b). Throughout the excavations, no subsurface cultural remains were discovered (Sander and Daly 2007:15), and the historical research did not identify any significant persons or events associated with the sites, nor any other historical quality of distinction (Daly 2007a:n.p.; 2007b:2). Therefore, the two sites were determined not to meet CEQA definition of "historical resources" (Sander and Daly 2007:15).


Figure 1. Location and configuration of the project area. (Based on USGS Riverside East, Calif., 7.5 quadrangle, 1980 edition)


Figure 2. Aerial image of the project area. (Based on Google Earth imagery)

However, at the conclusion of the testing program, archaeological monitoring was recommended for any ground-disturbing activities with 30 meters ( 100 feet) of the site boundaries (ibid.:16). Because the 2007 studies are now 11 years old, the research procedures implemented during this study are designed as an update to re-examine and confirm the findings.

\section*{Records Search}

A standard one-mile-radius records search was conducted on November 14, 2018, by CRM TECH archaeologist Nina Gallardo, B.A., at the Eastern Information Center (EIC), University of Riverside, California. The results of the records search indicate that in addition to the survey and testing reports summarized above, another cultural resources survey also took place within the project boundaries in 2007 (Schmidt 2007). That survey was focused on the site of a wooden power pole that was slated to be replaced (\#7264 in Fig. 3), and no cultural resources was identified in the vicinity (ibid.:2).

No other studies have occurred in the project area since 2007, according to EIC records, and Sites 33-015937 and 33-015938 and Isolate 33-015967 remain the only cultural resources recorded in the immediate vicinity. As stated above, all three of these known cultural resources were previously determined not to constitute "historic resources" under CEQA provisions. Since no new information has come to light that would necessitate a re-examination of the previous evaluation, Sites 33015937 and 33-015938 and Isolate 33-015967 require no further consideration during this study.

Outside the project area but within the one-mile radius, EIC records show that as of today at least 35 other cultural resources studies have been completed on various tracts of land and linear features, compared to the 14 studies inventoried in 2007 (Smallwood et al. 2007:9). Meanwhile, eight additional historical/archaeological resources have been recorded into the California Historical Resources Inventory since 2007, bringing the total number of recorded cultural resources within the scope of the records search to 46, including Sites 33-015937 and 33-015938 and Isolate 33-015967. Other than these three, none of the localities was found in the immediate vicinity of the project area.

The vast majority of the recorded cultural resources were prehistoric-i.e., Native American-in origin, consisting predominantly of bedrock milling features but also including groundstone, chipped stone artifacts, and a rockshelter with midden soil. Seven sites and one isolate dated to the historic period and included buildings, a refuse scatter, a former military shooting range, and structural remains along a former Santa Fe Railway siding. Since none of these sites and isolates has any potential to be impacted by the proposed subdivision and development of the project area, they, too, require no further consideration.

\section*{Supplemental Historical Research}

Historical background research for this study was conducted for the purpose of supplementing and updating the findings of the 2007 studies with information from sources that have become available since then, such as aerial photographs taken between 1966 and 2018, accessible at the Nationwide Environmental Title Research (NETR) Online website and through the Google Earth software. As mentioned in the 2007 survey report, an apparent homestead was once located in the northeast portion of the project area, at the location of Site 33-015937 (Smallwood et al. 2007:11-12). The


Figure 3. Previous cultural resources studies in the vicinity of the project area, listed by EIC file number. Locations of known historical/archaeological sites are not shown as a protective measure.
aerial photographs confirmed the presence of at least one residence and several ancillary structures at that location during the 1960s-1970s (NETR Online 1966-1978). By 1994, all of the buildings and structures had been removed, and some grading or clearing had occurred in the project area for unknown purposes (NETR Online 1994; Google Earth 1994). Since then, the property has remained entirely undeveloped to the present time, with only occasional vegetation clearing and off-road vehicle activities evident (NETR Online 2002-2014; Google Earth 2002-2018).

\section*{Field Inspection}

On November 21, 2018, CRM TECH field director/archaeologist Daniel Ballester conducted a "spot-check" field inspection of the project area. The archaeological fieldwork was focused primarily on the locations of the three previously recorded cultural resources in order to update observations made in 2007, and the rest of the project area was inspected along the southern and western perimeters for an overview of the current conditions of the property. Ground visibility ranged from poor (as low as 5\%) where dense vegetation grows around several springs to excellent (essentially 100\%) where all vegetation has been removed (Fig. 4). The field inspection reveals that features of Sites 33-015937 and 33-015938, such as the bedrock milling features and the structural remains, are still present today and are in a similar condition as in 2007, but the groundstone artifact at Isolate 33-015967 could not be located. No other potential cultural resources were encountered within or adjacent to the project boundaries during the field inspection.


Figure 3. Current condition of the project area. (Photograph taken November 21, 2018; view to the northeast)

\section*{Conclusion and Recommendations}

Based on the research results outlined above, CRM TECH present the following recommendations to the City of Moreno Valley:
- No "historical resources," as defined by CEQA, are present within or adjacent to the project area, and thus proposed project will have No Impact on any "historical resources."
- In light of the possibility for additional cultural remains to be unearthed during earth-moving operations at or near Sites 33-015937 and 33-015938, the 2007 recommendation for archaeological monitoring within 30 meters ( 100 feet) of the site boundaries remains valid and appropriate.
- If any subsurface cultural materials are encountered during earth-moving operations elsewhere in the project area, all work within 50 feet of the discovery should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

Thank you for this opportunity to be of service. If you have any questions or need further information regarding this study, please do not hesitate to contact our office.

Sincerely,


\section*{Reference Cited:}

Daly, Pamela
2007a Historic Resources Assessment Report: APN 256-150-001-4, Moreno Valley, California 92555. On file, Eastern Information Center, University of California, Riverside (\#RI-07887, Appendix A; see attachment).
2007b Kincaid Development Project: Results of an Archaeological Test Program at CA-RIV8274/H and CA-RIV-8275, Moreno Valley, Riverside County, California. Letter to the City of Moreno Valley, dated September 3. On file, Planning Division, Community Development Department, City of Moreno Valley (Case \#PA05-0073; see attachment).
Google Earth
1994-2018 Aerial photographs of the project vicinity; taken in 1994, 2002-2006, 2008, 2009, 2011-2014, and 2016-2018. Available through the Google Earth software.
NETR Online
1966-2014 Aerial photographs of the project vicinity; taken in 1966, 1967, 1978, 1994, 2002, 2005, 2009, 2010, 2012, and 2014. http://www.historicaerials.com.
Sander, Jay K., and Pamela Daly
2007 Kincaid Development Project: Results of an Archaeological Test Program at CA-RIV8274/H and CA-RIV-8275, Moreno Valley, Riverside County, California. On file, Eastern Information Center, University of California, Riverside (\#RI-07887; see attachment).
Schmidt, James J.
2007 DWO 6077-4800; AI \# 7-4801, -4802, -4807, -4809, AI \# 6-4800, -4884, -4886, -4887; Various Circuits, Riverside County; Idyllwild, San Jacinto Peak, Lakeview, Riverside East, and Lake Elsinore Quadrangles. On file, Eastern Information Center, University of California, Riverside (\#RI-07264).

Smallwood, Josh, Mariam Dahdul, Daniel Ballester, and Laura H. Shaker
2007 Historical/Archaeological Resources Survey Report: Tentative Tract Map No. 33626, City of Moreno Valley, Riverside County, California. On file, Eastern Information Center, University of California, Riverside (\#RI-07357; see attachment).

\section*{ATTACHMENT}

\section*{2007 Phase I Cultural Resources Survey Report and Phase II Archaeological Testing Report}


\title{
HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT Tentative Tract Map No. 33626
}

\author{
City of Moreno Valley \\ Riverside County, California
}

For Submittal to:
City of Moreno Valley Planning Department
14177 Frederick St.
Moreno Valley, CA 92553
Prepared for:
Joe Kincaid
Kincaid Development Corporation
17611 Wood Road
Riverside, CA 92508
Prepared by:
CRU TECH
1016 East Cooley Drive, Suites A/B
Colton, CA 92324
Michael Hogan, Principal Investigator Bai "Tom" Tang, Principal Investigator

May 30, 2007
CRM TECH Contract No. 2060

\title{
NATIONAL ARCHAEOLOGICAL DATABASE INFORMATION
}

Author(s): Josh Smallwood, Archaeologist/Report Writer Mariam Dahdul, Archaeologist/Report Writer Daniel Ballester, Archaeologist/Field Director Laura H. Shaker, Archaeologist/Native American Liaison

Consulting Firm: CRM TECH
1016 East Cooley Drive, Suites A/B
Colton, CA 92324
(909) 824-6400

Date: May 30, 2007
Title: Historical/Archaeological Resources Survey Report Tentative Tract Map No. 33626, City of Moreno Valley, Riverside County, California

For Submittal to: City of Moreno Valley Planining Department
14177 Frederick St.
Moreno Valley CA 92553
(951) 413-3000:

Prepared for Joe Kincaild
Kincaid Development Corporation
17611 Wood Road
Riverside, CA 92508
(775) 628-8951

USGS Quadrangle: Riverside East, Calif., \(7.5^{\text {i }}\) quadrangle; Section 34, T2S R4W, San
Bernardino Base Meridian
Project Size: Approximately 36 acres
Cultural Resources: Sites CA-RIV-7284/H (33-15937) and CA-RIV-7285 (33-15938); isolate
Keywords: Moreno Valley area, Riverside County; Phase I survey; Assessor's Parcel No. 256-150-001; prehistoric bedrock milling features; groundstone artifacts; historic-period structural remains; historicperiod refuse; Phase II study recommended

\section*{MANAGEMENT SUMMARY}

In April and May, 2007, at the request of Kincaid Development Corporation, CRM TECH performed a cultural resources study on approximately 36 acres of vacant land in the northwestern portion of the City of Moreno Valley, Riverside County, California. The subject property of the study, Tentative Tract Map No. 33626, consists of what is currently Assessor's Parcel No. 256-150-001, located east of Gernert Road and north of Jennings Court, in the northwest quarter of Section 34, T2S R4W, San Bernardino Base Meridian. The study is part of the environmental review process for the proposed subidivision of the property for residential development. The City of Moreno Valley, as Lead Agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA).

The purpose of the study is to provide the City of Moreno Valley with the necessary information and analysis to determine whether the proposed project woud cause substantial adverse changes to any historical/archaeological resources that may exist in or adjacent to the project area, as mandated by CEQA. In order to identify and evaluate such resources, CRM TECH conducted a historical/archaeological resources records search, pursued historical background research, consulted with Native American representatives, and carmed out an intensive-level field survey

As a result of these procedures, two archaeological sites, CA-RIV-7284/H (33-15937) and CA-RIV-7285 (33-15938), and one prehistoric isolate were identified within the propect boundaries. CA-RV-7284/H consists of both prehistoric and historic-period components, including bedrock milling features, building fourdations, a well, a cistern, and a refuse deposit. CARIV-7285 contains two bedrock milling features. The isolate is a hand held grinding stone that appears to have been used as a mano and a pestle.

The solate, by definition, does not qualify as a significant archaeological resource due to the lack of contextual integnty and its limited ability to contribute information to the study of prehistory. However, because the artifact is situated in a disked area near natural springs, there is a possibility that additional buried artifacts could be present. Therefore, the excavation of a few shovel test pits is recommended for this locality.

The significance of Sites CA-RIV-7284/H and -7285 cannot be properly evaluated without further archaeological investigations. Since both sites are located in an area that will be impacted by the proposed development project, CRM TECH recommends that an archaeological testing and evaluation program be implemented to determine the presence or absence of any subsurface cultural deposits, and thereby the significance of the sites. The testing and evaluation program should consist of, at a minimum, surface collection of artifacts, excavation of archaeological test pits and units, laboratory analysis of recovered artifacts, preparation of report presenting the findings, and permanent curation of artifacts at an appropriate facility. It should also include additional historical background research on the historic-period component of Site CA-RIV-7284/H. Further recommendations regarding the final treatment of the sites will be formulated and presented on the basis of the results of the testing and evaluation program.

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\section*{INTRODUCTION}

In April and May, 2007, at the request of Kincaid Development Corporation, CRM TECH performed a cultural resources study on approximately 36 acres of vacant land in the northwestern portion of the City of Moreno Valley, Riverside County, California (Fig. 1). The subject property of the study, Tentative Tract Map No. 33626, consists of what is currently Assessor's Parcel No, 256-150-001, located east of Gernert Road and north of Jennings Court, in the northwest quarter of Section 34, T2S R4W, San Bernardino Base Mendian (Fig. 2): The study is part of the environmental review process for the proposed subdivision of the property for residential development. The City of Moreno Valley, as Lead Agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC \$21000; et seq).

CRMTECH performed the present study to provide the City of Moreno Valley with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any historical/archaeological resources that may exist in or around the project area, as mandated by CEQA. In order to identify and evaluate such resources, CRM TECH conducted a historical/archaeological resources records search, pursued historical background research, consulted with Native American representatives, and carried out an intensive-level field survey. The following report is a complete account of the methods, results, and final conclusion of the study.


Figure 1. Project vicinity. (Basedon USGS San Bernardino and Santa Ana, Calif, 1:250,000 quadrangles [USGS 1969; 1979])


\section*{SETTING}

\section*{CURRENT NATURAL SETTING}

The project area is situated on the southwestern edge of the Box Springs Mountains, near the boundary between the Cities of Moreno Valley and Riverside. The surounding region often experiences some extreme temperatures, reaching over 100 degrees in summer and dipping below freezing in winter. The project area is bounded on the north, east, and west by undeveloped land, and on the south by an unnamed drainage and neighboring residential properties. Most of the western portion of the property has been recently disked to remove brush, but there are a number of eucalyptus trees and structural remains located in the eastern portion, indicative of past land use (Fig. 3). Several dirt off-highway vehicle trails traverse the property from the southwest to the northeast, and a motorcycle loop trail is found near the center of the property (Fig. 3).

The elevation of the property rises steeply from the west to the east, ranging between 1,580 and 2,080 feet above mean sea level. It is crossed by several minor drainages that course down from the western slope of the Box Springs Mountains, including one that contains a pool of water fed by a spring. Some other damp spots on the property also appear to be springs, as there are dense growths of vegetation around them, including poison oak, reeds, sycamore, eucalyptus, and pepper trees. Vegetation on the hillside above the springs is dominated by a species of Encelia, a native shrub that prefers drier soils.


Figure 3 Typical landscapes in the project area. Left: view to the north toward the Box Springs Mountains; right: view to the northeast toward springs, eucalyptus trees, and structural remains.

\section*{CULTURAE SETTING}

\section*{Prehistoric Context}

It is widely acknowledged that human occupation in what is now the State of Californa began 8,000-12,000 years ago. In attempting to describe and understand the cultural processes that occurred in the ensuing years, archaeologists have developed a number of chronological frameworks that endeavor to correlate the technological and cultural changes that are observable in archaeological records to distinct time periods. Unfortunately, none of these chronological frameworks has been widely accepted, and none has been developed
specifically for the so-called Inland Empire, the nearest ones being for the Colorado Desert and Peninsular Ranges area (Warren 1984) and for the Mojave Desert (Warren and Crabtree 1986).

The development of an overall chronological framework for the region is hindered by the lack of distinct stratigraphic layers of cultural sequences that could be dated by absolute dating methods to provide concrete dates. Since results from archaeological investigations in this region have yet to be synthesized into an overall chronological framework, most archaeologists tend to follow a chronology adapted from a scheme developed by William J. Wallace in 1955 and modified by others (Wallace 1955; 1978; Warren 1968; Chartkoff and Chartkoff 1984; Moratto 1984). Although the beginning and ending dates of the different horizons or periods may vary, the general framework of prehistory in this region under this chronology consists of the following four periods:
- Early Hunting Stage (ca \(10,000 \mathrm{BC}-6,000 \mathrm{BC}\) ), which was characterized by human reliance on big game animals, as evidenced by large, archaic-style projectile points and the relative lack of plant-processing artifacts;
- Millingstone Horizon (ca. 6,000 BC-AD 1,000), when plant foods and smail game animals came to the forefront of subsistence strategy, and from which a large number of millingstones, especially well-made, deep-basin metates, were left,
- Late Prehistoric Period (ca. AD 1,000-1,500), during which a more complex social organization, a more diversified subsistence base as evidenced by smaller projectile points, expedient millingstones and; later, pottery-and regional cultures and tribal territories began to develop;
- Protohistoric Period (ca AD \(1,500-1,700\) s), which ushered in long distance contact with Europeans, and thereby led to the Historic Period.

\section*{Ethnohistoric Context}

The subject property of this study lies in an area where the traditional territories of three Native American groups overlap: the Serrano of the San Bernardino Mountains, the Luiseño of the Perris-Elsinore region, and the Gabrielino of the San Gabriel Valley. Kroeber (1925:Plate 57) suggests that the Native Americans of the Riverside area were probably Luiseño, Reid (1968:8-9) states that they were Serrano, and Strong (1929:7-9, 275) claims that they were Gabrielino. In any case, there also occurred a late influx of Cahuilla duaring the 19th century (Bean 1978).

Whatever the linguistic affiliation, Native Americans in the Riverside/Moreno Valley area exhibited similar social organization and resource procurement strategies. Villages were based on clan or lineage groups. Their home/base sites are marked by midden deposits, often with bedrock mortar/metate features. During their seasonal rounds to exploit natural resources, small groups often ranged some distances in search of specific plants and animals. Their gathering strategies often left behind signs of special use sites, such as boulder slicks, at the locations of the resources.

\section*{Historic Context}

In comparison to other nearby communities such as Riverside and San Jacinto, the City of Moreno Valley is a "late-boomer" both in early development in the 19th century and in urban growth in the 20 th. By the mid-19th century, the area that constitutes present-day

Moreno Valley remained essentially uninhabited, despite its location on a plain surrounded by several large Mexican land grants. In 1853-1855, when the U.S. government initiated the first official land survey in southern California, the only man-made features observed in the area were a few roads crisscrossing the desert floor, including a wagon road from San Bernardino to Temecula, a second one leading to San Jacinto, and several unidentified roads or trails.

The Moreno Valley area remained unclaimed public land until 1870, when a large tract of 13,471 acres was purchased from the U.S. government in one single transaction. It was on this vast acquisition that the 11,560 -acre Alessandro Tract and the town of Alessandro, where the March Air Reserve Base lies today, were laid out and offered to settlers in 1887 (Gunther 1984:11), during a land boom that swept through southern California in the 1880s. After this initial development scheme failed, the developers of Redlands in San Bernardino County, fresh from their acclaimed success in creating the Bear Valley reservoir and the thriving Redlands colony, took over the Alessandro Tract with the intention of irrigating the land with an elaborate water system (ibid.).

Water from the Bear Valley reservoir reached the Moreno Valley area in 1891, ushering in a few years of prosperity in the early 1890s. Two more communities came into being in the vicinity during this brief boom: New Haven, soon to be renamed Moreno, and Midland, also known as Armada (Gunther 1984:323, 333), However, the boom soon turned to bust during the drought of the late 1890 s, when Bear Valley water was no longer delivered to the Moreno Valley area. As a result, the budding towns in the area became largely. abandoned, and many of the buildings were taken \(u p\) and moved to Riverside (ibid: 13 , 334).

During the early 20th century; the Moreno Valley area began to recover slowly. In 1912, a 1,100-acre portion of the original Alessandro Tract was re-subdivided as the Sunnymead Orchard Tract (County Surveyor 1912), thus bestowing on the community formerly known as Midland or Armada the new name of Sunnymead. Closer to the project location, a series of development projects began in 1923 to the west of Sunnymead, which ultimately resulted in the establishment of the community of Edgemont (Gunther 1984:171-172).

Despite these development efforts, Moreno Valley's economic prospect was severely hampered by the lack of reliable water supply until 1973, after the completion of the California Aqueduct and its southern terminus, Lake Perris (Gunther 1984:334). Since then, the promise of affordable housing brought an influx of commuters to the Moreno Valley area, setting off a period of rapid growth and urbanization. By 1984, when residents in the communities of Moreno, Sunnymead, and Edgemont voted to incorporate as the City of Moreno Valley, the new city had already become the second most populous in Riverside County (ibid.), thanks mainly to its attraction as a "bedroom community."

\section*{RESEARCH METHODS}

\section*{RECORDS SEARCH}

On April 18, 2007, CRM TECH archaeologist Nina Gallaxdo (see App. 1 for qualifications) conducted the historical/archaeological resources records search at the Eastern Information Center (EIC), University of California, Riverside. The EIC is the State of Califomia's official cultural resource records repository for the County of Riverside, and a part of the

California Historical Resources Information System established and maintained under the auspices of the California Office of Historic Preservation.

During the records search, Gallardo examined maps and records on file at the EIC for previously identified cultural resources in or near the project area, and existing cultural resources reports pertaining to the vicinity. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Information System.

\section*{NATIVE AMERICAN PARTICIPATION}

As part of the research procedures, CRM TECH contacted the State of California's Native American Heritage Commission on April 17,2007, to request a records search in the commission's sacred lands file. Following the commission's recommendations, CRM TECH further contacted a total of 16 Native American representatives in the region in writing on April 18 to solicit local Native American input regarding any possible cultural resources concerns over the proposed project. The correspondences between CRMTECH and the Native American representatives are attached to this report in Appendix 2.

\section*{FIELD SURVEY}

On April 21 and 24, 2007, CRM TECH archaeologists Daniel Ballester and Clarence Bodmer (see App. I for qualifications) carried out the intensive-level, on-foot field survey of the project area. During the survey, Ballester and Bodmer walked parallel north-south transects spaced 15 meters (approx. 50 feet) apart across most of the property, where the ground surface was moderately to slightly sloped. On the steeper slopes of the easternmost portion of the parcel, where the incline exceed \(30 \%\), the survey team walked transects along the contours of the slope. The numerous boulder outcrops found in the project area were closely examined for any indications of past Native American use or modification.

Using these survey methods, the ground surface in the entire project area was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic periods (i.e., 50 years ago or older). Ground visibility was excellent ( \(90-100 \%\) ) across most of the parcel since the surface vegetation was recently removed. In contrast, dense vegetation around many of the bedrock outcrops and in the areas where springs and structural ruins were found made for poor \((0-30 \%)\) ground visibility at these locales.

When features or artifacts were identified, their locations were marked with survey flags and the surrounding area inspected for any artifacts or additional features. The survey team noted each location on field maps and flagged the area to facilitate further recordation after the completion of the survey. An appropriate level ofrecordation was completed for 1 all potential archaeological resources identified during the field survey, including, at minimum, a description of the resource, a scaled sketch, and its location on a USGS map. The field maps and descriptions were then complled into standard site record and site Kecord update forms and submitted to the EIC for inclusion in the California Historical Resources Information System.

\section*{HISTORICAL RESEARCH}

Historical background research for this study was conducted by CRM TECH principal investigator/historian Bai "Tom" Tang (see App. 1 for qualifications) on the basis of published literature in local and regional history, archival records of the U.S. Bureau of Land Management (BLM), and historic maps of the project area: Among maps consulted for this study was the U.S. General Land Office's (GLO) land survey plat maps dated 1855 1877 and the U.S. Geological Survey's (USGS) topographic maps dated 1901-1967. These maps are collected at the Science Library of the University of California, Riverside, and the Callfornia Desert District of the BLM, located in Moreno Valley.

\section*{RESULTS AND FINDINGS}

\section*{RECORDS SEARCH}

According to records on file at the Eastern Information Center, the project area was apparently covered by two large-scale cultural resources studies completed in the 1980 s (Fig. 4), but no historical/archaeological sites were found within or adjacent to the present project area (McCarthy 1987, Drover 1989). While both of the 1980 stadies included field inspections, the field methods used in these studies, described as an "intuitive survey" in one (Drover 1989:6) and consisting of 30-meter transects in the other (McCarthy: 1987:7), do not appear to be consistent with today's standard for an intensive-level survey. In any event, since both of those studies are now nearly 20 years old, a systematic resurvey was deemed necessary for this study.
Outside the project boundaries but within a one-mile radius, EIC reconds show a total of 14 other previous cultural resources studies covering various tracts of land and linear features (Fig. 4). In all, more than \(50 \%\) of the land within the one-mile radius has been surveyed, resulting in the identification of 37 historical/archaeological sites and one isolate-i.e, site with fewer than three artifacts (Table 1). Seven of these sites, CA-RIV-3245/ \(\mathrm{H},-4182 \mathrm{H}\), \(-4183,-4184,-4185 ;-4187\), and -4188 , were later combined and re-assigned a new designation, CA-RIV-6943/H, to form a large site with both prehistoric and historic-period components, including nine bedrock milling stations and a number of features associated with a late-19th century homestead (Table 1).
The other 29 recorded sites within the scope of the records search included 23 prehistorici.e., Native American-sites, 3 historic-period sites, and 2 historic-period buildings. One of the prehistoric sites contained a boulder dotted with cupules, and another was a rock-: shelter with midden soils, milling slicks, and scattered groundstone and chipped-stone artifacts. Twenty-one of the prehistoric sites were bedrock milling features consisting of milling slicks or metates and at least one mortar, but no visible surface artifacts.

The three historic-period sites included a former military shooting range, concrete slabs and footings along a former Santa Fe Railroad siding, and an early 20 th century trash scatter. The two historic-period buildings were both described as early 20 th century Mediterranean/Spanish Revival-style residences. The isolate identified within the scope of the records search consisted of three 19 th century coins found together.


Figure 4. Previous cultural resources studies in the vicinity of the project area, listed by EIC file number. Locations of historical/archaeological sites are not shown as a protective measure.
\begin{tabular}{|c|c|c|}
\hline Site No. & Recorded by/Date & Description \\
\hline CA-RIV-1194 & Gardner 1973; Voast and Sundberg 1989, 1991 & One bedrock metate and one bedrock mortar on a sirigle rock outcrop \\
\hline CA-RV-1200 & Gardner 1973 & Two bedrock metates on a single rock outcrop \\
\hline CA-RIV-1203 & Gardner 1973 & Two bedrock nuilling surfaces on a single rock outcrop \\
\hline CA-RV-1206 & Gardner 1973 & One milling surface on a single rock outcrop \\
\hline CA-RIV-2868 & Drover 1984 & One milling slick on a single rock outcrop \\
\hline CA-RV-2869 & Drover 1984 & Two milling slicks on two boulders \\
\hline CA-RTV-3241 & Pinto 1987 & Three milling slicks on two boulders \\
\hline CA-RIV-3242 & Pinto 1987 & One milling silick on a sirtgle boulder \\
\hline CA-RTV-3243 & Pinto 1987 & One milling slick on a single botulder \\
\hline CA-RI-3244 & Pinto 1987 & Seven milling slicks on five boulders \\
\hline CA-RV-3245/H & Keller 1991; Ballester 2002 & Three boulders contaninig one milling slick each; redesignated as Feature 19 of CA-KIV-6943/H in 2002 \\
\hline CA-RV-3246 & Pinto 1987 & One boulder with one slick, and one boulder with three slicks \\
\hline CA-RIV-3264 & Parretal. 1987 & One boulder with one slick \\
\hline CA-RIV-3265 & Swope et al. 1987 & Five milling slicks on a single boulder outcrop \\
\hline CA-RIV-3266 & Parr and Nelditch & Four milling slicks on two boulders \\
\hline CA-RIV-3267 & Parret al 1987 & Rock shelter, midden soil, milling slicks, ithic scatter \\
\hline CA-RIV-3268 & Parretal. 1987 & Boulder with slick and cupules \\
\hline CA-RIV-3269 & Parret al 1987 & One boulder with one slick \\
\hline CA-RIV-3272H & Part ef al. 1987. & Military shooting/target range \\
\hline CA-RIV-3815 & Drover and Jackson 1989 & One milling surface on a single rock outcrop \\
\hline CA-RIV-3816 & Drover and Jackson 1989 & Five bedrock milling suffaces on three rock outcrops \\
\hline CA-KV-3817H & Gery and Oglesby 1989 & Concrete slabs and footings along a former Santa Fe Railroad siding \\
\hline \(\mathrm{CA}-\mathrm{RT}-4181\) & Keller 1991; Ballester 2002 & Four bedrock miling slicks on a single rock outcrop \\
\hline CA-RIV-4182H & Keller 1991; Ballester 2002 & Two rock walls and remainis of house foundation known as Webbe's House, re-designated as Features 1.9 b of CA-RIV6943/H in 2002 \\
\hline CA-RIV-4183 & Keller 1991; Ballester 2002 & One boulder with one grinding silick, re-designated as Feature 11 of CA-RIV- \(6943 / \mathrm{H}\) in 2002 \\
\hline CA-R1-4184 & Keller 1991; Ballester 2002 & One boulder with one shallow mortar, re-designated as Feature 15 of CA-RIV \(6943 / \mathrm{H}\) in 2002 \\
\hline CA-RTV-4185 & Keller 1991; Ballester 2002 & One boulder with three grinding slicks, re-designated as Feature 14 of CA-RIV \(6943 / \mathrm{H}\) in 2002 \\
\hline CA-RIV-4186 & Keller 1991 & One boulder with one grinding slick \\
\hline CA-EIV-4187 & Keller 1991; Ballester-2002 & One boulder with one grinding slick, re-designated as Feature 12 of CA-RIV-6943/H in 2002 \\
\hline CA-RV-4188 & Keller 1991; Ballester 2002 & Ore boulder with foar grinding slicks, re-designated as Feature 10 of CA-RIV-6943/H in 2002 \\
\hline CA-RTV-4189 & Keller 1991 & One boulder with one grinding slick \\
\hline CA-RIV-4195 & Schmidt et al. 1990 & Four bedrock milling slicks on four boulders \\
\hline CA-RIV-5669 & Keller 1995 & Three miling slicks on a single boulder \\
\hline CA-RTV-5670 & Keller 1995 & Scattered historic-period glass, ceramic, metal, and garment fragments \\
\hline CA-RIV-6943/H & Ballester 2002 & A total of 19 features, including many that were previously recorded and designated as individual sites; nine bedrock miliing features with slicks on boulders; structural remains associated with the late 19th century homestead of Cecil R.C. Webbe \\
\hline 33-11825 & Warner 1983 & Mediterrarean/Spanish Revival-style residence; ca. 1937 \\
\hline 33-11826 & Warner 1983 & Mediterranean/Spanish Revival-style residence, ca, 1937 \\
\hline 33-13608 & Gardner 1973 & Isolated find: three 19th century coins found together-a Mexican peso, a Swedish öre, and a Canadian penny \\
\hline
\end{tabular}

The presence of these previously recorded sites and artifacts in the vicinity of the subject property suggests that similar cultural features could be found within the project boundaries. However, none of these recorded cultural resources was found within or immediately adjacent to the project area. Therefore, none of them requires further consideration during this study.

\section*{NATIVE AMERICAN PARTICIPATION}

In response to CRM TECH's inquiry, the Native American Heritage Commission reports that the sacred lands record search identified no Native American cultural resources in the vicinity of the project area. However, noting that "the abserice of specific site information in the Sacred Lands File does not guarantee the absence of cultural resources in any 'area of potential effects," the commission recommends that local Native American representatives be consulted for additional information, and provided a list of potential contacts (see App. 2).

Upon receiving the Native American Heritage Commission's response, CRM TECH contacted all 13 individuals on the list and the organizations they represent. In addition, Dale Foster, Cultural Analyst for the Temecula Band of Luiseno Mission Indians, Erica Helms, Cultural Resources Administrator for the Soboba Band of Luiseño Indians, and John Gomez, Cultural Resources Coordinator for the Ramona Band of Cahuilla Indians, were also contacted. As of this time, two written responses have been received (see App. 2).

Britt Wilson, Cultural Resources Coordinator for the Morongo Band of Mission Indians; replied by e-mail on April 18, 2007. In the e-mail, Mr. Wilson identifies the project location as a part of the Morongo Tribe's Traditional Use Area: He states that he has no specific information retaining to the project area but that "there are substantial and numerous Native American cultural resources within very close proximity to this site." Therefore, he recommends archaeological monitoring; with at least one Native American monitor from the Morongo Band, during ground-disturbing activities. If any Native American cultural resources or human remains are discovered during such activities, Mr. Wilson requests that proper procedures be followed in accordance with state law and regulations. Furthermore, or behalf of the Morongo Band, Mr. Wilson requests a copy of any cultural resources reports generated in relation to this project and further consultations as part of any treatment plan necessitated by archaeological discoveries (see App. 2).

In the letter dated April 30, 2007, Erica Helms also requests that cultural resource monitor(s) be present during any ground-disturbing activities in the project area. In addition, she requests copies of cultural resource documentation generated through this study, as well as further consultation regarding the proposed project (see App. 2).

\section*{POTENTIAL HISTORICAL RESOURCES IN THE PROJECT AREA}

As a result of the field survey, two previously unknown archaeological sites and one isolate were identified within the boundaries of the project area. The sites have since been designated as CA-RIV-7284/H (33-15937) and -7285 (33-15938) by the Eastern Information Center (see App. 3 for site and isolate records).

Site CA-RIV-7284/H (33-15937): This site, which consists of both a prehistoric and historicperiod component, is located approximately 1,280 feet east of Gernert Road and 480 feet
north of Jennings Court. The southern half of the site is situated near the southern boundary of the project area, on a low ridge near the confluence of two natural drainages. The northern portion lies on a relatively level natural terrace at the foot of the Box Springs: Mountains. The prehistoric element of CA-RIV-7284/H occurs in the south part of the site and contains eight bedrock milling features with a total of 14 grinding slicks found on the bedrock surfaces. Two manos-i.e., hand-held grinding stones-were found among boulders with unmodified surfaces.

The historic-period component of the site occurs to the north and consists mainly of several structural features and refuse scatters, possibly associated with a late 19 th century or early: to mid-20th century homestead. The features at the site include dry-lain rock alignments, a rock-and-cement-walled cellar, two small concrete foundations, a concrete step, a well, a cistern, and a dirt access road. A prehistoric stone metate, used as construction material, was observed in the wall of the cellar. The refuse deposit found at the site contains rusted cans of various sizes and shape, ceramic sherds, one complete irk bottle, and blue, clear, and amethyst glass shards.

Site CA-RIV-7285 (33-15938): This site is located approximately 1,600 feet east of Gernert Road and 1,040 feet north of Frankhale Road, near the base of the Box Springs Mountains. It lies near the eastem boundary of the property, partially within an area that is reserved for open space. The site consists of two bedrock milling features with a total of three milling slicks fourd on the bedrock surfaces, and measures approximately 33 meters northsouth and 8 meters east-west, with the features located at each end of the site.

Isolate: The isolate recorded in the project area is a single groundstone piece that may have been used both as a mano and as a pestle. It was found in the southerm portion of the property, to the west of Site CA-RIV-7284/H. The artifact may have been unearthed during disking in the area, and its presence suggests that additional cultural material may exist as buried deposits at that location.

\section*{HISTORICAL RESEARCH RESULTS}

Based on historic sources consulted for this study, the project vicinity had evidently, experienced some settlement activities at least by the 1870 s. As Figure 5 shows, a few marimade features were observed in the vicinity in the 1850 s -1870s, including a "Road to San Diego," "Webb's House," and "Quinn's House," The project area itself, however, apparently remained unsettled at that time (Fig. 5). According to records of the Bureau of Land Management, the project area was included in a homestead patent granted by the U.S. government to Cecil RG. Webbe, an early settler in the Box Springs area, in the early 1880 s (BLM n.d.).

By the late 1890 s, several additional roads and buildings had appeared in the vicinity, including one building presumably a residence, in the southeastern portion of the project area that closely matches the location of structural ruins found at Site CA-RTV-7284/H during the field survey (Fig; 6; App.3). Historic maps of the area reveal that a building, possibly the same one, existed at that location in the 1930s, the 1950s, the 1960s, and probably as late as 1978 (Figs. 2, 7, 8). The building no longer survives today, as discovered during the field survey, and the bulk of the land within the project area, except for a road that traversed rortheasterly to the residence, was vacant and undeveloped throughout the historic period (Figs; 5-8).


Figure 7. The project area and vicinity in 1939.
(Source USGS 1942)

Figure 6. The project area and vicinity in 1897.
Figure 6 . The project area
(Source: USGS 1901)


Figture 8: The project area and vicinity in 1951-1953. (Source: USGS 1953)

\section*{DISCUSSION}

The purpose of this study is to identify any cultural resources within or adjacent to the project area, and to assist the City of Moreno Valley in determining whether such resources meet the official definition of "historical resources," as provided in the California Public Resources Code, in particular CEQA.

\section*{DEFINITION}

According to PRC \(\$ 5020.1(\mathrm{j})\), "'historical resource' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California:" More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR \(\$ 15064.5(\mathrm{a})(1)\) (3)).

Regarding the proper criteria of historical significance CEQA guidelines mandate that "a resource shall be considered by the lead agency to be "historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources". (Title 14 CCR \(\$ 15064.5(\mathrm{a})(3)\) ). A resource may be listed in the California Register if it meets any of the following criteria:
(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual; or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC \$5024.1(c))

Pursuant to these statutory and regulatory guidelines, the cultural resources in the project area are evaluated under the California Register criteria. The results of the evaluation are discussed below.

\section*{EVALUATIONS}

\section*{Site CA-RIV-7284/H}

Site CA-RTV-7284/H contains cultural elements dating to both the prehistoric and historic periods. The prehistoric component of the site consists of eight bedrock milling stations with grinding slicks on their surface, and two hand-held grinding stones. The milling stations occur along the edge of the Box Springs Mountains, where natural springs and seasonal drainages would haveafforded prehistoric peoples a suitable environment for gathering and processing vegetal and animal resources. As the records search results showed, many similar prehistoric sites have been identified in the vicinity, some of which contained subsurface cultural deposits. Because the milling features at CA-RIV-7284 occur on gradual slopes with a build-up of alluvium from steeper inclines of the Box Springs.

Mountains, there is a good possibility that the area may contain buried deposits that could yield additional information regarding the true nature of the site.

The historic-period component of CA-RIV-7284/H include rock alignments, foundations, a cellar, a well, a cistern, and a refuse deposit possibly associated with a late 19 th century or early to mid-20th century homestead. More in-depth historical research may yield information regarding the exact age and historical association of these remains as well as a chronology of events occurring at the site. At this time, there is insufficient information to relate these features to a specific person or event in history, or to ascertain the existence or absence of buried cultural deposits.

Because of the possibility of undetected subsurface cultural deposits from both the prehistoric and the historic periods, the archaeological data potential of Site CA-RIV\(7284 / \mathrm{H}\) is unclear. As a result, the historical significance of the site cannot be detemined without further archaeological investigations, including subsurface excavations, as well as more detailed historical background research, In order to adequately evaluate the significance of the site, additional research procedures will be necessary, as outined below.

\section*{Site CA-RIV 7285}

CA-RIV-7285 consists of two bedrock milling features exhibiting three grinding slicks. Like the prehistoric element of CA \(\mathrm{R} / \mathrm{V}-7284 / \mathrm{H}\), the milling stations at this site are located on the edge of the Box Springs Mountains, where there is some buildup of alluvium. Thus, there is a possibility that buried artifacts may be present at this site as well. Because of the uncertainty of its data potential, the historical significance of CA-RIV-7285 cannot be determined without further archaeological investigations.

\section*{Isolate}

The isolate identified within the project area consists of a hand held grinding stone that appears to have been used both as a mano and as a pestle. The artifact was found in a: disked area near some natural springs, which suggests that additional cultural material may be present as buried deposits. Isolates, or localities with fewer than three artifacts, by definition do riot constitute archaeological sites due to the lack of contextual integrity, and thus are not considered potential "historical resource." This particular artifact, similarly, requires no further consideration in the CEQA-compliance process. Fowever, the location where it was discovered appears to warrant some limited additional archaeological investigation to ascertain the existence or absence of buried cultural artifacts in the area.

\section*{CONCLUSION AND RECOMMENDATIONS}

The foregoing report has provided background information on the project area, outlined the methods used in the current study, and presented the results of the various avenues of research. As a result of these procedures, two archaeological sites, CA-RIV-7284/H (3315937) and CA-RIV-7285 (33-15938), and one prehistoric isolate were identified within the project boundaries. The isolate, by definition, does not qualify as a significant archaeological resource. However, because the artifact is situated in a disked area near natural springs, there is a possibility that additional buried artifacts could be present. Therefore, the excavation of a few shovel test pits is recommended for this locality.

The significance of Sites CA-RIV-7284/H and -7285 cannot be properly evaluated without further archaeological investigations. Since both sites are located in an area that will be impacted by the proposed development project, CRM TECH recommends that an archaeological testing and evaluation program be implemented to determine the presence or absence of any subsurface cultural deposits, and thereby the significance of the sites. The testing and evaluation program should consist of, at a minimum, surface collection of artifacts, excavation of archaeological test pits and units, laboratory analysis of recovered artifacts, preparation of report presenting the findings, and permanent curation of artifacts at an appropriate facility. It should also include additional historical background research on the historic-period component of Site CA-RIV-7284/H. Further recommendations regarding the final treatment of the sites will be formulated and presented on the basis of the results of the testing and evaluation program.

\section*{REFERENCES}

Bean, Lowell John
1978 Cahuilla. In Handbook of North American Indians, Vol. 8: California; edited by Robert F. Heizer; pp. 575-587. Smithsonian Institution, Washington; D.C.

BLM (Bureau of Land Management, U.S. Department of the Interior)
n.d. Online database of U.S. land patents. Http://www.glorecords.blm.gov.

Chartkoff, Joseph L., and Kerry Kona Chartkoff
1984 : The Archaeology of California. Stanford University Press, Stanford, Califormia.
County Surveyor, Riverside
1912 Plat map of the Sunnmead Orchard Tract; Map Book 9 , Page 17. Microfiche on file, Riverside County Surveyor's Office, Riverside.

Drover, Christopher E.
1989. Environmental Impact Evaluation: An Archaeological Assessment of Gateway: Center Long Beach Equities, Riverside, California. On file, Eastern Information Center, University of Califormia; Riverside.

GLO (General Land Office, U.S. Department of the Interior)
1855: Plat Map: Township No. III South Range No. IV West, San Bernardino: Meridian; surveyed in 1855-1856.
1877 Flat Map: Township No. 2 South Range No. 4 West, San Bernardino Meridian; surveyed in 1853-1877.

Gunther Jane Davies
1984. Riverside County, Calfornia, Place Names: Their Origins and Their Stories. J. D. Gunther Riverside.

Kroeber, Alfred L.
1925: Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Government Printing Office, Washington, D.C.
- McCarthy, Daniel F.

1987 Cultural Resources Inventory for the City of Moreno: Valley, Riverside County, California. On file, Eastern Information Center, University of California, Riverside.

Moratto, Michael J. (ed.)
1984 California Archaeology. Academic Press, Orlando, Florida.
Reid, Hugo
1968 The Indians of Los Angeles County: Hugo Reid's Letters of 1852; edited by Robert F. Heizer. Southwest Museum Papers 21.

Strong, William Duncan
1929 . Aboriginal Society in Southern California. University of Califorma Publications in American Archaeology and Ethnology 26. Reprinted by Malki Museum Press, Banning, California, 1972

USGS (United States Geological Survey, U.S. Department of the Interior)
1901 Map: Riverside, Calif. ( \(15,1: 62,500\) ); surveyed in 1897.
1942 Map: Riverside, Calif. (15', 1:62,500); aerial photographs taken in 1939.
1953 Map: Riverside East, Calif. (7.5', 1:24,000); aerial photographs taken 1951, field-checked in 1953.
1969 Map: San Bernardino, Calif. (1:250,000); 1958 edition revised.
1979 Map: Santa Ana, Calif. (1:250,000); 1959 edition revised.
1980 Map: Riverside East, Calif. (7.5', 1:24,000); 1967 edition photorevised in 1978.
Wallace, William J.
1955 A Suggested Chronology for Southern Califomia Coastal Archaeology. Southwestern Journal of Archaeology 11(3):214-230.
1978 Post-Pleistocene Archeology, 9,000 to 2,000 BC. In Handbook of North American Indians; Vol. 8, California, edited by Robert F. Heizer; pp. 25-36. Smithsonian Institution, Washington, D.C.

Warren, Claude N.
1968. Cultural Traditions and Ecological Adaptations on the Southern California Coast. In Archaic Prehistory in Western Unted States, edited by Cynthia Irwin-Williams; pp. I14. Eastern New Mexico University Contributions in Anthropology 1(3) Portales, New Mexico.
1984 The Desert Region. In California Archaeology, edited by Michael J. Moratto; pp. 339-430. Academic Press, Orlando, Florida.

Warren, Claude \(\mathrm{N}_{\text {, }}\), and Robert H. Crabtree
1986. Prehistory of the Southwestern Area. In Handbook of North American Indians, Vol. 11: Great Basin, edited by Warren L. D'Azevedo, pp. 183-193. Smithsonian Institution, Washington, D.C.

\section*{APPENDIX 1: \\ PERSONNEL QUALIFICATIONS}

\title{
PRINCIPAL INVESTIGATOR/HISTORIAN Baí "Tom" Tang, M.A.
}

\section*{Education}

1988-1993 Graduate Program in Public History/Historic Preservation, UC Riverside.
1987
1982 :
2000 : "Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.
1994 "Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.

\section*{Professional Experience}

2002- Principal Investigator, CRM TECH, Riverside, California.
\(1993-2002\)
\(1993-1997\)
Project Historian/Architectural Historian, CRM TECH, Riverside, California:
1991-1993 Project Histonian, Greenwood and Associates, Pacific Palisades, Californa,

1990
1990-1992 \({ }^{\text {. }}\) Teaching Assistant, History of Modern World, UC Riverside.
1988-1993 Research Assistant, American Social History, UC Riverside
1985-1988: Research Assistant, ModemChinese History, Yale Uriversity.
1985-1986: Teaching Assistant, Modem Chinese History, Yale University.
1982-1985 : Lecturer, History, Xi'an Foreign Languages Institate, Xi'an, China.

\section*{Honors and Awards}

1988-1990 University of California Graduate Fellowship, UC Riverside.
1985-1987 Yale University Fellowship, Yale University Graduate School.
1980, 1981 President's Honor List, Northwestern University, Xi'an, China.

\section*{Cultural Resources Management Reports}

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (With Special Reference to Condition 14 of NPS 1990 Program Review Report) California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

Membership
California Preservation Foundation.

\title{
PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST Michael Hogan, Ph.D., RPA
}

\section*{Education}

1991 Ph.D., Anthropology, University of California, Riverside.
1981 B.S., Anthropology, University of California, Riverside; with honors.
1980-1981
Education Abroad Program, Lima, Peru.
2002 Section 106 mational Historic Preservation Act: Federal Law at the Local Level. UCLA Extension Course \#888.
2002 "Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist.
2002 "Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.
1992 "Southern Califonnia Ceramics Workshop," presented by Jerry Schaefer.
1992
"Historic Artifact Workshop," presented by Anne Duffield-Stoll.

\section*{Professional Experience}

2002- Principal Investigator, CRMTECH, Riverside, Californa.
1999-2002
1996-1998
1992-1998
1992-1995.
1993-1994 Adjunct Professor, Riverside Community College, Mt: San Jacinto College, UC Riverside, Chapman University, and San Bernardino Valley College.
1991-1992 Crew Chief, Archaeological Research Unit, U. C. Riverside.
1984-1998. Archaeological Technician, Field Director, and Project Director for various southem Californa cultural resources mariagement firms.

\section*{Research Interests}

Cultural Resource Management, Southern Californan Archaeology, Settement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

\section*{Cultural Resources Management Reports}

Author and co-author of, contributor to, and principal investigator for numerous cultural resources management study reports since 1986.

\section*{Memberships}

Register of Professional Archaeologists, Society for American Archaeology, Society for California Archaeology, Pacific Coast Archaeological Society, Coachella Valley Archaeological Society.

\section*{PROJECT ARCHAEOLOGIST/REPORT WRITER Josh Smallwood, B.A.}

\section*{Education}

1998
1997
B.A., Anthropology, Humboldt State University, Arcata, California.

Archaeological Field School, Fort Ross Historic District, Fort Ross, California. Archaeological Field School, Coastal Test and Mitigation Projects, Arcata, California.
1996
1994
1993
1992

1994
2002
2001

2000
1998 "Unexploded Ordinance Training" presented by EOD officers, Fort Irwin
1997: "Obsidian Sourcing through Characterization," presented by Thomas Origer Archaeological Field School, Mad River Watershed Surveys, Blue Lake, California.
A. A., Anthropology, Palomar College, San Marcos, California.

Archaeological Field School, San Pasqual Battlefield, San Pasqual, California. Archaeological Field School, Las Flores Asisténcia, Camp Pendleton, CA. Archaeological Field School, Palomar College Campus Late Prehistoric Sites, San Marcos, California:
Extensive study of lithic resource procurement strategies, reduction technology, tool manufacture, and reproduction,
"Historical Archaeology Workshop," presented by Richara Norwood, Base Archaeologist, Edwards Air Force Base.
"CEQA and Section 106 Basics," presented by Richard Carrico, Principal Investigator, Brian F. Mooney \& Associates, San Diego.
"OSHA Safety Training for Construction Monitors," presented by OSHA and City of San Diego.
"HABS/HAER Recording Methods for Historic Structures," presented by Robert Case, Historic Archaeologist, Mooney \& Associates, San Diego. Army Training Facility, Barstow. Sonoma State University.

\section*{Professional Experience}

Project Archaeologist/Report Writer, CRM TECH, Riverside, California.
- Writer/co-author of cuttural resource reports for BLM, FCC, and Caltransreview, city general plans, commercial, and residential development projects.
- Field-director, archaeological field work, historic-period building surveys and recordation, historical archaeologist, and lithic andysis.
- Historical research based on published literature, historic maps, oral interviews, county and city archival records, internet sources, and consultation with local historical societies.
1997-2002
Archaeologist for several cultural resource management/environmental consultants, Department of Defense subcontractors, and Humboldt State University.

\section*{Cultural Resources Martagement Reports}

Co-author of and contributor to numerous CEQA and Section 106 compliance studies since 1997.

\title{
PROJECT ARCHAEOLOGIST/REPORT WRITER \\ Mariam Dahdul, M.A., RPA*
}

\section*{Education}

2002 M.A., Anthropology, California State University, Fullerton.
1993 B.A., Geography, California State University, Fullerton.
2003 "Ceramics Analysis," graduate seminar presented by Dr. Delaney-Rivera, California State University, Fullerton.
2002 "Section 106-National Historic Preservation Act: Federal Law at the Local Level," presented by UCLA Extension.
2002 "Historic Archaeology Workshop," presented by Richard H. Norwood, Base Archaeologist, Edwards Air Force Base.

\section*{Professional Experience}

2000- Project Archaeologist, CRM TECH, Riverside.
- Preparing cultural resources management reports, maps, and site records;
- Analyzing beads, ornaments, and shell:
- Conducting archaeological field surveys;
- Participating in various archaeological testing and mitigation programs.

\section*{Laboratory and Field Experience}

2001 : Archaeological field school under the direction of Dr. Brian Byrd.
- Test excavations of sites at the San Elijo Lagoon Reserve, including flotation of soil samples and sorting and cataloguing of artifacts;
2000: : Archaeological field class tunder the direction of Dr. Claude Warren.
- Excavated units at Soda Lake in the Mojave Desert and produced lake bottom stratigraphic profiles.
1999-2000 Archaeology Laboratory, CSU, Fullerton.
- Assisted in the cataloguing of artifacts.

1999 : Field survey course under the direction of Dr. Phyllisa Eisentraut
* Surveyed and mapped prehistoric site in the Mojave Desert.

\section*{Papers Presented}

2002
"Shell Beads from the Coachella Valley, Sixth Annual Symposium of the Coachella Valley Archaeological Society.
2002 "Shell Beads from the Coachella Valley," Kelso Conference on the Archaeology of the California and Mojave Deserts.

\section*{Cultural Resources Management Reports}

Co-author of and contributor to numerous cultural resources management study reports since 2000.

\footnotetext{
* Register of Professional Archaeologists
}

\title{
PROJECT ARCHAEOLOGIST/FIELD DIRECTOR \\ Daniel Ballester, B.A.
}

\section*{Education}

1998
1997
1994
2002 : "Historic Archaeology Workshop," presented by Richard Norwood, Base
Archaeologist, Edwards Air Force Base; presented at CRM TECH, Riverside.

\section*{Professional Experience}

2002
Field Director, CRMTECH, Riverside.
- Report writing site record preparation, and supervisory responsibilities over all aspects of fieldwork and field crew.
1999-2002
1998-1999 : Field Crew, K.E.A. Environmental, San Diego.

1998

1998
B.A., Anthropology, California State University, San Bernardino.

Archaeological Field School, University of Las Vegas and University of California, Riverside.
University of Puerto Rico, Rio Piedras, Puerto Rico.
over all aspects of fiedwork and tield crew.
- Survey, testing, data recovery, monitoring and mapping.
- Two and a half months of excavations on Topomai village site, Marine Corp Air Station, Camp Pendieton.
Field Crew, A.S.M. Affiliates, Encinitas.
- Two weeks of excavations on a site on Red Beach, Camp Pendleton, and two weeks of survey in Camp Pendleton, Otay Mesa, and Encinitas.
Field Crew, Archaeological Research Unit, University of California, Riverside.
- Two weeks of survey in Anza Borrego Desert State Park and Eureka Valley, Death Valley National Park.

\title{
PROJECT ARCHAEOLOGIST \\ Clarence Bodmer, B.A.
}

\section*{Education}

2000-2002 Graduate Program in Archaeology, University of Kentucky, Lexington:
1996 B.A., Archaeology, University of California, Santa Barbara.

\section*{Professional Experience}

2006- Archaeologist/Report Writer, CRM TECH, Riverside, California.
2006 Archaeologist, Tetra Tech, San Bernardino, Califormia.
2005-2006 Archaeologist, Discovery Works, Long Beach, California.
2004-2005 Archaeological Technician, Statistical Research, Inc., Redlands, California:
2003 Archaeological Technician, Wilbur Smith \& Associates, Lexington, Kentucky, 2000-2004 Archaeologist, Kentucky Archaeological Survey, Lexington, Kentucky;

Honors and Awards
2001-2002 Research Assistant, Deparment of Anthropology, University of Kentucky. 1995-1996 : Grant, University of Califormia, Santa Barbara.
1995-1996 Dean's Honor List, University of California, Santa Barbara.

\section*{Research Interests}

Organization of complex societies, ceramic analysis, settlement patterns, spatial analysis using GIS and remote sensing applications.

\section*{Memberships}

Society for American Archaeology.
Society for California Archaeology.

\author{
NATTVE AMERICAN LIAISON \\ Laura Hensley Shaker, B.S.
}

\section*{Education}

1998: B.S., Anthropology (with emphasis in Archaeology), University of California, Riverside.
1997 Archaeological Field School, University of California, Riverside:
2002 "Historic Archaeology Workshop," presented by Richard Norwood, Base Archaeologist, Edwards Air Force Base; presented at CRM TECH, Riverside.
1999. "Unexploded Ordinance Training," presented by EOD officers; Fort Irwin Army Training Facility, Barstow.

\section*{Professional Experience}
1999. : Project Archaeologist, CRM TECH, Riverside.

1999 Archaeological survey and excavation at Vandenburg Airforce Base; Appled Earthworks, Lompoc:
1999 Archaeological survey at Fort Irwin Army Training Faclity, Barstow; A.S.M Affiliates, Encinitas:
1998-1999 Paleontological fieldwork ard laboratory procedures, Eastside Reservoir Project; San Bernardino County Museum, Redlands:
1998 Archaeological survey at the Anza-Borrego State Park, Archaeological
\(\because\) Research Unit, U.C. Riverside:
1997-1998 "Archaeological survey and excavation at the Twentynine Palms Marine Corps Air and Ground Combat Center; Archaeological Research Unit, U.C.: Riverside.

\section*{Education}

2004 B.A. Anthropology/Law and Society, University of California, Riverside.

\section*{Professional Experience}

2004 : Project Archaeologist, CRM TECH, Riverside.
- Surveys, excavations, mapping, and records searches.

Honors and Awards
2000-2002 - Dean's Honors List, University of Califormia, Riverside.

\section*{APPENDIX 2:}

\section*{CORRESPONDENCES WITH NATIVE AMERICAN REPRESENTATIVES*}

\footnotetext{
*A total of 16 local Native American representatives were contacted; a sample letter is included in this report.
}

RE: Sacred Land records search

This is to request a Sacred Lands records search
Name of project:
Tract 33626; APN 256-150~001
CRMTECH \(\# 2060\)
Project Size:
36 acres
Location:
In the City of Moreno Valley
Riverside County
USGS \(7.5^{1}\) quad sheet data:
Riverside East, Calif.
Section 34, T2S R4W, SBBM
Please call if you need more information or have any questions:

Results may be faxed to the number above.
Tappreciate your assistance in this matter.

Map included

\author{
NATIVE AMERICAN HERITAGE COMMISSION \\  \\  \\ (916) \(658-527\) \\  \\ Wés Stite whw.nphc.cargoy \\ 
}

April 17, 2007
Ms. Laura Hensley Staker
CRH TEH
4472 Orange Street
Riverside. CA 92501

Sent by FAX to: 951-784-2987
Number of pages: 3
Re: Culheral Resource identification StudvSacred Lands inle Search for Proposed Tract 33636 Prolect in City of 多orano (CRW TECH \(\# 2000\), Rlverside Cotiolv, Calfornia
Dear Ms. Hensy/ Shaker Lavta
The Native American Heriage Cornmission was able to perfom a record seareh of its Sacred Lands File (SLF) for the affected project area. The SLF failed to indicate the presence of Native American cultural resources in the inmediate project area. The absence of specific sith information in the Sacred Lands Fife does rot guarantee the absence of cultural resources in any 'area of potential ethect (APE).'

Early consultation with Natue Arnerican tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the nearest tribes that mey have knowledge of cultural resources in the propect area. A List of Native American contacts are attached to assist you. The Commission makes no recommendation of a single individual or group over another. It is advisable to contact the person listed, if they cannot supply you whthenecific information about the impact on cultural resources; they may be able to refer you to another tribe or person knowledgeable of the cultural resolrces in or near the affected project area:(APB).

Laok of sufface evidence of archeologimat resturces does not preclude the existerme of archeological resources. Lead agenties should consider avoidance, as defined fract Secton 15370 of the Calfomia Environmental Quality Act (CEOA) when signiticant cuiturai resourceis could be * affected by a project Also; Pulafic Resources Code Section 5097.98 and Health \& Safety Code Section 7050.6 provide for provisions for accidentally discovered archeologital resources during construction sind mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other that a dedicated cemetery. Discussion of these shoud be Included in your enviromental documents, as appropiate.

If you haye any questions about this response to your request, please do not hesitete to


\footnotetext{
Attachenent Native American Contact List
}

\section*{Native American Contacts}

\author{
Riverside County
}

April 17, 2007

Cahuilla Band of Indians
Anthony Madrigal, Jr, Interim-Chairperson
P.O. Box 391760

Cahtilla
Anza - CA 92539
tribalcouncilcochuilla.net
(951) 763-2631
(951) 763-2632 Fax

Pechanga Band of Mission Indians
Paul Macarro, Cultural Resource Center
P.O. Box 1477 Luiseno

Temecula , CA 92593
(951) 308-9295
(951) 676-2768
(951) 605-1778 Fax

Ramona Band of Mission Indians
Joseph Hamilton, vice chairmarn
P.O. Box 391670 Cahuilla

Anza , CA 92539
admin@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

San Manuel Band of Mission Indians
Henry Duro, Chairperson
28569 Community Center Drive Serrano
Highland, CA 92346
(909) 864-8933
(909) 864-3370 Fax

Santa fosa Band of Mission Indians John Marcus, Chairman
P.O. Box 609 Cahuilla

Hemet , CA 92546
stribaloffice@aol.com
(951) 658~5311
(951) 658-6733 Fax

Morongo Band of Mission Indians
Britt W. Wilson, Cultural Resources-Project Manager
49750 Seminole Drive Cahuila
Cabazon , CA 92230 Serrano
britt wilsonemmorngo.org
(951) 755-5206
(951) 755-5200/323-0822-cell
(951) 922-8146 Fax

San Manuel Band of Mission Indlans Ann Brierty, Environmantal Department 101 Pure Water Lane Serranc
Highland , CA 92346
abrierty@sanmanuel-nsn,gov
(909) 863-5899 EXT-4321
(909) 862-5152 Fax

Soboba Band of Luisento Indians
Bennae Calac, Cultural Resource Director
P.O. Box 487 Luiseno

San Jacinto , CA 92581
(951) 653-8332
(951) 654-4198 - FAX

\footnotetext{

}



 for which a Sacred Landta File gench was fequestent.

Pechanga Band of Mission Indians Mark Macarro, Chairperson
PO. Box 1477 : CA 92593
Temectia
tbrown@pechanga-nsnogov
(951) \(676-2768\). Fex
(951) 695.1778 Fax Maurico Chacon, Cultural Resources
P.O. Box \(391760 \quad \therefore \quad\) Canullia

Anza , CA 92539
cbandodian@aol.com
(951) 763-2631
(951) 763-2632 Fax

Willie Pink
48310 Pechanga Road . Luiseno
Temecula: CA 92592
wipink@homailicom
(909) 036-1216

Prefer email contact

Serrano Band of indians
Goldie Walke:
6588 Valeria Drive: : Serrano
Highland , CA 92346
(909) 862-9883

Soboba Band of Luiseno Indians
Harold Arres, Cultural Resources Manager
P.O. Box 487

Luiseno
San Jacinto: , CA 92.581
harres@soboba-nsn.gov
(951) 654-2765

FAX: (951) 654-4198

Thle list





Ann Brierty, Cultural Resource Coordinator
San Manuel Band of Mission Indians
101 Pure Water Lane
Highland, CA 92346
RE: 36 Acres in APN 256-150-001; Tract 33626
In the City of Moreno Valley, Riverside County
CRM TECH Contract \#2060

Dear Ms. Brierty:
CRM TECH is conducting a cultural resources study on the property referenced above: In the meantime, I am writing to request your input on potential Native American cultural resources on or near the property. Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional significance within or near the project area that we should be aware of before conducting the field survey. The lead agency for this project is the City of Moreno Valley in the CEQA review process. Please note that this project is not under the provision of SB18.

The property is located just north of the northem end of Morton Road and east of the eastern end of Gernert Road, in the City of Moreno Valley, Riverside County. The accompanying map, based on the USGS Riverside East, Calif., 7.5' quadrangle, depicts the location of the project area in the northwest comer of Section \(34, T 2 S\) R4W, SBBM.

Any information, concerns or recommendations regarding cultural resources in the vicinity of the project area may be forwarded to CRM TECH by telephone, email, facsimile or standard mail. Thank you for the time and effort in addressing this important matter.

Respectfully

\section*{Latura Hensley Shaker CRM TECH}

\footnotetext{
Encl.: Project location map
}

Subject: 36-acre project in Moreno Valley
Date: Wednesday; April 18, 2007 5:31 PM
From: Britt Wilson <britt_wilson@morongo.org>
To: Laura Hensley-Shaker <laura.shaker@crintech.us>
Cc: Britt Wilson <britt_wilson@morongo.org>
Conversation: 36-acre project in Mureno Valley
Thank you for contacting the Morongo Band of Mission Indians concerning cultural resource information relative to the above referenced project(s). Due to the high number of information requests the Tribe has been receiving, we are only able to respond via email.
The project(s) is outside of the Tribe's current reservation boundaries but within an area that may be considered a traditional use area or one is which the Tribe has cultural ties (e.g. Cahuilla/Serrano territory): Although the Tribe has no specific information on your site, there are substantial and numerous Native American cultural resources within very close proximity to this site. In that light, the Tribe recommends the following:
- Archaeological site monitoning with at least one monitor being a Native American representing Morongo. The project developer can contact Britt Wilson to coordinate contract, etc;
- In accordance with state law, the County coroner should be contacted if any human remains are found during earthmoving activities;
- If Native American cultural resources are uncovered during earthmoving activities, work in the immediate vicinity of the find shall cease and an archaeologist meeting Secretary of Interior standards shall be retained to assess the find. If the find is significant enough to require a Treatment Plan, the Morongo Band of Mission Indians asks that it be contacted again to provide further consultation:
[SPECIAL NOTE (for projects other than cell towers): If this project is associated with a city or county specific plan or general plan action it ss subject to the provisions of SB18-
Traditional Tribal Cultural Places (law became effective January 1, 2005) and will require the city or county to participate in formal, government-to-government consultation with the Tribe. If the city or county are your client, you may wish to make them aware of this requirement. By law, they are required to contact the Tribe. This email does not constitute consultation under SB18.]
Thank you for the opportunity tocomment on the project.
Sincerely,
Britt W, Wilson
Project Manager - Cultural Resources
Morongo Band of Mission Indians
49750 Seminole Drive (Casino Morongo Bldg)
Cabazon, CA 92230
Office: (951) 755-5200 Direct: (951) 755-5206
Mobile: (951) 323-0822
Fax: (951) 922-8146 E-mail: Britt_wilson@morongo.org
Wayta' Yawa' (always believe)


\section*{Mission:}

Educate and conmmunicate the rich heritage of Soboba peoples; Lead and assist individuals, organizations and communities in understanding the needs and concerns of Native American monitoring of traditional sites; Advocate Native American participation in state agencies and boards; Advocate legislation and enforcement of laws affecting Native American peoples and protecting histonical and archaeological resources.
April 30, 2007
Attn: Laura Shaker
CRM TECH
4472 Orange Street
Riverside, Ca 92501
Re: Contract \#2060
The Soboba Band of Luiseno Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The infornation provided to us on said project(s) has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does falls: within the bounds of our Tribal Traditional Use Areas.

Soboba Band of Luiseño Indians is requesting the following:
1. Further government to government consultation.
2. Copies of archeological and/or cultural resource documentation.
3. Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase: For this reason the Soboba Band of Luiseño Indians requests Cultural Resource Monitor(s) to be present during any ground disturbing proceedings.
[SPECLAL NOTE (for projects other than cell towers): I/ this project is associated with a city or county speciffe plan or general plan action it is subject to the provisions of SB18-Tradtional Tribal Cultural Plades (law became effective Jantary 1,2005 ) and wiil require the city or county to participate in formal, government-to-government consultation with the Tribe. If the city or county are your client, you may wish to make them aware of this requirement. By law, they are required to contact the Tribe.]


Soboba Band of Luiseño Indians
Phone (951) 487-8268
Cell (951) 663-8333
ehelms@soboba-nsn,gov

\section*{APPENDIX 3}

\section*{Site/Isolate Records}
(Confidential)


P1. Other Identifler:
P2. Locatlon: \(\sqrt{ }\) N Not for Publication ___Unrestrfcted
*a. County Riverside
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
\({ }^{\text {'b. USGS 7.5' Quad Riverside East, Calif. }} \quad \therefore\) Date 1980
T2S; A4W: NW \(1 / 4\) of NW \(1 / 4\) of Sec 34 ; S.B.B.M.
Elevation: Approximately \(1,640 \mathrm{~m} 1,720\) feet above mean sea level
c. Address W/A Clity Moreno Valley: Zip
d. UTM: (Give more than one for large and/or linear resources) Zone 11 , 472,937 rit \(/ 3,757,387 \mathrm{mN}\) UTM Derivation:__ USGS Quad \(V\) GPS; NAD 1927
e. Other Locational Data: (e.g, parcel if, difections to resource, etc, as appropriate) The site is located approximately. 1,280 fees east of Gernert Road and 480 feet north of Jennings court.
*P3aw. Descripton: (Describe rescurce and its major elements. Include design, materials, conditiof, alterations; size, setting, and boundaries) The site consists of both prehistoric and historic-period components, The prehistoric element occurs in the southern part of the site and contains eight bedrock milling features with a total of 14 grinding slicks found on the bedrock surfaces: Two manos were found among boulders with umodified surfaces.

The historic-period component of the site occurs to the north and consists mainly of several structural features and refuse scatters, possibly associated with a late \(19 t h\) century or atly to mid 20 th century homested. The features at the site include dry-lain rock alignments a rockwand-cerentwalled cellar. two small concrete foundations a concrete step, a well, a cistern, and a dirt access road. A prehistoric stone metate; used as construction material, was observed in the wall of the cellar. The refuse deposit found at the site contains rusted cans of various sizes and shape, ceramic sherds, one complete ink bottle, and blue, clear, and amethyst glass sharẹs.
*P3b. Resource Attibutes: (List attributes and codes) AP4-Bedrock-milling features AH2Foundations/structure pads; AB4-Trash scatter; AH5-well/cistern
+P4. Resources Present:__Building___Structure___ Object V Site__ District___ Element of District Isolate: Other
Pra. Photogfaph or Drawing Photograph sequired tor buidings, struetures, and obects)
P5b. Descriptlon of Photo: (view, date, accession i)
"P6. Date Constructed/Age and Sources:_Historic___ Prehistoric V Both
"P7. : Owner and Address: Unknown
PP8. Recorded by: (Name, affiliation, and address) Daniel Ballester, CRM TECE, 1016 East Cooley Drive Suites A/B, Colton, CA 92324
"P9. \(\quad\) Date Recorded:__April 24, 2007
P10.: Survey Type: (Describe) Intensive-level survey for CEQA-compliance purpose
P11. Report Cltation: (Cite survey report and other sources, of enter "none.") Josh Smallwood, Maxiam Bahdul, Daniel Ballester, and Laura H. Shaker 12007): Gistorical/ Archaeological Resources Survey Report: Tentative Tract Map No. 33626 , City of Moreno valley, Riverside County, California. on file, Eastern Information Center, University of California, Riverside.

Atiachments: _ None \(\sqrt{ }\) Location Map \(\sqrt{ }\) Sketch Map__Contituation Sheet_Building, Structure, and Object Record \(\checkmark\) Archaeological Recotd_District Fecord___Linear Resource fecord__Miling Station Record__ Rock Art Record Atifact Record Photograph Record Other (List):

Prmary \# 33-15937
THinomal CA-ETV-7284/B

A1. Dimensfons: a. Length_140 m (E-W) b. Width \(130 \mathrm{~m}(\mathrm{~N}-\mathrm{S})\)
Method of Measurement:_Paced_Taped_Visual estmate \(\sqrt{V}\) Other:_Range-finder
 Rellabllity of Determination \(\qquad\) High \(\sqrt{ }\) Medium Low Explain: Limitations (Check any that apply): Pestricted access Disturbances___ Vegetation__O_ Other (Explain):
A2. Depth: None \(\sqrt{\text { Unknown Method of Determination }}\)
*A3. Human Remains:__Present \(\sqrt{ }\) Absent Possible Unknown (Explain):
*A4. Features: (Number, brielly describe, indicate size, list associated cultural constituents, and show location of each leature on sketch map.) See item p3a.
*A5. Cultural Constttuents: (Describe and quantify astifacts, ecofacts, cultural residues, etc., not associated with tealures.) See item P3a.
"A6. Were Specimens Collected? \(\sqrt{ }\) No__Yes (It yes, attach Artifact Record or catalog and dentify where specimens are curated.)
*A7. Site Conditlon: Good_V_Far_ Poor (Describe disturbances.):
*A8. Nearest Water (Type, distance, and direction ) The site is located on a low ridge near the confluence of two intermittent drainages. Several springs are located in the immediate vicinity, along the base of the कox springs Mountains.
A9. Elevation: Approximately \(1,640-1,720\) feet above mean sea level
A10. Environmental Setting: (Describe vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc), The vegetation noted in the vicinity of the site includes eucalyptus; pepper, sycamore, Eacelia sp, poison oak, and wild mustard. The terrath the area is nearly level but inclines to the east towards the western slope of the Box Springs Mountains.

A11. Historical Informatlon: A building was known to be present at this location at least by the \(1890 s_{\text {, and may have survived tinto the recent decades. The area }}\) was included in a homestead patent issued to cecti R.G. Webber an early settler in the Box Springs area, in the early 18805.
\({ }^{*}\) A12. Age: \(\sqrt{ }\) Prenistoric. Protohistoric \(1542-1769\). \(1769-1848 \quad 1848-1880 \quad \sqrt{ } 1880-1914 \quad \sqrt{ } 1914-1945\) Post 1945 _ Undetermined Describe posithon in regional prenistorlc chronology or factual historlc dates If known:


A13. Interpretations: (Discuss scientific, interpretive, ethnic, and other values of site, if known) , The site is situated in an area where the traditionar territories of three Native Anerican groups overlapped: the Serrano, the luiseno, and the Gaboielino. The bedrock mililig features may heve been used to process vegetal and/or animal resources that were gathered/hunted from the suxrounding area. The historicuperiod remains may be associated with a late 19th century or early to mid-20th century homestead.

A14. Remarks: The historical significance of the site cannot be determined without further archaeological investigations, including subsurface excavations.
A15. Reterences: (Documents, tinformants, maps, and other references.): See Item P 11 .
A16. Photographs: (List subjects, direction of vew, and accession numbers or attach a Photograph Record.)
Original Media/Negatives Kept at: CRM TecH, 41016 East Cooley Drive, Suites: \(A / B_{1}\) Colton, CA 92324
*A17. Form Prepared by: Johr J. Eddy D, Date; May 3, 2007
Attlation and Address: CRM TRCH, 1016 East Cooley Drive, Suites \(A / B\), Colton, CA 92324
\begin{tabular}{ll} 
State of Califorria-The Resources Agency & Primary \(33-15937\) \\
DEPARTMENT OF PARKS AND RECREATION & HRI \\
LOCATION MAP & Trinomial CA-RIV \(72 \mathrm{~B} 4 / \mathrm{H}\)
\end{tabular}

Page 3 of 4
*Resource Name or \# (Assigned by recorder) CRM. TECH 2060-1
*Map Name: \({ }^{\text {kiverside East, Calif. }}\) \(\qquad\) *Dte of Map: 1980


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\title{
State of Calliornia-The Resources Agency DEPARTMENT OF PARKS AND RECREATION \\ PRIMARY RECORD
}

Primary \# 33-15938
HFI\#
Trinomlal CA-RIV-7285
NRHP Status Code 7
Other Listings
Revlew Code Reviewer Date
Page \(\pm\) of 4
*Resource Name or \# (Assigned by recorder) CRM TECH 2060-2
P1. Other Identifler:
*P2. Locatlon: \(\sqrt{ }\) Not for Publication _nerestricted. *a. County Riverside and (P2t and P2c or P2d. Attach a Location Map as necessary.)
"b. USGS 7.5' Quad Riverside East, Calif. Date_1980 T2S; R4E; NE \(1 / 4\) of NW \(1 / 4\) of NW \(1 / 4\) of Sec \(34 ;\) S.B.B.M. Elevation: Approximately 1,740 feet above mean sea level
c. Address N/A City Moreno Valley Zip
d. UTM: (Give more than one for large and/or linear resources) Zone \(11,4,47,033 \mathrm{mE} / 3,757,468 \mathrm{mN}\) UTM Derivation: \(\quad\) USGS Quad \(\sqrt{ } \sqrt{ }\) GPS: NAD 1927
e. Other Locational Data: (eg., parcel \#, directions to fesource, etc, as appropriate) The site is Iocated approximately 1,600 feet east of Gernert Road and 1,040 feet north of Frankhale Foad.
*P3a. Description: (Describe resource and its major elements. moluce design, materials, condition, alterations, size, setting, and boundaries). The site congists of two bedrock miling features situated near the base of the Box springs Mountaing. A total of three milling slicks are found on the bedrock surfaces.
"P3b. Resource Attrlbutes: (List attributes and codes) AP4: Bedrock miling features "P4. Resources Present: Bulding_ Stricture_ Object \(V\) Site_ District E_ Element of District Isolate Other
P5a.: Photograph or Drawling (Photograph required tor buildings, structures; and objects.)
P5b. Description of Photo: (view, date, accession \#)
*P6. Date Constructed/Age and Sources: Historic \(V\) Prehistoric Both
*P7. Owner and Address: Unknown
*P8. Recorded by: (Name; affilation, and adress) Daniel Ballester, CRM TECH, 1016 East Cooley Drive Suites A/B, Colton, CA 92324
*P9. Date Recorded: ApriL 24, 2007
*P10. Survey Type: (Describe) Intensive-level survey for ceot compliance purpose
P11: Report Cltation: (Cite survey report and other sources, or enter "rione.") Josh Smallwood, Mariam Dahdul, Daniel Ballester; and Laura H Shaker (2007) Historital/ Archaeological Resources Survey Report: Tentative Tract Map No. 33625 , City of Moreno Valleyi Riverside county California. on file, Eastern Information Center, University of california, Riverside.
*Attachments:_None \(\sqrt{ }\) Location Map \(\sqrt{ }\) Sketch Map__Continuation Sheet_Building, Structure, and Object Record: V Archaeological Record; District Record Linear Resource Fecord Milling Station Record Rock Art Record Artifact Record _ Photograph Beçord. Other (List); \(\qquad\)

\section*{ARCHAEOLOGICAL SITE RECORD}

Page_2 of 4
*Resource Name or \# (Assigned by recorder) CRM TECH. 2060-2
A1. Dimenslons: a. Length \(33 \mathrm{~m}(\mathrm{~N}-\mathrm{S})\)
b. Width 8 m (E-W)

Method of Measurement: Paced_Taped_Visual estimate \(\sqrt{ }\) Other: Range-finder
Method of Determination (Check any that apply.): Artifacts \(\sqrt{ }\) Features Soil Vegetation Topography Cut bank Animat burrow_ Excavation_Proponty boundary. Other (Explain): Rellabllity of Determination: High \(V\) Medium Low Explain:
Limiltations (Check any that apply); Restricted access___Paved/ouith over_ Site limits incompletely defined Disturbances Vegetation Other (Explain):
A2. Depth: None \(\sqrt{\text { Unknown : Method of Determination: }}\)
*A3. Human Remains:___ Present \(\sqrt{ }\) Absent Possible ___ Unknown (Explain):
*A4. Features: (Number, brietly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map. , Two bedrock-milifng features, designated Features I and_2 were recorded at the site. Feature. I exhibited a single miling glick measuring 23 x 23 cm while Feature 2 exhibited two milling slicks measurinc \(80 \times 20 \mathrm{~cm}\) and \(30 \times 20 \mathrm{~cm}\).
*A5. Cultural Constltuents: (Describe and quantily artifacts, ecofacts, cultaral residues, etc., not associated with features.) None.
*A6. Were Spectmens Collected? V No. Yes (if yes, attach Artitact Record or catalog and identify where specimens are curated.)
*A7. Sife Condition: Good Fair Poor (Describe disturbances)
A8. Nearest Water (Type distance, and direction) The site is adjacent to an intermittent dranage Several springs are located in the immediate vicinity, along the base of the Box Springs Mountains.
*A9. Elevation: Approximately 1,740 feet above mean sea level
A10. Environmental Setting: (Desctibe vegetation; fauna; solls, geology, landform, slope, aspect; exposure, etc.): Vegetation in the site area consists predoninately of Encelia spe the terrain inclines steeply to the east towards the western slope of the Box Spfings Mountains.

A11. Historlcal information:
*A12. Age: \(V\) Prehistoric Protonistoric 1542-1769. 1769-1848 1848-1880 1880-1914. 1914-1945 Post 1945 Undetermined Describe position In regional prehistoric chronology or factual histofic dates it known:

A13. Interpretations: (plscuss scientific, interpretive, ethnic, and other values of ste, known) The site is situated in an area where the traditional territories of three Native Anerican oroups overlapped: the Serrano, the Luiseñ, and the Gabrielino. the bedrock milling features may have been used to proces nnimal resources that wese gathered/hunted from the suriounding area.
A14. Remerks: The historical significance of the site cannot be determined without further archaeological investigations, including subsurface excavations.

A15. Relerences: (Documents, informants, maps, and other references): See Item PiI.
A16. : Photogrephs: (List subjects, direction of view, and accession numbers or attach a Photograph Record.):
Original MediaNegatives Kept at: CRM . TECH, 1016 East Cooley Drive, Suites A/B, Colton CA 92324
*A17. Form Prepared by; John J. Eddy
Date: May 3, 2007
Attilation and Address: CRM TECE, 1016 East Cooley Drive, Suites A/B; Colton; CA 92324
\(\qquad\) *Date of Map: \(\qquad\) 1980


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Primary \#
HR1\#
Trinomial
NRHP Status Code 62
Other Listings Review Code

Reviewer
Date
Page 1 of 2
*Resource Name or \# (Assigned by recorder) Isolate 2060-1

P1. Other Identifier:
*P2. Location: Not for Publication Unrestricted *a. County Riverside
and \(\langle\mathrm{P} 2 \mathrm{~b}\) and P 2 c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Guad Riverside Ease, Calif.
Date 1980

Elevalion: Approximately 1,640 feet above mean sea ievel

d. UTM: (Give more than one for large and/or linear resources) Zone_11; \(472,806 \mathrm{mE} / 3,757,379 \mathrm{mN}\) UTM Derivation:_ USGS Quad \(\sqrt{ }\) GPS (NAD 27)
e. Other Locational Data: (e.g., parcel \#, directions to resource, etc., as appropriate) The isolate is located approxinately 720 feet east of Gernert Road and 640 teat north of Jennings court.
"P3a. Description: (Describe resource and iss major elements. Include design, materials, condition, aterations, size, setting. and boundaries) the isolate consists of handmeld grinding stone that appears to have been used both as a mano and as a pestle
*P3b. Fesource Attrlbutes: (List attrbutes and codes)_AP16. other (isolated groundstone)
 V Isolate___Other

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)
P5b. Description of Photo: (view, date, accession \#)
*P5. Date Constructed/Age and Sources: \(\qquad\) Historic \(\sqrt{ }\) Prehistonc___ Both
"P7. Owner and Address:
*PB. Recorded by: (Name, atillation, and addess) Daniel Ballester, CRM MECEI, 1016 East Cooley Drive, Suites \(A / 3\), colton, CA 92324
*P9. Date Recorded: April 24, 2007
*P10. Survey Type: (Describe)_Intensive-level survey for CEOA-compliance purpose
*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Josh Smallwood, Mariam Dahdul, Daniel Ballester, and Laura B. Shaker (2007): Historical/ Archaeological Resouxces Survey Report: Tentative Tract Map No. 33626 . City of Moreno Valley, Riverside County, California, On file, Eastern Information Center, University of California, Riverside.
*Attachments:__None_ \(\sqrt{ }\) Location Map___Sketch Map__Continuation Sheet_ Buliding, Structure, and Object Record Archaeological Fecord__District Reoord__Linear Resource Record__Miling Station Record__ Fock Art Record Artifact Record_Photograph Record__Other (List): \(\qquad\)
\(\qquad\)

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From: Kay White <eickw@ucr.edu>
Sent: Tuesday, July 17, 2007 2:00 PM
To: crmtech@crmtech.us
Subject: Numbers
Mike/Tom: It is really a good thing that I retired. Maybe I should not have come back to work at all.!!!!! I gave you incorrect trinomials for this project. I have corrected them in blue below. Please correct your records. Sorry about this. kay
*************************************************

Josh: We did get these records and sent you numbers on May 10, 2007. Here they are again.
*******************************************

Hi John:
We have assigned the following primary numbers and trinomials to the records you recently submitted. Please submit one hard copy of each record complete with numbers on every page.

CRM TECH 2060-1/H = 33-15937 and CA-RIV-7284 should be CA-RIV-8274
CRM TECH 2060-2 \(=33-15938\) and CA-RIV-7285 should be CA-RIV-8275
Thanks.
kay

Kay H. White
Administrative Assistant
Eastern Information Center
c/o Department of Anthropology
University of California
Riverside, CA 92521-0418
(951) 827-5745

Fax (951) 827-5409

\section*{KINCAID DEVELOPMENT PROJECT: RESULTS OF AN ARCHAEOLOGICAL TEST PROGRAM AT CA-RIV-7.284H AND CA-RIV-728* MORENO VALLEY, \(\left.\begin{aligned} & \text { RIVERSIDE COUNTY, } \\ & 8274\end{aligned} \right\rvert\, \begin{aligned} & \text { CALIFORNIA } \\ & 8275\end{aligned}\)}

By:
Jay K. Sander, M.A. Principal Investigator

With contributions by:
Pamela Daly, M.S.
DEC 192007
EIC
Prepared For:
KINCAID DEVELOPMENT
17611 Wood Road
Riverside, CA 92508

Prepared By:
CHAMBERS GROUP, INC.
302 Brookside Avenue Redlands, CA 92373

July 2007

\section*{MANAGEMENT SUMMARY}

\begin{abstract}
A test program was completed at two archaeological sites as part of the proposed Kincaid Development Project of 36 acres identified as Tentative Tract 33626, Assessor's Parcel Number (APN) 256-150-001, Moreno Valley, Riverside County, California. The two sites, CA-RIV-7284/H (33-15937) and CA-RIV-7285 (33-15938), were discovered in 2007 during the cultural resources survey for the Kincaid Development project. The purpose of the test program was to evaluate the sites for eligibility for the California Register of Historical Resources. The test program at each site consisted of recording of surface cultural material, shovel test pits (STPs), and two 1-by-1-meter excavation units at CA-RIV-7284. No cultural material was found subsurface at either CA-RIV-7284/H or CA-RIV-7285. Because of the lack of subsurface cultural material that could be used to address research topics, the two sites are evaluated as not eligible for the California Register of Historical Resources. Therefore, because both are evaluated as not eligible, mitigation through data recovery is not necessary. However, grading monitoring by a qualified archaeologist is recommended.
\end{abstract}

The trinomials in this report are incorrect, however, the primary numbers are correct.

Results of Archaeological Test Program:
CA-RIV-7284/H AND CA-RIV-7285, Moreno Valley, Riverside County, California
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\section*{SECTION 1 - INTRODUCTION}

The Kincaid Development project involves work on approximately 36 acres of vacant land in the vicinity of the southwestern edge of the Box Springs Mountains in the city of Moreno Valley in Riverside County, California. Kincaid Development retained CRM Tech to perform a records/literature review of cultural resources known to exist in the project area as well as an intensive survey to identify any previously unrecorded cultural resources that could be impacted by the project (Smallwood and Dahdul 2007). As a result of the field survey, two prehistoric sites were documented and temporarily designated as CRM Tech 2060-1 and CRM Tech 2060-2 (Figure 1). Later, CRM Tech 2060-1 was formally designated as CA-RIV7284/H (33-15937) and CRM Tech 2060-2 as CA-RIV-7285 (33-15938). A test program was subsequently performed by Chambers Group, Inc. (Chambers Group) to evaluate the eligibility of the two sites for the California Register of Historical Resources (CRHR). This report presents the results of archaeological testing at the two sites and an evaluation of the eligibility of the two sites for the CRHR.

\subsection*{1.1 LOCATION AND ENVIRONMENTAL SETTING}

The study area of the Kincaid project is located on privately owned land on the southwestern edge of the Box Springs Mountains, north of Moreno Valley. The Assessor's Parcel Number (APN) is 256-150-001. It is within Section 34 of Township 2 South, Range 4 West, as depicted on the U.S. Geological Survey (USGS) 7.5-minute Riverside East topographic quadrangle. The area ranges in elevation from approximately 1,650 to 1,7400 feet above mean sea level.

The project area is situated on a low ridge near the confluence of two intermittent drainages. Slope angles vary from level to approximately 45 degrees on some of the more severe hills. There are several springs within the immediate vicinity, along the base of the Box Springs Mountains. The dominant native vegetation species is brittlebush (Encelia sp.). Non-native species observed include eucalyptus, pepper tree, sycamore, and wild mustard. Bedrock outcrops of granite occur throughout the area. The project area has been disturbed by erosion and by the construction, maintenance, and subsequent demolition of a small residence that formerly stood on the property.

CA-RIV-7284/H consists of both prehistoric and historic-period components. It is located approximately 1,280 feet east of Gernert Road and 480 feet north of Jennings Court. The prehistoric component of the site is comprised of eight bedrock milling features with 8 grinding surfaces (slicks) on them. Two manos were found on the surface of the site in association to the bedrock features (Smallwood and Dahdul 2007:11).

The historic-period component of the site is comprised of structural features, an electric well pump, and a trash scatter that is dominated by 1940-1960s refuse. Also noted were a few fragments of sun-colored amethyst glass which dates to between the late 1800 s and early 1900 s. The structural features include dry-lain rock alignments, a concrete and rock wall built into the side of a hill, two small concrete slabs, and a concrete cistern surrounding a natural spring.

CA-RIV-7285 consists of two bedrock milling features about 98 feet apart with three grinding slicks. The site is on a slope above CA-RIV-7284/H, located 1,600 feet east of Gernert Road and 1,040 feet north of Frankhale Road. No artifacts were found on the surface of the site.

Both of these sites are situated on gradual slopes that may have contained buried cultural deposits covered by erosion and the build-up of alluvium (Smallwood and Dahdul 2007:13). For this reason, archaeological testing of the site was recommended. The goal of testing was to determine whether there was intact subsurface archaeological deposits that may contribute to the significance of this cultural resource.



\subsection*{1.2 PREHISTORIC AND HISTORIC BACKGROUND}

\subsection*{1.2.1 Prehistory}

At this time, no chronological synthesis has been developed specifically for the interior valleys and mountains that include the region surrounding the current project area. Instead, researchers have generally come to rely on typological cross-dating from either the coastal or desert sequences (McDougall et al 2003). For this reason, a brief outline of generally accepted Southern California chronology (both desert and coastal combined) is presented below.

It is generally believed that human occupation of southern California began at least 10,000 years before present (BP). The archaeological record indicates that between approximately 10,000 and 6,000 years BP, a predominantly hunting economy existed, characterized by archaeological sites containing numerous projectile points and butchered large animal bones. Animals that were hunted probably consisted mostly of large species still alive today. Bones of extinct species have been found, but cannot definitely be associated with human artifacts. Although small animal bones and plant grinding tools are rarely found within archaeological sites of this period, small game and vegetal foods were probably exploited on a limited basis. A lack of deep cultural deposits from this period suggests that most groups included only small numbers of individuals who did not often stay in one place for extended periods (Wallace 1978). There is some evidence to suggest that there were groups during this time period that did have a semi sedentary lifestyle along the coast (Koerper et al 1991), but there only two sites of this type in the inland regions of western riverside county (Grenda 1997; Horne et al n.d.)

Around 6,000 years BP , there was a shift in focus from hunting towards a greater reliance on vegetal resources. Archaeological evidence of this trend consists of a much greater number of milling tools (e.g., metates and manos) for processing seeds and other vegetable matter. This period, which extended until around 3,000 years BP, is sometimes referred to as the "Millingstone Horizon" (Wallace 1978). Projectile points are found in archaeological sites from this period, but they are far fewer in number than from sites dating to before 6,000 years BP. An increase in the size of groups and the stability of settlements is indicated by deep, extensive middens at some sites from this period (Wallace 1978).

In sites dating to after about 3,000 years BP, archaeological evidence indicates that reliance on both plant gathering and hunting continued as in the previous period, with more specialized adaptation to particular environments. Mortars and pestles were added to metates and manos for grinding seeds and other vegetable material. Flaked stone tools became more refined and specialized, and bone tools were more common. During this period, new peoples from the Great Basin began entering southern California. These immigrants, who spoke a language of the Uto-Aztecan linguistic stock, seem to have displaced or absorbed the earlier population of Hokan-speaking peoples. The exact time of their entry into the region is not known; however, they were present in southern California during the final phase of prehistory. During this period, known as the "Late Period," population densities were higher than before and settlement became concentrated in villages and communities along the coast and interior valleys (Erlandson 1994; McCawley 1996). Regional subcultures also started to develop, each with its own geographical territory and language or dialect (Kroeber 1925; McCawley 1996; Moratto 1984). These were most likely the basis for the groups encountered by the first Europeans during the eighteenth century (Wallace 1978). Despite the regional differences, many material culture traits were shared among groups, indicating a great deal of interaction (Erlandson 1994). The introduction of the bow and arrow into the region sometime around 1,500 to 1,000 years BP is indicated by the presence of small projectile points (Moratto 1984).

\subsection*{1.2.2 Ethnohistory}

The project area is located in a disputed region known to have been utilized by three different Native American Groups: the Cahuilla of the deserts and San Bernardino Valley, the Luiseno of the Perris-Lake Elsinore region, and the Serrano of the San Bernardino Mountains area. All three groups probably utilized the region at times; therefore, each group is described in more detail below.

Results of Archaeological Test Prograne:
CA-RIV-7284/H AND CA-RIV-7285, Moreno Valley, Riverside County, California
Cahuilla
Cahuilla territory was bounded on the north by the San Bernardino Mountains, on the east by the Orocopia Mountains, on the west by the Santa Ana River, the San Jacinto Plain and the eastern slope of the Palomar Mountains, and on the south by Borrego Springs and the Chocolate Mountains (Bean 1978).

The diversity of the territory provided the Cahuilla with a variety of foods. It has been estimated that the Cahuilla exploited more than 500 native and non-native plants (Bean and Saubel 1972). Acorns, mesquite, screw beans, pinion nuts, and various types of cacti were used. A variety of seeds, wild fruits and berries, tubers, roots, and greens were also a part of the Cahuilla diet. A marginal agricultural existence provided corn, beans, squashes, and melons. Rabbits and small animals were also hunted to supplement the diet. During high stands of Ancient Lake Cahuilla, fish, migratory birds, and marshland vegetation were also taken for sustenance and utilitarian purposes (Bean 1978).

Structures within permanent villages ranged from small brush shelters to dome-shaped or rectangular dwellings. Villages were situated near water sources, in the canyons near springs, or on alluvial fans at man-made walk-in wells (Bean 1972). Mortuary practices entailed cremation of the dead. Upon a person's death, the body was bound or put inside a net and then taken to a place where the body would be cremated. Secondary interments also occurred. A mourning ceremony took place about a year after a person's death. During this ceremony, an image of the deceased was burned along with other goods (Lando and Modesto 1977; Strong 1929).

Precontact Cahuilla population has been estimated as low as 2,500 to as high as 10,000 . At the time of first contact with Europeans, around 1774, the Cahuilla numbered approximately 6,000 . Although they were the first to come into contact with the Cahuilla, the Spanish had little to do with those of the desert region. Some of the Cahuilla who lived in the plains and valleys west of the desert and mountains, however, were missionized through the asistencia located near present day San Bernardino. Cahuilla political, economic, and religious autonomy was maintained until 1877 when the United States government established Indian reservations in the region. Protestant missionaries came into the area to convert and civilize the Native American population. During this era, traditional cultural practices, such as cremation of the dead, were prohibited. Today, the Cahuilla reside on eight separate reservations in southern California, located from Banning in the north to Warner Springs in the south and from Hemet in the west to Thermal in the east (Bean 1978).

\section*{Luiseño}

The project area is located in the territory known ethnographically to have been occupied by the Luiseño, a Takic-speaking people. The Spanish gave the name Luisenfo to the native groups who were living in the area under influence of Mission San Luis Rey (Bean and Shipek 1978).

The Luiseño lived in sedentary and autonomous village groups, each with specific subsistence territories encompassing hunting, collecting, and fishing areas. Villages were typically located in valley bottoms, along streams, or along coastal strands near mountain ranges where water was available and village defense was possible. Inland populations had access to fishing and gathering sites on the coast, which they used during the winter months (Bean and Shipek 1978).

Luiseño subsistence was centered on the gathering of acorns, seeds, greens, bulbs, roots, berries, and other vegetal foods. This was supplemented with hunting mammals such as deer, antelope, rabbit, woodrat, ground squirrels, and mice, as well as quail, doves, ducks, and other birds. Bands along the coast also exploited marine resources, such as sea mammals, fish, crustaceans, and mollusks. Inland, trout and other fish were taken from mountain streams (Bean and Shipek 1978).

Hunting was done both individually and by organized groups. Tool technology for food acquisition, storage, and preparation reflects the size and quantity of items procured. Small game was hunted with the use of curved throwing sticks, nets, slings, or traps. Bows and arrows were used for hunting larger game. Dugout canoes, basketry fish traps, and shell hooks were used for near-shore ocean fishing. Coiled and twined

Results of Archaeological Test Program: CA-RIV-7284/H AND CA-RIV-7285, Moreno Valley, Riverside County, Caljornia
baskets were made for food gathering, preparation, storing, and serving. Other items used for food processing included large shallow trays for winnowing chaff from grain, ceramic and basketry storage containers, manos and metates for grinding seeds, and ceramic jars for cooking (Bean and Shipek 1978).

Villages had hereditary chiefs who controlled religious, economic, and territorial activities (Bean and Shipek 1978; Boscana 1933). An advisory council of ritual specialists and shamans was consulted for environmental and other knowledge. Large villages located along the coast or in inland valleys may have had more complex social and political structures than settlements controlling smaller territories (Bean and Shipek 1978; Strong 1929).

Most Luiseño villages contained a ceremonial structure enclosed by circular fencing located near the center of the village. Houses were semisubterranean and thatched with locally available brush, bark, or reeds. Earth-covered semisubterranean sweathouses were also common and were used for purification and curing rituals (Bean and Shipek 1978).

The Luiseño first came into contact with Europeans in 1769 when the expedition led by Gaspar de Portolá arrived in their territory. That same year, the San Diego Mission was established just to the south, followed by the San Juan Capistrano Mission in 1776 and the San Luis Rey Mission in 1798. Poor living conditions at the missions and introduced European diseases led to a rapid decline of the Luiseño population. Following the Mission Period (1769-1834), Luiseffo Indians scattered throughout southern California. Some became serfs on the Mexican ranchos, others moved to newly founded pueblos established for them, some sought refuge among inland groups, and a few managed to acquire land grants. Later, many moved to or were forced onto reservations. Although many of their cultural traditions had been suppressed during the Mission Period, the Luiseño were successful at retaining their language and certain rituals and ceremonies. Starting in the 1970s, there was a revival of interest in the Luiseno language and classes were organized. Since then, traditional games, songs, and dances have been performed, traditional foods have been gathered and prepared, and traditional medicines and curing procedures have been practiced (Bean and Shipek 1978).

\section*{Serrano}

Ethnographic accounts indicate that the Serrano were the dominant group of Native Americans in the region that includes the project area. The Serrano occupied an area in and around the San Bernardino Mountains between approximately 1,500 and 11,000 feet above mean sea level. Their territory extended west into the Cajon Pass, east as far as Twentynine Palms, north to Victorville, and south to the Yucaipa Valley. The Serrano were mainly hunters and gatherers who occasionally fished. Game that was hunted included mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Vegetable staples consisted of acorns, piñon nuts, bulbs and tubers, shoots and roots, berries, mesquite, barrel cacti, and Joshua tree (Bean and Smith 1978a).

A variety of materials were used for hunting, gathering, and processing food, as well as for shelter, clothing, and luxury items. Shells, wood, bone, stone, plant materials, and animal skins and feathers were used for making baskets, pottery, blankets, mats, nets, bags and pouches, cordage, awls, bows, arrows, drills, stone pipes, musical instruments, and clothing (Bean and Smith 1978a).

Settlement locations were determined by water availability, and most Serranos lived in small villages near water sources. Houses and ramadas were round and constructed of poles covered with bark and tule mats (Kroeber 1925). Most Serrano villages also had a ceremonial house used as a religious center. Other structures within the village might include granaries and sweathouses (Bean and Smith 1978a).

The Serrano were loosely organized along patrilineal lines and associated themselves with either the Tukum (wildcat) or the Wahilyam (coyote) moiety. Organization of individual bands of Serrano was considered by Kroeber (1925) to be similar to political groups. Tribes, as opposed to bands, were larger in numbers, and were distinguished from each other by having distinct dialects. Unlike, bands, tribes often had names that were more than merely a designation for the place where they lived (Kroeber 1925).

Partly due to their mountainous inland territory, contact between Serrano and European-Americans was minimal prior to the early 1800s. In 1819, a Capilla (chapel) was established near present-day Redlands and was used to help relocate many Serrano to Mission San Gabriel. However, small groups of Serrano remained in the area northeast of the San Gorgonio Pass and were able to preserve some of their native culture. Today, most Serrano live either on the Morongo or San Manuel reservations (Bean and Smith 1978a).

\section*{Tongva (Gabrielino)}

Ethnographic accounts of Native Americans indicate that the Tongva (or Gabrielino) once occupied the region that encompasses the project area. At the time of contact with Europeans, the Tongva were the main occupants of the southern Channel Islands, the Los Angeles basin, much of Orange County, and extended as far east as the western San Bernardino Valley. The term "Gabrielino" came from the group's association with Mission San Gabriel Arcangel, established in 1771, However, today the group prefers to be known by their ancestral name, Tongva. The Tongva are believed to have been one of the most populous and wealthy Native American tribes in southern California prior to European contact, second only to the Chumash (Bean and Smith 1978b; McCawley 1996; Moratto 1984).

The Tongva occupied numerous villages with populations ranging from 50 to 200 inhabitants. Residential structures within the villages were domed, circular, and made from thatched tule or other available wood. Kinship groups, with each group composed of several related families who together owned hunting and gathering territories, organized Tongva society. Settlement patterns varied according to the availability of floral and faunal resources (Bean and Smith 1978b; McCawley 1996; Miller 1991)

Vegetal staples consisted of acorns, chia, seeds, piñon nuts, sage, cacti, roots, and bulbs. Animals hunted included deer, antelope, coyote, rabbits, squirrels, rodents, birds, and snakes. The Tongva also fished (Bean and Smith 1978b; McCawley 1996; Miller 1991).

By the late 18th century, Tongva population had significantly dwindled due to introduced diseases and dietary deficiencies. Tongva communities near the missions disintegrated as individuals succumbed to Spanish control, fled the region, or died. Later, many of the Tongva fell into indentured servitude to AngloAmericans. By the early 1900s, few Tongva people had survived and much of their culture had been lost (Bean and Smith 1978b; McCawley 1996; Miller 1991). However, in the 1970s, a revival of the Tongva culture began which continues today with growing interest and support.

\subsection*{1.2.3 History}

The first significant European settlement of California began during the Spanish Period (1769 to 1821) when 21 missions (including the San Bernardino Asistencia, built around 1830 as a branch of the San Gabriel Mission) and 4 presidios were established between San Diego and Sonoma. Although located primarily along the coast, the missions dominated economic and political life over the majority of the California region during this period. The purpose of the missions was primarily Indian control, along with economic support to the presidios, forced assimilation of the Indians to Hispanic society, and conversion of the native population to Spanish Catholicism (Castillo 1978; Cleland 1941).

The Mexican Period (1821 to 1848) began with the success of the Mexican Revolution in 1821, but changes to the mission system were slow to follow. When secularization of the missions occurred in the 1830s, the vast land holdings of the missions in California were divided into large land grants called ranchos. The Mexican government granted ranchos throughout California to Spanish and Hispanic soldiers and settlers (Castillo 1978).

In 1848, the Treaty of Guadalupe Hidalgo ended the Mexican-American War and marked the beginning of the American Period (1848 to present). The discovery of gold the same year initiated the 1849 California Gold Rush, bringing thousands of miners and settlers to California, most of whom settled in the north. For those settlers who chose to come to southern California, much of their economic prosperity was fueled by

Results of Archaeological Test Program:
CA-RIV-7284/H AND CA-RIV-7285, Moreno Valley, Rnerside County, California
cattle ranching rather than by gold. This prosperity, however, came to a halt in the 1860s as a result of severe floods and droughts, which put many ranchos into bankruptcy (Castillo 1978; Cleland 1941).

\subsection*{1.2.4 Project Area History}

In 1850, California became a state and the large Spanish land grant of San Jacinto Nuevo y Potrero became public land, developed by ranchers and traveled over by John Butterfield's legendary but shortlived Overland Mail Company. His Tucson-to-San Francisco stage, via San Diego and Los Angeles, opened up the Temescal approach to Los Angeles, passing through the oak groves of what is now Perris Valley, continuing through what is now Moreno Valley, and over Reche Canyon into Redlands.

In 1883, Frank E. Brown formed the Bear Valley Land and Water Company. Brown ("Brown" is "Moreno" in Spanish) built a dam at Bear Valley in the San Bernardino Mountains and contracted to provide water to the tiny, and new communities of Moreno and Alessandro.

Histories of the Moreno Valley area state that when water was piped from Bear Dam in Big Bear Lake to the Moreno region in 1891 by the Bear Valley and Alessandro Development Co., land was sold for ten times the price of what it had been just months before and there was a veritable "land boom" as the population reached 500 residents. By 1893, Moreno had four brick buildings, a weekly newspaper, a \(\$ 5,000\) school building, a hotel, livery stable, two churches, a pharmacy and a literary society. Groves of orange trees, olives, apricots, peaches and garden crops were established around farmsteads that had been built in the region. The water stopped flowing in the early 1900 s .

As a result of the loss of water delivery, many of the over 500 residents of Moreno Valley were forced to leave the area in search of a more livable environment. The more expensive homes were removed from their foundations, and moved in their entirety by steam-powered tractors. Many of them were relocated to the city of Riverside. Others, stolen during the owner's absence, were relocated to parts unknown. By 1901, few people resided in the Moreno Valley, and those who remained turned primarily to the dry farming of hay, grain, and grapes. Mr. Brown had lost his dream, and the valley named after him remained as a reminder of the regions vulnerability to such simple needs as water.

\section*{SECTION 2 - OBJECTIVES AND METHODS}

\subsection*{2.1 OBJECTIVES}

As stated in the Introduction, the purpose of the test programs at CA-RIV-7284/H and CA-RIV-7285 was to determine whether the sites were significant and, if so, to obtain information necessary to plan a data recovery program, if avoidance is not feasible. The CEQA guidelines (California Code of Regulations, Section 15064.5) state that a project that causes a substantial adverse change in the significance of an historical resource is considered to have a significant effect on the environment unless mitigated. Historical resources are defined as buildings, structures, districts, sites, or objects that are eligible for the California Register of Historical Resources. The eligibility criteria for the California Register are similar to those for the National Register of Historic Places. CRHR Criterion D states that eligible sites are those that have "yielded, or may be likely to yield, information important in prehistory or history." In practice, this means that sites that have the potential to yield data relevant to important research questions are eligible. The CEQA guidelines state that the CEQA lead agency makes the determination of eligibility for the California Register based on the results of the test program.

\subsection*{2.1.1 Research Topics}

Given the lack of previous problem-oriented research for the Late Period in this area of Riverside County, not enough information is available to formulate specific research questions. However, the sites can be considered eligible for the California Register if they have the potential to yield significant data with which to address at least some of the following research topics:
- Site type and activities
- Internal site organization
- Subsistence
- Chronology
- Trade and exchange

\section*{Site Type and Activities}

Beginning in the Millingstone Period there appears to have been a shift from relatively mobile groups to that of increasingly formal territories with a seasonal round (Altschul and Grenda 2002). By the Late Period there were, perhaps, four site types: base villages, summer villages, temporary resource procurement camps, and bedrock mortar grinding stations with no evidence for overnight stays. In order to determine site type and reconstruct some of the activities performed at sites, the variety and density of artifacts and subsistence remains and the number and variety of features will be investigated.

\section*{Internal Site Organization}

Different activities may have been performed in different areas within a site. Were male and female activities performed in different areas of the site? Were ceremonial activities segregated from subsistence tasks? Internal spatial organization is studied by plotting the spatial distribution of artifact categories and types, subsistence remains, and features. If a site is small and there are few categories that do not vary spatially, this domain cannot be addressed.

\section*{Subsistence}

Subsistence refers to the foods consumed and how they were procured and processed. What animal and plant foods were processed and consumed at the site? Was there specialization in a particular kind of food? Is there evidence for intensification of food production? Specialization would be indicated by large numbers of the remains of a single species. Intensification is indicated by reliance on resources that require greater amounts of labor to procure or process. These are added to the diet when population increases and procurement activities are limited to a local territory. To address questions about
subsistence, a reliable sample of plant or animal subsistence remains is necessary.

\section*{Chronology}

It has been assumed that sites in this area were occupied during the Late Period by the Luiseno, Serrano, or the Tongva. The period of occupation can be addressed if sufficient charcoal is present for radiocarbon dating.

\section*{Trade and Exchange}

The occupants of sites in the Inland Empire had access to items from other regions. These items included obsidian from the northeast and southeast interior, and shell beads from the California coast and possibly from the Gulf of California. The source of obsidian can be determined through geochemical tests. It can be ascertained whether Olivella shell beads came from the California coast or the Gulf of California by determining whether they were manufactured from Olivella biplicata shells (California coast) or Olivella dama shells (Sea of Cortes).

\section*{Summary}

The results from the test program at each site will not directly address these research domains, but the test program results will be used to evaluate whether the site has the potential to yield data with which to address them during a data recovery program. If so, the site will be considered eligible for the California Register. The test program is also designed to provide information on subsurface site boundaries, the integrity of subsurface deposits, and the internal distribution of concentrations of subsurface cultural material. This information is necessary to adequately plan a data recovery program if one should become necessary.

\subsection*{2.2 METHODS}

The methods for the test programs at CA-RIV-7284/H and CA-RIV-7285 included a surface collection, documentation of all milling features, excavation of shovel test pits (STPs), excavation of 1-by-1-meter test units (at CA-RIV-7284/H), mechanical trenching (also at CA-RIV-7284/H only), and cataloging and analysis of the recovered artifacts. The fieldwork at CA-RIV-7284/H and CA-RIV-7285 was performed between June 26 and 28, 2003, and was directed by Jay Sander, M.A., Chambers Group Senior Archaeologist and Field Director. Other project personnel are listed in Section 7.

\subsection*{2.2.1 CA-RIV-7284/H}

Where possible, two STPs were excavated at judgmentally placed locations adjacent to each of the granite boulder milling stations. A total of 15 STPs were excavated in 25 -centimeter (cm) levels to a maximum depth of 50 cm or until bedrock was encountered. Three STPs, not associated with any features, were placed 10 meters apart in a judgmentally selected area between the historic and prehistoric features. No STPs were placed in the vicinity of Feature 6 due to a paucity of soil and none were placed near Feature 8 ; instead, a 1-by-1-meter test unit was excavated near the southwest edge of that feature. Additionally, a second 1-by-1-meter test unit was placed in-between the two manos that were found on the ground surface. Finally, two backhoe trenches were placed in the vicinity of the historic-period component of the site (see Figure 3).

Excavated material was passed through \(1 / 8^{\text {th }}\) inch mesh. All material remaining in the screen was carefully sorted in the field for identification and potential cataloging.

All bedrock milling features were mapped, measured, and photographed. For each bedrock outcrop with milling features, a map was made of the surface of the outcrop showing the relationship and sizes of the milling features.


Results of Archaeological Test Program:

\subsection*{2.2.2 CA-RIV-7285}

Three STPs were excavated at CA-RIV-7285. These included one each adjacent to the two granite outcrops (Features 1 and 2) containing milling features, as well as one at the base of an outcrop near Feature 1 that could conceivably have been used as a small sun or wind shelter (see Figure 4).

Excavated material was passed through \(1 / 8^{6 \pi}\) inch mesh. All material remaining in the screen was carefully sorted in the field for identification and potential cataloging.

All bedrock milling features were mapped, measured, and photographed. For each bedrock outcrop with milling features, a map was made of the surface of the outcrop showing the relationship and sizes of the milling features.


\section*{SECTION 3 - RESULTS}

\subsection*{3.1 CA-RIV-7284/H}

There are eight milling stations at this site. Feature 1 is on the west side and Features 2 through 8 form an arc from the southwest corner to the east edge of the site. The boulders range in size from 10 cm to 300 cm high and from 90 cm to 400 cm across. None of the eight features exhibited more than one slick. In general, most of the slicks appeared to only be moderately well formed.

Surface items collected from the surface of CA-RIV-7284/H included one unifacial granite mano fragment and one granite cobble with both a single ground surface and a moderately well-battered end. Neither artifact appeared to be shaped other than through casual use. No flaked stone was observed at the site.

The historic-period component of the site is comprised of structural features, an electric well pump, and a trash scatter that is dominated by 1940-1960s refuse. Also noted were a few fragments of sun-colored amethyst glass which dates to between the late 1800s and early 1900s. The structural features include dry-lain rock alignments, a concrete and rock wall built into the side of a hill, two small concrete slabs, and a concrete cistern surrounding a natural spring. One of the stones used as building material in the dry-lain rock wall is a prehistoric metate made from locally available schist. These remaining features all appear to be fairly insubstantial.

None of the 15 STPs yielded cultural material. The soil was found to be extremely disturbed sandy silt, often with modern trash well into the second 25 cm level. Of the 12 STPs associated with features, six went down 50 cm and the remaining encountered bedrock at between 9 and 32 cm below ground surface. All three STPs not associated with milling features were excavated to 50 cm below surface.

Unit 1 was located next to Feature 8. The unit was excavated through loose to moderately-well compacted sandy silt using a mattock and shovel to a depth of 40 cm below surface where decomposing granite was encountered. One abalone shell button was found in the 10 to 20 cm level. Aside from that, no prehistoric or historic-period artifacts were found. No discernible stratigraphy was apparent in the unit sidewalls.

Unit 2 was located between the two manos found on the surface, next the western end of the site. The unit was excavated through loose to moderately-well compacted sandy silt using a mattock and shovel to a depth of 30 cm below surface where granite bedrock was encountered. No cultural material was found and no discernible stratigraphy was apparent in the unit sidewalls.

The site was likely used as a temporary resource procurement and processing location. The ephemeral nature of the milling features and near-total absence of artifacts suggests that it is not likely that people stayed overnight and that this location was not used often.

\subsection*{3.2 CA-RIV-7285}

There are a total of two outcrops that contain milling features at CA-RIV-7285, as well as one boulder large enough to serve as a wind or sun shelter. Feature 1, the larger outcrop of the two, measures 4.5 meters in diameter. There is one milling slick measuring 50 by 60 cm . The most interesting ting about this boulder is that it has split in two pieces with the brake running through the middle of the slick. The smaller of the two portions has since shifted 50 cm away from the larger. Feature 2 measures 3.2 meters in diameter and contains two slicks, one of which is nearly 1 meter across.

One STP was placed adjacent to each of the 2 bedrock milling features. A third STP was placed next to the boulder that appeared to have potential as a temporary shelter. All three STP were excavated down to 50 cm below surface. None yielded cultural remains of any type. Also, no artifacts were found on the surface of the site. A-RIV-7285 appears to be a limited-use bedrock mortar grinding station no evidence for overnight stays.

\section*{SECTION 4-SIGNIFICANCE}

\subsection*{4.1 CA-RIV-7284/H}

Almost all cultural material at CA-RIV-7284/H was found on the surface-none of it prehistoric. The cultural material on the surface of the site has already been analyzed and the bedrock milling features have been recorded. If there is any subsurface cultural material remaining at CA-RIV-7284/H, it likely has very limited research potential. The recovered cultural material is not sufficient to address the research topics discussed in Section 2.1. The site type and activities topic has been adequately addressed using the data already recovered from the surface (see Section 3.1). The unit and STP results indicate that subsurface data are not present with which to address the research topics of internal site organization, subsistence, chronology, and trade and exchange. The distribution of the two manos would not provide sufficient information to investigate internal site organization at CA- RIV-7284/H. No animal bone was found, suggesting that data from further subsurface investigation would be inadequate to address the subsistence research topic. It is likely that this site dates to the Late Period and was used by people ancestral to either the Cahuilla, Serrano, or Tongva people. No items that would have been traded or exchanged were recovered from CA- RIV-7284/H.

Because the site type and activities topic has been adequately addressed using data from the test program and the data potential is not adequate to address the other research topics, CA- RIV-7284/H is evaluated as not eligible for the California Register of Historical Resources.

The in-depth property research carried out for the parcel (see Appendix A) similarly demonstrates that the historic component of the site fails to meet any of the criteria for inclusion to the NRHP or CHRP. For this reason, again, CA-RIV-7284/H is evaluated as not eligible for the California Register of Historical Resources.

\subsection*{4.2 CA-RIV-7285}

No cultural material was found subsurface at CA-RIV-7285. Because the site type and activities topic has been adequately addressed using data from the surface of the site and there is no additional subsurface data potential with which to address other research topics, CA-RIV-7285 is evaluated as not eligible for the California Register of Historical Resources.

Results of Archaeological Test Program:

\section*{SECTION 5 -RECOMMENDATIONS}

Because CA-RIV-7284/H and CA-RIV-7285 do not appear to be eligible for the California Register of Historical Resources, mitigation through preservation or data recovery is not necessary. Furthermore, the results of the test program showed that there is no significant subsurface cultural material associated with the sites. However, any trenching, grading, or other ground surface-disturbing activity within 30 meters (100 feet) of the site boundaries should be monitored by a qualified archaeologist who shall have the power to divert or halt grading if features or other potentially important cultural material are encountered. Such features or material should then be evaluated and recovered, if necessary.

\section*{SECTION 6 - REFERENCES CITED}
Altschul, Jeffery, H. and Donn R. Grenda (eds.)2002 Islanders \& Mainlanders: Prehistoric Context for the Southern Califomia Bight. SRI Press,Tucson.
Avif̃a, Rose H.1976 Spanish and Mexican Land Grants in California. Arno Press. New York.
Bean, Lowell J.1972 Mukat's People: The Cahuilla Indians of Southem Califomia. University of CaliforniaPress, Berkeley.1978 Cahuilla. In Handbook of North American Indians, Volume 8, California. Edited by RobertF. Heizer, pp. 575-587. W.C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.
Bean, Lowell J. and Katherine S. Saubel1972 Temalpakh: Cahuilla Indian Knowledge and Use of Plants. Malki Museum, Banning,California.
Bean, Lowell J. and F.C. Shipek1978 Luiseño. In Handbook of North American Indians, Volume 8: Califomia. Edited by R.F.Heizer, pp. 550-563. Smithsonian Institution, Washington, D.C.
Bean, Lowell J. and Charles R. Smith1978a Serrano. In Handbook of North American Indians, Volume 8, Califormia, pp. 570-574.Edited by Robert F. Heizer. Smithsonian Institution, Washington, D.C.
1978b Tongva. In Handbook of North American Indians, Volume 8, California,
pp. 538-549. Edited by R.F. Heizer. William C. Sturtevant, general editor. Smithsonian Institution,Washington DC.
Castillo, Edward D.1978 The Impact of Euro-American Exploration and Settlement. In Handbook of NorthAmerican Indians, Volume 8, Califomia, edited by R.F. Heizer, pp. 99-127. William C. Sturtevant,general editor. Smithsonian Institution, Washington D.C.
Cleland, Robert \(\mathbf{G}\).1941 The Cattle on a Thousand Hills: Southern California, 1850-1870. Huntington Library, SanMarino, California.
Erlandson, Jon M.
1994 Early Hunter-Gatherers of the California Coast. Plenum Press, New York.
Grenda, Donn R.1997 Continuity \& Change: 8,500 Years of Lacustrine Adaptation on the Shores of LakeElsinore. Technical series 59, Statistical Research, Inc., Tucson. Submitted to the U. S. ArmyCorps of Engineers, Los Angeles District, Los Angeles, California. Report on file at the EasternInformation Center, University of California, Riverside.
Gunther, Jane D.
1984 Riverside County, California Place Names: Their Origins and Their Stories. RubidouxPrinting Company, Riverside.

Horne, Melinda, C., Dennis P. McDougall, Jill Onken, P. Vandiver, William Spaulding, R. McKim, and S. Anderson
n.d. Early Archaic Settlement and Subsistence in the San Jacinto Valley, Riverside County, California. Applied Earthworks, Inc., Hemet. Draft report in progress for the Metropolitan Water District of Southern California, Los Angeles.

Koerper, Henry C., Adelle Schroth, and Roger Mason
1991 Early Holocene Adaptations and the Transitional Phase Problem: Evidence from the Allan O. Kelly Site, Aqua Hedionda Lagoon. In, Hunter-Gatherers of Early Holocene Coastal California, edited by John M. Erlandson and R. H. Colten, pp. 43-62. Perspectives in California Archaeology, Vol. 1. Institute of Archaeology, University of California, Los Angeles.

Kroeber, Alfred L.
1925 Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Smithsonian Institution, Washington DC.

Lando, Richard and Ruby E. Modesto
1977 Temal Wakhish: A Desert Cahuilla Village. Journal of California Anthropology 4:95-112.
McCawley, William
1996 The First Angelinos: the Gabrielino Indians of Los Angeles. Malki Museum Press, Morongo Indian Reservation, Banning, California.

McDougall, Dennis, Melinda Horne, and Jay Sander
2003 Cultural Resources Survey of a Portion of the Lake Mathews Inundation Zone. Applied Earthworks, Inc., Hemet. Report prepared for the Metropolitan Water District of Southern California. Report on file at the Eastern Information Center, University of California Riverside.

Miller, Bruce W.
1991 The Gabrielino. Sand River Press, Los Osos, California.
Moratto, Michael J.
1984 California Archaeology. Academic Press, Inc. (Harcourt, Brace, Jovanovich, Publishers), Orlando, Florida.

Parr, Robert E. and Mark Q. Sutton
1991 "Invisible Archaeological" Deposits at Small Milling Sites. Journal of California and Great Basin Anthropology 13(2):279-283.

Smallwood, Josh and Miriam Dahdul
2007 Historical/Archaeological Resources Survey Report: Tentative Tract Map No. 33626, City of Moreno Valley, Riverside County, California. CRM Tech, Colton. On file at the Eastern Information Center, University of California, Riverside.

Strong, W.D.
1929 Aboriginal Society in Southern California. University of California Publications in American Archaeology and Ethnology 26(1):1-358.

Wallace, William
1978 Post Pleistocene Archaeology, 9000 to 2000 B.C. Handbook of North American Indians 8:26-36. Smithsonian Institution, Washington, D.C.

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HISTORIC RESOURCES ASSESSMENT REPORT
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APN: 256-150-001-4 \\ Moreno Valley, California 92555
}

\section*{Historic Resources Survey and Evaluation}

Prepared by Pamela Daly, M.S. Sr . Architectural Historian Chambers Group Inc. 302 Brookside Avenue Redlands, CA 92373

July 2007

\section*{1. INTRODUCTION}

\section*{A. INTRODUCTION}

This assessment report documents and evaluates the federal, state, and local significance and eligibility of the historic agricultural features located at Gernert Road, Moreno Valley, Riverside County, California. The report includes a discussion of the survey methodology used, a brief historic context of the property and surrounding area, and the identification and formal evaluation of the subject property.

The subject features consists a site with both prehistoric and historic resources located approximately 1,280 feet east of Gernert Road and 480 feet north of Jennings Court. (See Figure 1.) The historic-period features of the site have been surveyed (CRM Tech, 2007) and are considered to be associated with a late \(19^{\text {th }}\)-century or early \(20^{\text {th }}\)-century homestead. The features include dry-laid rock walls, a cellar constructed of large rocks and mortar, two small, formed concrete foundations, a well, a cistern, metal pipes, and concrete culvert pipe.

The site is reached by going north on Morton Road from the intersection with Box Spring Road, until the road bears to the left (west). There is a dirt driveway heading north up towards the base of the hills at the point where Morton Road heads west. The driveway goes up (north) the hillside and then heads to the east for 200 feet. The drive ends at the site. (See Figure 2.)

\section*{B. BACKGROUND INFORMATION}

The subject property was previously surveyed and identified as a historic resource by CRM Tech in April 2007 and identified by the Eastern Information Center as site CA-RIV-7284/H (33-15937). The historic resources were included in the survey for identification purposes only and were not evaluated for eligibility for listing in the National Register of Historic Places, California Register of Historical Resources, or for designation under a local ordinance.

In 2002, CRM Tech prepared an archaeological mitigation report for Tentative Tract 26901 (containing site CA-RIV-6943/H), Project No. PO 1-005, City of Moreno Valley, Riverside County. This report was prepared in anticipation of a housing development that was planned, and later constructed, immediately to the east of the property under investigation in the current project. The historic resources investigated in the 2002 report were found to be the remains of a late nineteenth-century homestead owned by Cecil R. G. Webbe.

\section*{C. METHODOLOGY}

This historic resource assessment was conducted by Pamela Daly, M.S., Senior Architectural Historian. In order to identify and evaluate the subject property as a potential historic resource, a multi-step methodology was utilized. Site inspection Packet Pg. 884
review of tax assessor records of the prior existing buildings were performed to document existing conditions and assist in assessing and evaluating the property for significance. An intensive-level pedestrian survey of the property, including photography and background research, was also conducted. The National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), and the City of Moreno Valley Landmark or Structure of Merit criteria were employed to evaluate the significance of the property. In addition, the following tasks were performed for the study:
- The National Register of Historic Places, the California Historical Resources Inventory, and the City of Moreno Valley Historic Resources Inventory were searched.
- Site-specific research was conducted on the subject property utilizing maps, city directories, newspaper articles, historical photographs, and other published sources.

Ordinances, statutes, regulations, bulletins, and technical materials relating to federal, state, and local historic preservation, designation assessment processes, and related programs were reviewed and analyzed.

\section*{2. REGULATORY FRAMEWORK}

Historic resources fall within the jurisdiction of several levels of government. Federal laws provide the framework for the identification, and in certain instances, protection of historic resources. Additionally, states and local jurisdictions play active roles in the identification, documentation, and protection of such resources within their communities. The National Historic Preservation Act (NHPA), of 1966 as amended, and the California Register of Historical Resources (CRHR), are the primary federal, state, and local laws and regulations governing the evaluation and significance of historic resources of national, state, regional, and local importance. A description of these relevant laws and regulations are presented below.

\section*{A. FEDERAL LEVEL}

\section*{1. National Register of Historic Places}

First authorized by the Historic Sites Act of 1935, the National Register of Historic Places (National Register) was established by the National Historic Preservation Act of 1966, as "an authoritative guide to be used by Federal, State, and local governments, private groups and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment." \({ }^{11}\) The National Register recognizes properties that are significant at the national, state and local levels. Further discussion of National Register criteria and guidelines is provided in Section III, Environmental Setting, of this document.

\section*{B. STATE LEVEL}

The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the National Historic Preservation Act (NHPA) on a statewide level. The OHP also carries out the duties as set forth in the Public Resources Code (PRC) and maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state's jurisdictions.

\section*{1. California Register of Historical Resources}

Created by Assembly Bill 2881, which was signed into law on September 27, 1992, the California Register of Historical Resources (California Register) is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change." \({ }^{12}\) The criteria for eligibility for the California Register are based upon National Register criteria. \({ }^{3}\) Certain resources are determined by the statute

\footnotetext{
1 Code of Federal Regulations (CFR), 36 § 60.2.
2 California Public Resources Code § 5024.1(a).
}
to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register of Historic Places. \({ }^{4}\)

The California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:
- California properties listed on the National Register of Historic Places and those formally Determined Eligible for the National Register of Historic Places;
- California Registered Historical Landmarks from No. 770 onward;
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register. \({ }^{5}\)

Other resources which may be nominated to the California Register include:
- Individual historical resources;
- Historical resources contributing to historic districts;
- Historical resources identified as significant in historical resources surveys with significance ratings of Category 1 through 5 ;
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as a historic preservation overlay zone. \({ }^{6}\)

\section*{C. LOCAL LEVEL}

\section*{1. City of Moreno Valley}

The City of Moreno Valley, through provisions in the Moreno Valley Municipal Code, has established processes to preserve its designated historic resources. The provisions of the Moreno Valley Municipal Code relative to historic preservation (Title 7 Cultural Preservation), present a planning tool to promote the public health, safety and general welfare of its constituents by providing for the preservation, identification, protection, enhancement and perpetuation of existing historic resources.

Section 7.01.010 of the Ordinance defines a historic resource as any site, building, structure, area or place, signs, objects, features, districts, neighborhoods, streets and natural features having special cultural, historical, archaeological,

\footnotetext{
4 California Public Resources Code § 5024.1 (d).
\({ }^{5}\) California Public Resources Code § 5024.1(d).
6 California Public Resources Code § 5024. 1(e).
}

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architectural or community value in the city. Section 7.05 .010 defines a Landmark or Structure of Merit as any site, including significant trees or other significant permanent landscaping located thereof, place, building, structure, street, improvement, natural feature or other object having a special historical, archaeological, paleontological, cultural, architectural or community value in the city.

Listing a Landmark or Structure of Merit in the City of Moreno Valley does not preclude a historic resource from being removed from the local Register, nor from being altered or demolished. The City of Moreno Valley Director of Development and the Cultural Preservation Advisory Committee and its staff review recommendations and permits to delete, alter, relocate or demolish these historic resources. Sections 7.05.020 through 7.05 .100 of the City of Moreno Valley Municipal Code must be implemented if the rescission or modification of the landmark status of a historic resource and/or historic district is intended.

\section*{3. EVALUATION}

\section*{A. HISTORIC CONTEXT}

\section*{1. Moreno Valley \({ }^{7}\)}

In 1850, California became a state and the large Spanish land grant of San Jacinto Nuevo y Potrero became public land, developed by ranchers and traveled over by John Butterfield's legendary but short-lived Overland Mail Company. His Tucson-toSan Francisco stage, via San Diego and Los Angeles, opened up the Temescal approach to Los Angeles, passing through the oak groves of what is now Perris Valley, continuing through what is now Moreno Valley, and over Reche Canyon into Redlands.

In 1883, Frank E. Brown formed the Bear Valley Land and Water Company. Brown ("Brown" is "Moreno" in Spanish) built a dam at Bear Valley in the San Bernardino Mountains and contracted to provide water to the tiny, and new communities of Moreno and Alessandro.

Histories of the Moreno Valley area state that when water was piped from Bear Dam in Big Bear Lake to the Moreno region in 1891 by the Bear Valley and Alessandro Development Co., land was sold for ten times the price of what it had been just months before and there was a veritable "land boom" as the population reached 500 residents. By 1893, Moreno had four brick buildings, a weekly newspaper, a \(\$ 5,000\) school building, a hotel, livery stable, two churches, a pharmacy and a literary society. \({ }^{8}\) Groves of orange trees, olives, apricots, peaches and garden crops were established around farmsteads that had been built in the region. "It was a booming area in the late 1890's and early 1900's until the water was taken from the valley."9

As a result of the loss of water delivery, many of the over 500 residents of Moreno Valley were forced to leave the area in search of a more livable environment. The more expensive homes were removed from their foundations, and moved in their entirety by steam-powered tractors. Many of them were relocated to the city of Riverside. Others, stolen during the owner's absence, were relocated to parts unknown. By 1901, few people resided in the Moreno Valley, and those who remained turned primarily to the dry farming of hay, grain, and grapes. Mr. Brown had lost his dream, and the valley named after him remained as a reminder of the regions vulnerability to such simple needs as water.

\section*{2. Cecil R. G. Webbe}

There are five facts known about Cecil R. G. Webbe, who owned the parcel of land that is currently being investigated.

\footnotetext{
\({ }^{7}\) Excerpted from Moreno Valley, California, In the Beginning. Hamner, V.F. Page 123-126.
\({ }^{8}\) Riverside County, California, Place Names, Gunther, Jane D. page 33.
\({ }^{9}\) The Mabel Stoddard Story, compiled by Moreno Valley Jaycees, 1967.
}
1) A homestead with the name "Webbs" was identified on the GLO map dated 1853 - 1877. The homestead was located just to the east and south of the site presently being investigated. \({ }^{10}\) On February 20, 1884, Cecil R. G. Webbe was granted a 160 acre tract of land in Section 34, Township 2-South, Range 4-West, San Bernardino Meridian." Webbe would have been granted the patent after a 3 to 5 year application process. (The patent application and yearly "proof" interviews can be valuable documents for learning more about the person/s applying for the patent. Due to the 60 to 90 day length of time to receive a copy of the file from the National Archives, the applicant file information will be amended to this report after they are received.)
2) Cecil R. G. Webbe is listed in the Schedule of the Twelfth Census of the United States, June 1, 1900, as living in Moreno Township, Riverside County, California. He is recorded as the "Head of Household", Single, born in July 1827, 72 years old. He was born in Ireland, and gained citizenship to the United States in \(1873 .{ }^{12}\)
3) Webbe deeded his property to Charles H. Vosburg, a carpenter, living on Wainut Street near Tenth, in the city of Riverside, California. \({ }^{13}\) The transfer was made between 1895 and 1899. \({ }^{14}\)
4) On September 11, 1908, Cecil R. G. Webb, age 82, United State citizen, and rancher in Riverside, California, was traveling on the steamship City of Pueblo from Victoria, Canada to San Francisco, California. He had three pieces of baggage which may have meant that he had taken a journey of some length. \({ }^{15}\)

Out of these five facts, we can only conjecture a history of Cecil R. G. Webbe. \({ }^{16}\) According to Canadian immigration records, there was a large group of individuals with the last name of Webbe, which emigrated from Great Britain to Canada in 1871. This may be where Cecil's siblings settled, while he ventured into the United States, arriving here in 1873.

It appears that shortly thereafter, he settled on the land in Moreno Valley, establishing a small homestead. The navel orange had just been cultivated in 1873, and it sparked a booming citrus industry in the Riverside area. The land that Webbe had settled on, and is on the parcel being investigated in this report, had a natural

\footnotetext{
\({ }^{10}\) General Land Office map; 1855 to 1877.
\({ }^{\text {" }}\) Bureau of Land Management, General Land Office Records. http://www.glorecords.blm.gov.
\({ }^{12}\) Twelfih Census of the United States, Riverside County, Moreno Township, Sheet 5.
\({ }^{13}\) Twelfth Census of the United States, Riverside County, Riverside Township, Sheet 6.
\({ }^{\text {If }}\) CRM TECH, Archaeological Mitigation Report Tentative Tract 26901. Page 36.
\({ }^{15}\) Pacific Coast Steamship Company, S.S. City of Pueblo, passenger manifest, September 11, 1908.
\({ }^{16}\) This possible history is based on a review of all the records available on Ancestry.com. Records include census and immigration information for the United States, Great Britian and Canada; ship manifests, and oth records.
}
spring which would have been able to provide the needed irrigation in an area not serviced by the Redlands Water Co. or Gage canals. Webbe stayed with the parcel until the late 1890s when he sold the land to Charles H. Vosburg.

Webbe may have stayed on the land even after selling it to Vosburg, which would explain why he is listed on the 1900 Census as living in Moreno Township, and then why in 1908 on the ships manifest, he still refers to himself as a "rancher" in Riverside County. The ships manifest is used to support the theory that Cecil Webbe still had family in Canada. (The ships manifest also shows that Cecil was a man of considerable stamina, for he made this voyage from Riverside to San Francisco to Canada, and back again, when he was 82 years old.)

Unfortunately, no further information was found about Cecil after 1908. What we do know is that although Cecil Webbe was an industrious and adventurous immigrant to America, and would have braved many hardships establishing a homestead in the area that would become Riverside County and Moreno Valley; he is not noted as a person who made an impact on the early history of the region.

\section*{B. CRITERIA FOR EVALUATION OF HISTORIC RESOURCES}

In analyzing the historic significance of the subject property, criteria for designation under federal, State, and local landmark programs were considered. Additionally, the Office of Historic Preservation (OHP) survey methodology was used to survey and rate the relative significance of the property.

\section*{1. National Register of Historic Places}

To be eligible for listing in the National Register, the quality of significance in American history, architecture, archaeology, engineering, or culture must be in a district, site, building, structure, or object that possesses integrity of location, design, setting, materials, workmanship, feeling and association, and: \({ }^{17}\)
A. is associated with events that have made a significant contribution to the broad patterns of our history; or
B. is associated with the lives of persons significant in our past; or
C. embodies the distinctive characteristics of a type, period, or method of construction or that represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. yields, or may be likely to yield, information important to prehistory or history.

\footnotetext{
\({ }^{17}\) Guidelines for Completing National Register Forms, National Register Bulletin 16, U.S. Department of the Interior, National Park Service, September 30, 1986 ("National Register Bulletin 16"). This bulletin contains technical information on comprehensive planning, survey of cultural resources, and registration in the Register of Historic Places.
}

A property eligible for listing in the National Register must meet one or more of the four criteria (A-D) defined above. In addition, unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing.

In addition to meeting the criteria of significance, a property must have integrity. "Integrity is the ability of a property to convey its significance." \({ }^{" 18}\) According to National Register Bulletin 15, within the concept of integrity, the National Register criteria recognize seven aspects or qualities that, in various combinations, define integrity. To retain historic integrity a property will always possess several, and usually most, of these seven aspects. The retention of specific aspects of integrity is paramount for a property to convey its significance. \({ }^{19}\) The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association. The following is excerpted from National Register Bulletin 15, which provides guidance on the interpretation and application of these factors.
- Location is the place where the historic property was constructed or the place where the historic event occurred. \({ }^{20}\)
- Design is the combination of elements that create the form, plan, space, structure, and style of the property. \({ }^{21}\)
- Setting is the physical environment of a historic property. \({ }^{22}\)
- Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. \({ }^{23}\)
- Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. \({ }^{24}\)
\({ }^{18}\) National Register Bulletin 15, page 44.
\({ }^{19}\) Ibid
20 "The relationship between the property and its location is often important to understanding why the property was created or why something happened. The actual location of historic property, complemented by its setting is particularly important in recapturing the sense of historic events and persons. Except in rare cases, the relationship between a property and its historic associations is destroyed if the property is moved." Ibid.
\({ }^{21}\) "A property's design reflects historic functions and technologies as well as aesthetics. It includes such considerations as the structural system; massing; arrangement of spaces; pattern of fencstration; textures and colors of surface materials; type, amount, and style of ornamental detailing; and arrangement and type of plantings in a designed landscape. " Ibid
\({ }^{22}\) National Register Bulletin 15, page 45.
23 "The choice and combination of materials reveals the preferences of those who created the property and indicated the avallability of particular types of materials and technologies. Indigenous materials are often the focus of regional building traditions and thereby help define an area's sense of time and place. " Ibid.
24 "Workmanship can apply to the property as a whole or to its individual components. It can be expressed in vernacular methods of construction and plain finishes or in highly sophisticated configurations and or, detailing. In can be based on common traditions or innovative period techniques." Ibid.
- Feeling is property's expression of the aesthetic or historic sense of a particular period of time. \({ }^{25}\)
- Association is the direct link between an important historic event or person and a historic property. \({ }^{26}\)

In assessing a property's integrity, the National Register criteria recognize that properties change over time; therefore, it is not necessary for a property to retain all its historic physical features or characteristics. The property must, however, retain the essential physical features that enable it to convey its historic identity. \({ }^{27}\)

For properties that are considered significant under National Register criteria A and B, National Register Bulletin 15 states that a property that is significant for its historic association is eligible if it retains the essential physical features that made up its character or appearance during the period of its association with the important event, historical pattern, or person(s). \({ }^{28}\)

In assessing the integrity of properties that are considered significant under National Register criterion C, National Register Bulletin 15 provides that a property important for illustrating a particular architectural style or construction technique must retain most of the physical features that constitute that style or technique. \({ }^{29}\)

The primary effects of listing in the National Register on private property owners

\footnotetext{
\({ }^{25}\) "It results from the presence of physical features that, taken together, convey the property's historic character." Ibid.
\({ }^{26}\) "A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to the observer. Like feeling, associations require the presence of physical features that convey a property's historic character... Because feeling and association depend on individual perceptions, their retention alone is never sufficient to support eligibility of a property for the National Register." Ibid.
\({ }^{27}\) National Register Bulletin 15 , page 46.
\({ }^{25}\) Ibid.
23 "A property that has lost some historic materials or details can be eligible if it retains the majority of the features that illustrate its style in terms of the massing, spatial relationships, proportion, patter of windows and doors, texture of materials, and ornamentation. The property is not eligible, however, if it retains some basic features conveying massing but has lost the majority of features that once characterized its style." Ibid
}

\section*{2. California Register of Historical Resources}

To be eligible for the California Register, a historic resource must be significant at the local, state, or national level under one or more of the following four criteria:
1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

Additionally, a historic resource eligible for listing in the California Register must meet one or more of the criteria of significance described above and retain enough of its historic character or appearance to be recognizable as a historic resource and to convey the reasons for its significance. Historical resources that have been rehabilitated or restored may be evaluated for listing. \({ }^{31}\)

Integrity under the California Register is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. The resource must also be judged with reference to the particular criteria under which it is proposed for eligibility. It is possible that a historic resource may not retain sufficient integrity to meet criteria for listing in the National Register, but it may still be eligible for listing in the California Register. \({ }^{32}\)

\section*{3. California Office of Historical Preservation Survey Methodology}

The evaluation instructions and classification system prescribed by the California Office of Historic Preservation in its Instructions for Recording Historical Resources provide a three-digit evaluation rating code for use in classifying potential historic resources. The first digit indicates one of the following general evaluation categories for use in conducting cultural resources surveys:
1. Listed on the National Register or the California Register;
2. Determined eligible for listing in the National Register or the California Register;

\footnotetext{
\({ }^{31}\) California Code of Regulations, California Register of Historical Resources (Title 14, Chapter11.5), Section 4852(c).
}
3. Appears eligible for the National Register or the California Register through survey evaluation;
4. Appears eligible for the National Register or the California Register through other evaluation;
5. Recognized as Historically Significant by Local Government;
6. Not eligible for any Listing or Designation; and
7. Not evaluated for the National Register or California Register or needs reevaluation.

The second digit of the evaluation status code is a letter code indicating whether the resource is separately eligible (S), eligible as part of a district (D), or both (B). The third digit is a number that is used to further specify significance and refine the relationship of the property to the National Register and/or California Register. Under this evaluation system, categories 1 through 4 pertain to various levels of National Register eligibility. The California Register, however, may include surveyed resources with evaluation rating codes through level 5 . In addition, properties found ineligible for listing in the National Register, California Register, or for designation under a local ordinance are given an evaluation status code of 6 .

\section*{C. HISTORIC RESOURCES IDENTIFIED}

The historic resources being surveyed in this report are rock alignments, foundations, a cellar, a well, and a cistern (Photograph 1). The features that are associated with water; the cistern, well and cellar, appear to date from the early homestead of Cecil Webbe established circa 1875 . The rock walls may also derive from that period also. The foundations constructed of modern cement and concrete are most probably associated with the small house and barn that was constructed near the source of the water in 1940.

The features associated with the homestead of circa 1875 are made of large rough hewn stones. The cellar, well and cistern walls are constructed of stones and a mortar comprised of sand/dirt, water, lime and a small amount of hydraulic cement. The stone walls were dry laid and appear to serve to hold back soil (Photograph 2).



Photograph 2: Dry laid wall
According to the Riverside County Tax Assessors records for the project site (APN 256-150-001-4) a small house measuring 40 feet by 18 feet, that combined with the attached porches was 788 square feet, and built in 1940. It was a simple structure of frame construction, with a gable roof, sitting on a poured concrete foundation. The house had two bedrooms, a living room, kitchen and bathroom. The interior ff Packet Pg. 896
were noted as being "few" and "cheap". The windows were casement and double-hung, with wood frames. The house was hooked up to the local electric power supply which powered a water heater, but no heating system is noted.

There was also a gable roofed barn measuring 22 feet by 32 feet that dated from 1940, and a small storage shed measuring 12 feet by 18 feet, located on the parcel. All of the buildings were demolished in 1989.

The modern concrete and cement blocks (Photograph 3) found in the project area would date from the 1940 to 1989 time period. There are also some long lengths of galvanized pipe that seem to be coming from the natural water source that could have been used to supply the house or barn with water.


Photograph 3: A block of modern concrete

\section*{3. Significance}

The subject property, located on Gernert Road is located in the City of Moreno Valley. There is a collection of some historic features that are the remains of an early water system associated with the homestead and ranch of Cecil R. G. Webbe. The area surrounding the subject features, and the parcel it sits on, is quickly being converted to planned residential neighborhoods. At this point in time, there is still a rural feel to the area with many properties containing corrals, barns and sheds for horses or other livestock.

In assessing the subject property's historical significance federal, state, and local criteria was applied. The subject property is currently not listed on either the N مtional Packet Pg. 897

Register or the California Register, nor is it a designated City of Moreno Valley Historic Landmark or Structure of Merit.

Under the National Register or California Register criteria used to assess the historic features association with significant historical events exemplifying broad patterns of our history, the historic features were found not to be associated with any significant events in Moreno Valley, California or the United States.

Under the National Register or California Register criteria relating to a buildings association with persons of historic importance, the property investigated in this report has not been found to have been associated with any persons important in the local or national arena. The history of Cecil R. G. Webbe is interesting, but there has not been any information revealed that Cecil Webbe was of historic importance in national or local history.

Under the National Register or California Register criteria relating to the distinctive characteristics of a type, period, region, or method of construction, the subject features are not significant as they are the remnants of the water/irrigation system that was created by Cecil Webbe. The remaining features are unable to "make a picture" of the system Webbe created to take advantage of the artesian waters, and how he irrigated his crops or fruit trees. The features are interesting as they date from the last quarter of the nineteenth century, but they do not possess the integrity to relate the time, period or method used to construct them.

When Webbe constructed the cistern and well, he used a method of construction that was widely used throughout the United States and was not limited to the Moreno Valley area, or the State of California. The features, that are remnants of water system that Cecil R. G. Webbe constructed, have been severely compromised by the demolition of the remains of the historic homestead that was located to the south and east of the project area, and the demolition of the house and barn located on the subject area in 1989. The integrity has been lost that associate these features with a homestead that was one of the earliest in what is now Moreno Valley.

\section*{RESULTS}

The historic features located on the site are not eligible for listing on the National Register of Historic Places, the California Register of Historical Resources or on the list of historic sites of Moreno Valley.

The archeological investigation performed as part of this investigation, and this report with what is known of Cecil R.G. Webbe, should serve to record the historic features for future research by historians interested in Moreno Valley history.

\section*{IV. BIBLIOGRAPHY}

\section*{A. PUBLICATIONS}

Carley, Rachel. The Visual Dictionary of American Domestic Architecture. New York, New York: Henry Holt and Company, 1994.

Gunther, Jane Davies. Riverside County, California, Place Names - Their Origins and Their Stories. Riverside, CA: Rubidoux Printing Co., 1984.

Hamner, Viola F. Moreno Valley, California, In the Beginning. CA: Loma Linda University Printing Services, 2003.

McAlester, Virginia \& Lee. A Field Guide to American Houses. NY: Alfred A. Knopf, 1990.

Moreno Valley JayCees and Moreno Valley Chamber of Commerce. Moreno Valley, Historical Edition 1967.

Office of State Historic Preservation. California Historic Resources Inventory, Survey Workbook (excerpts). State of California: Sacramento, 1986.

Office of State Historic Preservation. Historic Properties Directory. State of California: Sacramento, 1995.

Parker, Patricia L. National Register Bulletin 24, "Guidelines for Local Surveys: A Basis for Preservation Planning." Washington D.C.: U.S. Government Printing Office, 1985.

United States Department of the Interior. National Register Bulletin 15, "How to Apply the National Register Criteria for Evaluation." Washington, DC: National Park Service, Interagency Resources Division, rev. 1991.

United States Census Records. Accessed online at Ancestry.com.

\section*{B. PUBLIC RECORDS, INFORMATION, AND OTHER MATERIALS}

City of Moreno Valley. City of Moreno Valley Municipal Code, Chapter 7 Cultural Preservation. Chapter 7.05 Landmarks and Structures of Merit. Chapter 7.01.010 Purpose of Title.

City of Moreno Valley website: http://www.ci.moreno-valley.ca.us/

City of Moreno Valley Planning Division. City of Moreno Valley, Department of Building and Safety, Memorandum, Historic Resources Inventory. 1989.

City of Moreno Valley Planning Division. Moreno Valley General Plan Draft Program EIR. June 2005.

County of Riverside, Tax Assessor. File for APN:256-150-001-4.

\section*{APPENDICES}



\section*{RESIDENTIAL BUILDING RECORD}

DESCRIPTION OF BUILDING



40y\% \(=220\)
\(10 \times 18=\frac{220}{78}=\frac{68}{788}\)

\(9 \times 7=63\) e 0.50

\section*{RIVERSIDE COUNTY ASSESSOR}

\section*{CAP RESIDENTIAL BUILDING RECORD,}

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Attachment: Appendicies A-G (6434: Gateway Heights Tract 38459)

\author{
Chambers Group \\ 
}

302 Brookside Avente Rediatds: Califormia 92373
909 - 335.7068 tel
909-335-6318 fax

September 3, 2007
Kathleen Dale
Associate Planner
City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92552

\section*{Re: KINCAID DEVELOPMENT PROJECT RESULTS OF AN ARCHAEOLOGICAL TEST PROGRAM AT CA-RIV-7284/H AND CA-RIV- 7285 MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA}

Dear Ms. Dale;
In response to your request for an addendum to the teport noted above, we are submitting this letter report with information gained from teviewing a copy of Ceci R. G. Webbe's Genenal Land Entry file from the U.S. National Archives \& Records, and research gained from a review of deeds and property records in San Bernarcho County. We have also attached to this letter copies of the original patent and deed documents.

The General Land Entry (patent) file has copies of the documents and testimony that Webbe was requifed to file to obtain ownership of 160 acres of land in 1884 , ln what is now Mareno Valley Riverside County. Webbe was still a citizen of Greal Britain in 1880 when he applied for ownership of the parcel, he had resided on since 1875, under the Homestead Land Act (as revised in 1877). His Louse was recorded on the General Land Office (GLO) map when the area was surveyed in. 1877. In Webbe's patent application he had to swear that he would establish a homestead on the parcel and that he would become a citizen of the United States. As he had already constructed a bomestead on the land in 1875, he was able to fulfiti this requirements for ownership in only two years. Webbe's final testimony in 1882 to the Los Angeles General Land Office states that he was 55 years old, was living with a maiden (unmarried) sister, was using the fand for agricultural purposes, had setted on the land in March 1875, was still residing on the parcel, had made improvements consisting of a dwelling buit in 1875 ; horse stables, other out buildings, a few vines and fruit trees, an apiary, water ditches, and thatythe cost of the improvements was approximately \(\$ 300\). He also stated that he had broken and cultivated about 10 acres of land for the planting of barley, corn and vegetables.

Webbe was awarded ownership of the land, (which prior to 1893, was considered part of San Bernardino County) in 1882, and the patent was recorded in 1884. No sooner did Webbe get ownership of the land, he dectdedto sell the eastern half of it, 80 acres, to Milton Santee of Los Angeles County in May 1883 . He sold to Santee the southeast \(1 / 4\) of the northwest quarter, and the northeast \(1 / 4\) of the southwest quarter, of Section 34 . There are no buildings or structures noted as belonging to the parce. According to the 1880 census records, Milton Santee had been a 45 year old surveyor working in the forests of Lassen County, and was residing in

Jamesville Township. In 1900, he was recorded in that year's census as living in the \(9^{\text {th }}\) Precinct in Los Angeles. It does not appear that he ever established residency on the fand, but he may have leased the land to local growers or homesteaders.

In 1891, Webbe sold the southwest \(1 / 4\) of the northwest \(1 / 4\), and the southwest \(1 / 4\) of the nortinwest \(1 / 4\) of the northwest \(1 / 4\) of Section 34 , to Charles \(M\). Dexter. Included in the transfer deed (bill of sale) is a map of the parcel with the location of the natural springs and house of Cecil R.G. Webbe at its northeast comer. There is no notation on the deed map as to the location of the stables and outbuildings that Webbe had built when he claimed his patent. Chafles M. Dexter, born in Ohio, had served in the \(167^{\text {Th }}\) Regiment of the Ohio Infantry of the Union Army and had been discharged as a second lieutenant. In 1870 he was living with his mother, a brother and a sister in Delaware, Ohio, and working as a sewing machine superintendent. Charles and his mother were heading west, and in 1880 they were living in Colorado Springs, Colorado, where Charles was working as a machinist. He married shortly thereafter, and twenty years later in 1900, Charles and his wife were living on Eleventh Street in the city of Riverside. In 1910, at the age of 67, Charles and his wife are still living on Eleventh Street, and he is employed as a park superintendent in the city of Riverside. By 1920, only Charles' widow Rose is still living in Riverside on Eleventh Street.

After selling off the 80 acres to Milton Santee and 46 acres to Charies Dexter, Webbe would have only still owned 34 acres that were located in the most northern area of his original 160 acre parcel, along the southwest edge of the Box Spring Mountains. The landscape of this area is steep and rocky, not suited to agricultural purposes, nor does it have any natural aquifers.

For the time period of 1854 to 1916, we were unable to find any further transfers of land in San Bernardino County from Cecil R.G. Webbe, particularly from Webbe to Charles H. Vosburg in 1899. We did not review the records in Riverside County that would have started being kept in 1893. (The county of Riverside was created in 1893 from land previously associated with San Bernardino and San Diego counties.)

We have determined that although the project area is interesting in history of the settement of Moreno Valley, it is not significant for its association with persons important in the history of the United States, California or Moreno Valley. This decision does not alter our conclusion as to the eligibility or significance of the project area and the historic features found there, as found in our report "Kincaid Development Report."


Pamela Daly, M.S.
Sr. Architectural Historian
Attach: Land Patent record of Cecil R.G. Webbe
Census pages for Charles M. Dexter and Milton Santee

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 and sworn to before me this: \(\neq x+2\) \(\qquad\) day of 1882


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\section*{TESTIMONY OF CLAIMANT.}

Ques. 1. What is your name? (Be careful to give it in full, correctly spelled, in order that it may be here written exactly as you wish it written in the patent whig you desire to obtain )

Ans:


Quag. 2. What is your age?

Ques. 3 . Are you the head of a family; or a single person; and, if the head of a family, of whom does your family consist?



Ques. 4: Are you a native-born citizen of the United States? If not, have you deciare your intentHon to become a citizen, and have you mbtanea certificate of naturalization? *


Ques. 5. Are there my indications of coal, salines, or minerals of any kind on the land embraced in Your homestead entry: above described f if so, state what they are, and whether the springs or mineral deposits are valuable.)

Ans.


Ques. 6. Is the land more valuable for agricultural than mineral purposes?
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you have, give, as nearly as you can, the date thereof, and description of the land, and state whether the entry still subsists, or, if it has been canceled, state the cause of its cancellation.)

Ans.

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Ques. 9. Have you sold the land or conveyed to any one your right and interest in the same; and; if so, to whom and for what purpose?

Ans. \(\qquad\)
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Ques. 10. Does any one except yourself claim the land under the homestead or preemption haws?
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Ans. \(\qquad\)
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Ques. 15. Was your residence upon the land continuous during the period atoned?
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\(\qquad\)
Ques. 16. If you bad a family during said period of residence on the homestead, did your family: reside thereon?

Ans. \(\qquad\)


Ques 1.7. What improvements have you made or do you possess on the land? (Describe them.)
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\section*{HOMESTEAD PROOF.}

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\section*{SECTION 2291 OF THE REVISED STATUTES OF THE UNITED STATES.}


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\(8 P\) \(\qquad\) under section No. 2289 of the Revised Statutes of the United States, do now apply to perfect my elaimetherefo by virtue of section No. 2291 of the Revised Statutes of the United States; and for that purpose do solemnly

\section*{Hantactitizen of the United States; that I have made actual settlement upon and have cultivated said}

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to thepresent the? that no part of aid land has lien alienated, except as proved a section 2288 of the
Revised Statutes, but that I an the sole bona fuds owner as an actual settler; that I will bear true allegiance:
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\section*{TESTIMONY OF CLAIMANT.}
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Ques. 3. Are yon the head of a family, or a single person, and, the the head of a family, of whom does your fabilif consist?
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Ques 4. Are you a ativenborn citizen of the United States? If not have you declared your inter-



Ques. 5. Are there any indications of coal, salines, or minerals of any hind on the land embraced in Your homestead entry hove described? (If so, state what they are, and whether the springs or mineral deposits are valuable.) \(\Rightarrow\)

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Ques. 6. Is the land more valuable for agricultural than mineral purposes?
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You have, give, as nearly as you can, the date thereof, and description of the land, and state whether the entry still subsists, or, if it has been canceled, state the carse of its cancellation.)

Ans. \(\qquad\)
\(\qquad\)
\(\qquad\)
\(\qquad\)
Ques. 9. Have you sold the land or conveyed to any one your right and interest in the same; and; if so, to whom and for what purpose?

Ans. \(\qquad\)

Ques. 10. Does any one except yourself claim the land under the homestead or preemption laws?
Ans. \(\qquad\)
Ques. 11. When did yep first make settlement on the said lame
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Ques 19. When did you first establish a residence upon the land?
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Ques 14. Up w what time have you resided on the lated?
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Ques. 15. Wis your residence upon the land continuous during the period named?
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Ques. 16. If you had a fatnityduring said period of residence on the homestead; did your faritily reside thereon?

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(Describe them.)
Ques. 17. What improvements have you made or do you possess on the land?

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Appendix D

\section*{Energy Calculations}

\section*{Energy Use Summary}
\begin{tabular}{|c|c|c|c|c|}
\hline Construction Phase (gallons/construction perioc & Gasoline & Diesel & & \\
\hline Construction Vehicles & 10,413 & 10,457 & & \\
\hline Worker Trips & 4,373 & 19 & & \\
\hline Vendor Trips & 1,070 & 17 & & \\
\hline Haul Trucks & 15 & 12,642 & & \\
\hline Total & 15,871 & 23,135 & & \\
\hline Operations Phase (gallons/year) & Gasoline & Diesel & Natural Gas (kBTU/yr) & Electricity (kWh/yr) \\
\hline Condominiums & 120,409 & 1,533 & 2,447,660 & 609,342 \\
\hline 0 & 0 & 0 & 0 & 0 \\
\hline 0 & 0 & 0 & 0 & 0 \\
\hline 0 & 0 & 0 & 0 & 0 \\
\hline 0 & 0 & 0 & 0 & 0 \\
\hline 0 & 0 & 0 & 0 & 0 \\
\hline All Land Uses & 120,409 & 1,533 & 2,447,660 & 609,342 \\
\hline
\end{tabular}

Operations Onroad Energy Use



\section*{Utilities}
\begin{tabular}{lccc} 
& \multicolumn{2}{c}{ NaturalGas Use } & Electricity Use \\
LBTU/yr & \(\mathrm{kWh} / \mathrm{yr}\) \\
Land Use & & \(2,447,660\) & 609,342 \\
Condominiums & 0 & & \\
& 0 & & \\
& 0 & & \\
& 0 & & \\
& 0 & & \(\mathbf{6 0 9 , 3 4 2}\)
\end{tabular}

Offroad Construction Equipment Energy Use
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline PhaseName & OffroadEquipmentType & OffRoadEqui pmentUnitA mount & UsageHours & HorsePower & Load Factor & Horsepower Category & Num Days & Year & \(\underset{\substack{\text { (gal/hour) }}}{\text { Fuel Consumption Rate }}\) & Fuel Type & Total Fuel Consumption (gal/construction period) \\
\hline Site Preparation & Rubber Tired Dozers & 1 & 8 & 247 & 0.4 & 300 & 10 & 2022 & 4.5 & Diesel & 145 \\
\hline Site Preparation & Tractors/Loaders/Backhoes & 0 & 8 & 97 & 0.37 & 100 & 10 & 2022 & 1.6 & Diesel & 0 \\
\hline Grading & Excavators & 0 & 8 & 158 & 0.38 & 175 & 44 & 2022 & 2.9 & Diesel & 0 \\
\hline Grading & Graders & 0 & 8 & 187 & 0.41 & 175 & 44 & 2022 & 3.2 & Diesel & 0 \\
\hline Grading & Rubber Tired Dozers & 1 & 8 & 247 & 0.4 & 300 & 44 & 2022 & 4.5 & Diesel & 639 \\
\hline Grading & Scrapers & 2 & 8 & 367 & 0.48 & 300 & 44 & 2022 & 5.6 & Diesel & 1,878 \\
\hline Grading & Tractors/Loaders/Backhoes & 0 & 8 & 97 & 0.37 & 100 & 44 & 2022 & 1.6 & Diesel & 0 \\
\hline Building Construction & Cranes & 1 & 7 & 231 & 0.29 & 300 & 264 & 2022 & 3.3 & Diesel & 1,760 \\
\hline Building Construction & Forklifts & 3 & 8 & 89 & 0.2 & 100 & 264 & 2022 & 2.0 & Diesel & 2,539 \\
\hline Building Construction & Generator Sets & 1 & 8 & 84 & 0.74 & 100 & 264 & 2022 & 5.2 & Gasoline & 8,123 \\
\hline Building Construction & Tractors/Loaders/Backhoes & 3 & 7 & 97 & 0.37 & 100 & 264 & 2022 & 1.6 & Diesel & 3,263 \\
\hline Building Construction & Welders & 1 & 8 & 46 & 0.45 & 50 & 264 & 2022 & 2.4 & Gasoline & 2,290 \\
\hline Paving & Pavers & 1 & 8 & 130 & 0.42 & 100 & 10 & 2022 & 1.7 & Diesel & 58 \\
\hline Paving & Paving Equipment & 1 & 8 & 132 & 0.36 & 100 & 10 & 2022 & 1.6 & Diesel & 47 \\
\hline Paving & Rollers & 1 & 8 & 80 & 0.38 & 100 & 10 & 2022 & 1.7 & Diesel & 51 \\
\hline Architectural Coating & Air Compressors & 1 & 6 & 78 & 0.48 & 100 & 20 & 2022 & 1.3 & Diesel & 76 \\
\hline & & & & & & & & & \[
\begin{aligned}
& \text { Total } \\
& \text { Total }
\end{aligned}
\] & Gasoline Diesel & \[
\begin{aligned}
& 10,413 \\
& 10,457
\end{aligned}
\] \\
\hline
\end{tabular}

\section*{Onroad Construction Energy Use}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{8}{|l|}{Year 2022} \\
\hline \multirow[t]{2}{*}{Vehicle Types} & \multicolumn{3}{|l|}{MPG by Fuel Type} & \multicolumn{4}{|l|}{Population by Fuel Type} \\
\hline & GAS & DSL & ELEC & GAS & DSL & ELEC & Total \\
\hline LDA & 30.8 & 48.7 & & 6,542,832 & 58,938 & 127,533 & 6,601,770 \\
\hline LDT1 & 26.5 & 22.6 & & 736,906 & 387 & 5,339 & 737,293 \\
\hline LDT2 & 24.7 & 35.7 & & 2,246,303 & 14,235 & 22,590 & 2,260,537 \\
\hline LHDT1 & 10.5 & 21.6 & & 175,903 & 119,381 & & 295,284 \\
\hline LHDT2 & 9.2 & 19.5 & & 30,010 & 47,336 & & 77,346 \\
\hline MCY & 36.4 & & & 295,960 & & & 295,960 \\
\hline MDV & 20.0 & 27.4 & & 1,579,640 & 33,349 & 11,658 & 1,612,989 \\
\hline MH & 5.2 & 10.6 & & 35,098 & 12,759 & & 47,857 \\
\hline MHDT & 5.1 & 10.7 & & 25,445 & 123,310 & & 148,755 \\
\hline HHDT & 4.2 & 6.7 & & 78 & 108,362 & & 108,440 \\
\hline OBUS & 5.0 & 8.5 & & 5,959 & 4,274 & & 10,234 \\
\hline SBUS & 9.1 & 7.6 & & 2,631 & 6,631 & & 9,262 \\
\hline UBUS & 4.9 & 6.0 & & 952 & 14 & 17 & 966 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Input & & & & & & & Gasoline Co & umption & & Diesel Con & umption & \\
\hline Phase Name & Worker Trip Number & Vendor Trip Number & Hauling Trip Number & Worker Trip Length & Vendor Trip Length & Hauling Trip Length & Worker & Vendor & Haul & Worker & Vendor & Haul \\
\hline Site Preparation & 3 & 0 & 0 & 14.7 & 6.9 & 20 & & & & & & \\
\hline Grading & 8 & 0 & 4267 & 14.7 & 6.9 & 20 & & & & & & \\
\hline Building Construction & 25 & 12 & 0 & 14.7 & 6.9 & 20 & & & & & & \\
\hline Paving & 8 & 0 & 0 & 14.7 & 6.9 & 20 & & & & & & \\
\hline Architectural Coating & 16 & 0 & 0 & 14.7 & 6.9 & 20 & & & & & & \\
\hline Adjusted & & & & & & & & & & & & \\
\hline Site Preparation & 30 & 0 & 0 & 14.7 & 6.9 & 20 & 18 & 0 & 15 & 0 & 0 & 0 \\
\hline Grading & 352 & 0 & 4267 & 14.7 & 6.9 & 20 & 208 & 0 & 15 & , & 0 & 12,642 \\
\hline Building Construction & 6600 & 3168 & 0 & 14.7 & 6.9 & 20 & 3,909 & 1,070 & 0 & 17 & 17 & 0 \\
\hline Paving & 80 & 0 & 0 & 14.7 & 6.9 & 20 & 47 & 0 & 0 & 0 & 0 & 0 \\
\hline Architectural Coating & 320 & 0 & 0 & 14.7 & 6.9 & 20 & 190 & 0 & 0 & 1 & 0 & 0 \\
\hline Total & & & & & & & 4,373 & 1,070 & 15 & 19 & 17 & 12,642 \\
\hline
\end{tabular}

\section*{Appendix E}

\section*{Geotechnical Report}
 RESIDENTIAL DEVELOPMENT, TENTATIVE TRACT MAP NO. 37557, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA.

Dated: September 22, 2018
Project No. G18-1648-10

Prepared For:
Shizao Zheng
1378 West Zhorgshan Road Ningbo City, Zhejiang Province China

\section*{Shizao Zheng}

1378 West Zhorgshan Road
Ningbo City, Zhejiang Province
China

\section*{Subject: Preliminary Geotechnical Xnvestigation for the Proposed Single-Family Residential Development, Tentative Tract Map No. 37557, City of Moreno Valley, Riverside County, California.}

LGC Geo-Environmental, Inc. (LGC) is pleased to submit herewith our preliminary geotechnical investigation report for the proposed single-family residential development, Tentative Tract Map No. 37557, City of Moreno Valley, Riverside County, California.

This report presents the results of our review of published geologic/geotechnical reports, maps, and aerial photographs relative to the area that includes the site; our field exploration, geologic mapping, and laboratory testing; and geotechnical and geologic judgment, opinions, conclusions and preliminary recommendations associated with the proposed residential development.

Based on the results of the scope of our work and our review of the conceptual grading plan tract map, it is our opinion that the subject site is suitable for the proposed residential development, provided that the recommendations presented herein are incorporated into the design and implemented during grading and construction. LGC should review the final grading plans, as well as any foundation/structural plans when those become available, and revise the recommendations presented herein, if necessary.

LGC is pleased to have been retained to be of service to you during the design stages of this project. Should you have any questions regarding the contents of this report or should you require additional information, please do not hesitate to contact us.

Respectfully submitted,
LGC Geo-Environmental, Inc.


Robert L. Gregorek II, CEG 1257
Certified Engineering Geologist


AJR/RLG/JPN
Distribution: (4) Addressee


John P. Nielsen, GE 641 Geotechnical Engineer

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Appendix D - General Earthwork and Grading Specifications (Rear of Text)

\subsection*{1.0 INTRODUCTION}

This report presents the results of LGC Geo-Environmental, Inc.'s (LGC) geotechnical investigation for the proposed single-family residential development, Conceptual Grading Plan Tract Map No. 37557, City of Moreno Valley, Riverside County, California. The purpose of this geotechnical investigation was to evaluate the soil engineering properties of the surface and subsurface soll conditions on the site, and to provide geotechnical recommendations with respect to grading, construction, foundation design and other relevant geotechnical aspects related to the proposed residential development. The referenced conceptual grading plan tract map which was provided to LGC, was utilized as the base map for our Geotechnical Map (Plate 1) of the site.

Our scope of services included:
- A review of available published geologic/geotechnical literature, geologic maps, and aerial photographs pertinent to the site (Appendix A).
- Geologic mapping of the site.
- Subsurface exploration consisting of the excavating, sampling, and logging of ten (10) exploratory trenches, TR-1 through TR-8 and IT-1 through IT-2, to depths ranging from approximately 3.0 to 13.5 feet below the existing ground surface. All of the trenches were excavated using a backhoe. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions on the project site, including classification of site soil, determination of depth to groundwater (if present), and to obtain representative soil samples.
- Laboratory testing of representative soil specimens collected during our subsurface exploration (Appendix C).
- Geotechnical engineering and geologic analyses of the data with respect to the proposed singlefamily development.
- Preparation of General Earthwork and Grading Specifications (Appendix D).
- Preparation of this report presenting our findings, conclusions and preliminary geotechnical design recommendations for the proposed development.

\subsection*{1.1 Proposed Construction and Grading}

The referenced conceptual grading plan tract map prepared by Sikand Engineering dated June 13, 2018 indicates that the proposed development will consist of 24 single-family residential lots with associated roadways, walk ways, and hardscape, landscape areas and a water quality basin and a debris basin. It is anticipated that the structures will be up to two-stories, with wood/steel frame and masonry wall construction and some masonry block walls. This type of construction provides for relatively moderate to heavy loads imposed on the underlying foundation soil.

The referenced 80 -scale tentative tract map indicates proposed cut and fill depths will be generally be approximately 32 and 22 feet, respectively. Proposed maximum cut and fill slope heights are about 55 feet and 22 feet respectively, at slope ratios of 2:1 (h:v) or flatter.

\subsection*{1.2 Location and Site Description}

The site is located north of Jennings Court, west of Morton Road and east of the mountains at the base, in the City of Moreno Valley, in Riverside County, California. The site is irregular in shape and is approximately 32.8 -acres in size. The site is moderately covered with annual weeds and shrubs, some cluster of trees and scatter boulders, mainly at the base of the mountain. The site also contains some scattered trash and debris. The general location and configuration of the site is shown on the Site Location Map (Figure 1).


\subsection*{1.3 Topography and Drainage}

The topography of the site is undulated with approximately four washes running down the site from the northeast. Elevations range from approximately 2,040 feet above mean sea level ( msl ) in the northeastern portion of the site to approximately 1,588 feet msl in the western portion of the site.

\subsection*{1.4 Existing Improvements and Vegetation}

The site has not been previously developed. Vegetation consists of a moderate to dense cover of annual weeds/shrubs

\subsection*{1.5 Research of Previous Geological and Geotechnical Data}

LGC researched published and unpublished geotechnical reports and geologic data (Appendix A). Pertinent site and geologic information were incorporated into the conclusions and recommendations presented in this report.

\subsection*{1.6 Aerla/ Photograph Analysls}

Google Earth Pro aerial imagery (from 1994 to 2018) was evaluated for the subject site and surrounding vicinity. The available information, as it pertains to the geologic and geotechnical issues of the proposed single-family residence, has been incorporated into the conclusions and recommendations presented in this report.

Our review of the aerial photographs indicates that the site has been a vacant property from 1994 to the present.

\subsection*{2.0 ETELD INVESTIGATION}

\subsection*{2.1 Geologic Mapping}

Surface geologic mapping of the site and accessible surrounding areas was completed by a geologist from this firm during September 2018, utilizing the referenced Conceptual Grading Plan Tract Map No. 37557 for plotting geologic observations. This information is plotted on the enclosed Geotechnical Map (Plate 1).

\subsection*{2.2 Field Exploration}

Ten (10) exploratory trenches, TR-1 through TR-8 and \(\Pi-1\) through IT-2, were excavated with a backhoe on September 4, 2018 and September 6, 2018 to depths of approximately 3.0 to 13.5 feet below the existing ground surface. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions beneath the site, those include classification of site

Bulk samples of soil associated with the exploratory trenches were collected for laboratory testing. Bulk samples consisted of selected soil and bedrock materials obtained at various depth intervals from the exploratory trenches.

\subsection*{2.3 Laboratory Testing}

During our subsurface exploration, relatively undisturbed and bulk soil samples were retained for laboratory testing. Laboratory tests were performed on selected representative samples of onsite soil materials and included maximum dry density and optimum water content, expansion index, sulfate content, chloride content, pH, resistivity, and shear strength. A brief description of the laboratory test results and test data are presented in Appendix C.

\subsection*{3.0 FINDINGS}

\subsection*{3.1 Regional Geologic Setting}

The site is located in the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are characterized by steep, elongated valleys that trend west to northwest. Locally the northwesttrending topography is controlled by the Elsinore fault zone, which extends from the San Gabriel River Valley southeasterly to the United States/Mexico border. The Santa Ana Mountains lie along the western side of the Elsinore fault zone, while the Perris Block is located along the eastern side of the fault zone. These mountainous regions are underlain by Pre-Cretaceous, metasedimentary and metavolcanic rocks and Cretaceous plutonic rocks of the Southern California Batholith. Tertiary and Quaternary rocks are generally comprised of non-marine sediments consisting of sandstone, mudstones, conglomerates, and occasional volcanic units. A map of the regional geology is presented on the Regional Geologic Map (Figure 2).

\subsection*{3.2 Local Geoloqy and Soil Conditions}

Based on our review of available geological and geotechnical literature, current field mapping, exploratory trenches and exploratory borings conducted at the site, it is our understanding that the site is primarily underlain by undocumented artificial fill, older alluvial fan deposits, and Bonzal Tonalite bedrock. Each unit is described in greater detail below and presented within the exploratory trench and boring logs (Appendix B). The approximate locations of the observed geologic units are depicted on the Geotechnical Map (Plate 1).

Artificial Fill, Undocumented (Afu): During our subsurface exploration, artificial fill (undocumented) was encountered down to depths ranging from approximately 2.0 feet to 5.5 feet. The artificial fill generally consists of silty sand and clayey silt and is various shades of brown, red and black; very fine to medium grained with some coarse grains; coarse and very coarse rock fragments; dry to damp; medium dense/firm; contains some pores; roothairs; desiccated; with traces of concrete pleces.

Topsoil (No Map Symbol); Topsoil was present within portions of the site overlying the older alluvial deposits or bedrock. The topsoil consisted of silty sand which was generally very fine to coarse grained, various shades of red and brown, dry to damp, loose to medium dense, desiccated with some pores and roots. These materials were generally 0.5 foot to 2.0 foot thick where explored.

Alluvium (Qal): Alluvium is present within drainage courses on the site and consist of silty sand which is generally very fine to coarse grained, various shades of read and brown, dry to damp, loose to medium dense with some rock fragments, pores, and roots. The alluvium where explored is about 2.0 feet to 7.0 feet deep and could be as much aa 10.0 feet deep.

Older Alluvial Fan Deposits (Qoa): Older alluvial fan deposits encountered on the site during our subsurface exploration, were observed to range from the surface approximately 2.0 feet to 6.5 feet deep to as deep as 12 feet. The older alluvial fan deposits generally consist of silty sand and is

characterized as being various shades of brown, green, gray, and red; dry; medium to very dense; very fine to medium grained with coarse grains; pinhole pores; roothairs; with oxidation staining. Portions of the upper 1.0 foot to 2.0 foot are weathered.

Bedrock: Bonzal Tonalite (Qdi) - Bedrock of the Peninsular Ranges was present at the near surface, but mostly below the topsoil, alluvium and older alluvial fan deposits at depths of about 0.5 feet to 12.0 feet. The bedrock consists of quartz diorite. The bedrock was slightly to moderately weathered; various shades of black, orange, gray, yellow, brown and white; dry to damp; moderately hard to very hard; friable; fine to very coarse grained; with oxidation staining; and manganese staining.

\subsection*{3.3 Landslldes}

Our review of geologic literature did not indicate the presence of landslides on or directly adjacent to the site.

\subsection*{3.4 Groundwater}

Groundwater was not encountered during the subsurface exploration performed for this report. Our review of the California Department of Water Resources, Water Data Library 2018 online database indicates historical depths of groundwater approximately four miles away from the general site area is about 73 feet below the existing ground surface at an elevation of approximately 1,638 above mean sea level (Well ID: Station 335628N1171932W001).

\subsection*{3.5 Caving}

Caving was not encountered in the exploratory trenches. Caving may occur within excavations made into the friable portions of the alluvium, older alluvial fan deposits and weathered bedrock.

\subsection*{3.6 Surface Water}

Surface water runoff relative to project design is the purview of the project civil engineer and should be designed to be directed away from all structures and walls.

\subsection*{3.7 Faufting}

The geologic structure of the Southern California area is mainly dominated by northwest-trending faults assoclated with the San Andreas system. Faults, such as the Whittier, Elsinore, San Jacinto and San Andreas, are major faults in this system and are known to be active and may produce moderate to strong ground shaking during an earthquake. In addition, the San Andreas, Elsinore and San Jacinto faults are known to have ruptured the ground surface in historic times.

The following table is comprised of a list of the significant faults located within 20 miles of the proposed project site. We have also included the Maximum Earthquake Magnitude predicted for each of these faults.

TABLEI
Slanificant Faults in Proximily of the Project Site
\begin{tabular}{|l|c|c|}
\hline \multicolumn{1}{|c|}{ ABBREVIATED FAULT NAME } & \begin{tabular}{c} 
APPROXIMATE DISTANCE \\
\((\mathrm{mi})\)
\end{tabular} & \begin{tabular}{c} 
MAXIMUM \\
EARTHQUAKE \\
MAGNTTUDE (Mw)
\end{tabular} \\
\hline San Jacinto-San Bernardino & 5.2 & 6.7 \\
\hline San Jacinto-San Jacinto Valley & 5.6 & 6.9 \\
\hline San Andreas-San Bernardino & 14.9 & 7.3 \\
\hline San Andreas-Southern & 14.9 & 7.4 \\
\hline Elsinore-Glen Ivy & 18.5 & 6.8 \\
\hline Chino-Central Ave (Elsinore) & 19.0 & 6.7 \\
\hline Cucamonga & 19.4 & 7.0 \\
\hline
\end{tabular}

Source: EQFAULT for Windows Version 3.00b
Active, potentially active, or inactive faults are not known to project through the site. The site does not lie within an Alquist-Priolo Earthquake Fault Hazard Zone as defined by the State of California in the Alquist-Priolo Earthquake Fault Hazard Zoning Act or a Riverside County Fault Zone Map. The possibility of damage to structures or site improvements because of ground rupture is considered negligible because active faults are not known to cross the site.

\section*{Seismicily}

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the southern California region, which may affect the site, include soil liquefaction and dynamic settlement. Liquefaction is a seismic phenomenon in which loose, saturated, granular soil behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) groundwater within 50 feet of the ground surface 2) low density non-cohesive (granular) soil; and 3) high-intensity ground motion. Studies indicate that saturated, loose to medium dense, near surface cohesionless soil exhibit the highest liquefaction potential, while dry, dense, cohesionless soil and cohesive soil exhibit low to negligible liquefaction potential.

Other secondary seismic effects include shallow ground rupture, seiches, and tsunamis. In general, these secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. A risk assessment of these secondary effects is provided in the following sections.

\subsection*{3.9 Settlement Analysis}

The results of our subsurface exploration and laboratory testing indicate the site is underlain by approximately 2 feet to 7 feet to possibly up to 10 feet of potentially compressible and/or hydrocollapsible soil, consisting of artificial fill, undocumented, topsoil, alluvium, weathered older alluvial fan deposits and weathered bedrock. These materials exhibit the potential to settle or hydro-consolidate under the surcharge of proposed fill loads and anticipated future structural loads.

In areas where overexcavation to competent underlying older alluvial fan deposits or bedrock is accomplished, total settlement of about 0.50 -inch, and a differential settlement of about 0.25 -inch over a distance of about 40 feet could be anticipated.

\subsection*{4.0 CONCLUSTONS AND RECOMMENDATIONS}

\section*{General}

Based on the results of our current geotechnical investigation, it is our opinion that the proposed residential development, as indicated on the conceptual grading plan tract map, is feasible from a geotechnical and geologic standpoint, provided that the following recommendations are incorporated into the design criteria and project specifications and implemented during site grading and during construction. When actual grading plans for the site and foundation/structural plans for the proposed development are available, a comprehensive plan review should be performed by LGC. Depending on the results, additional recommendations may be necessary to provide updated geotechnical design parameters for both earthwork and foundations. Grading should be conducted in accordance with local codes, the recommendations within this report, and future plan reviews. It is also our opinion that the proposed construction and grading will not adversely impact the geologic stability of adjoining properties.

The following is a summary of the primary geotechnical factors determined from our geotechnical investigation.
n The site is underlain by undocumented artificial fill, topsoil, alluvium, older alluvial fan deposits and bedrock.
- Landslides are not known to impact the site.
- Groundwater are not considered a constraint for the proposed development.
- The potential for liquefaction is considered negligible because of shallow depths to very dense older alluvial fan deposits and hard bedrock.
- Active or potentially active faults are not known to exist on the site.
- Laboratory test results of the upper soil and bedrock indicate a very low expansion potential and negligible potential for soluble sulfate effects on normal concrete and chloride effects on reinforcing steel.
- The majority of the site is underlain by approximately 2 feet to 7 feet to as much as 10 feet locally of undocumented artificial fill, topsoil, alluvium, weathered older alluvial fan deposits and weathered bedrock which may be prone to potential intolerable post-grading settlement and/or hydroconsolidation, under the surcharge of the future proposed structural loads and/or fill loads. These materials should be overexcavated to underlying competent older alluvial fan deposits or bedrock.
- The existing onsite soil from a geotechnical perspective, appear to be suitable material for use as fill, provided those are relatively free from rocks (larger than 12 inches in maximum dimension), construction debris, and organic material. It is anticipated that the onsite soil may be excavated with conventional heavy-duty construction equipment.

\subsection*{5.0 GEOLOGIC CONSIDERATIONS}

\subsection*{5.1 Slopes}

Cut slopes and fill slopes to the proposed slope heights and slope ratios of approximately \(2: 1(\mathrm{H}: \mathrm{V})\) or flatter and should be grossly and surficially stable.

\subsection*{5.2 Faulting}

Geologic hazards related to fault rupture are not known or not detected during our field exploration and site reconnaissance to be present at the site.

\subsection*{5.3 Groundwater}

Adverse effects on the proposed development resulting from groundwater are not anticipated.

\subsection*{5.4 Subsidence}

In consideration of the anticipated grading, recommended overexcavations, proposed structures and improvements, and subsurface material types and their conditions, unfavorable ground subsidence is not anticipated. This should be confirmed with additional consolidation testing in the older alluvial fan deposits.

\subsection*{5.5 Landsliding}

Landslides or surface failures were not observed at or directly adjacent to the site. As a result, the probability of the site being affected by landslides is considered nil.

\subsection*{5.6 Ground Rupture}

Ground rupture because of active faulting is not likely to occur on site because of the absence of known active fault traces on the site. Cracking because of shaking from distant seismic events is not considered a significant hazard, although it is a possibility at any site.

\subsection*{5.7 Rock Fall}

The potential for rock fall is considered moderate, due to the close proximity of the mountainside. See referenced report in Appendix A.

\subsection*{5.8 Tsunamis and Seiches}

Based on the elevation of the site with respect to sea level and its distance from large open bodies of water, the potentials for seiche and/or tsunami is considered to be negligible.

\subsection*{6.0 SETSMXC-DESIGN CONSTDERATIONS}

\subsection*{6.1 Ground Motions}

The site will probably experience ground shaking from moderate to large size earthquakes during the life of the proposed development. Furthermore, it should be recognized that the Southern California region is an area of high seismic risk, and that it is not considered feasible to make structures totally resistant to seismic-related hazards.

Structures within the site should be designed and constructed to resist the effects of seismic ground motions as provided in the 2016 CBC, Section 1613. The method of design is dependent on the seismic zoning, site characterizations, occupancy category, building configuration, type of structural system, and building height.

The following selsmic design parameters, presented in Table 2, were developed based on the CBC 2016 and should be used for the proposed structures. A site coordinate of \(33.8066^{\circ} \mathrm{N}, 117.1195^{\circ} \mathrm{W}\) was used to derive the seismic parameters presented below.

TABLE 2
Seismic Design Soil Parameters
\begin{tabular}{|l|c|}
\hline \multicolumn{2}{|c|}{ SEISMIC DESTGN SOIL PARAMETERS (2016 CBC Section 1613) } \\
\hline Site Class Definition ASCE 7; Chapter 20 (Table 203-1) & D \\
\hline Mapped Spectral Response Acceleration Parameter Ss (for 0.2 second) (Figure 1613.5.3.(1) & 1.51 \\
\hline Mapped Spectral Response Acceleration Parameter, \(\mathrm{S}_{1}\) (for 1.0 second) (Figure 1613.5.3.(2) & 0.64 \\
\hline Site Coefficient \(\mathrm{F}_{\mathrm{s}}\) (short period) [Table 1613.3.3.(1)] & 1.0 \\
\hline Site Coefficient Fv (1-second period) [Table 1613.3.3.(2)] & 1.5 \\
\hline \begin{tabular}{l} 
Adjusted Maximum Considered Earthquake (MCE) Spectral Response Acceleration Parameter \\
Sws (short period) (Eq. 16-37)
\end{tabular} & 1.51 \\
\hline \begin{tabular}{l} 
Adjusted Maximum Considered Earthquake (MCE) Spectral Response Acceleration Parameter \\
Sm1 (1-second period) (Eq. 16-38)
\end{tabular} & 0.96 \\
\hline Design Spectral Response Acceleration Parameter, Sos (short period) (Eq. 16-39) & 1.00 \\
\hline Design Spectral Response Acceleration Parameter, Sol (1-second period) (Eq. 16-40) & 0.64 \\
\hline Mean Peak Ground Acceleration (PGAm) & 0.59 \\
\hline
\end{tabular}

\subsection*{6.2 Secondary Selsmic Hazards}

Secondary effects of seismic activity normally considered as possible hazards to a site include several types of ground failure, as well as induced flooding. Various general types of ground failures which might occur as a consequence of severe ground shaking of the site include liquefaction, landsliding, ground subsidence, ground lurching, and shallow ground rupture. The probability of occurrence of each type of ground failure depends on the severity of the earthquake, distance from faults, topography, subsoil and groundwater conditions, in addition to other factors. Based on the proposed grading and recommended overexcavation of potentially compressible materials within areas of proposed development, the secondary effects of liquefaction and other seismic activity noted above are considered unlikely at the site.

Seismically induced flooding, which might be considered a potential hazard to a site, normally includes flooding because of a tsunami (seismic sea wave), a seiche (i.e., a wave-like oscillation of the surface of water in an enclosed basin that may be initiated by a strong earthquake) or failure of a major reservoir or retention structure upstream of the site. The site is located several miles inland from the nearest coastline of the Pacific Ocean at an elevation in excess of approximately 1630 feet above msl , the potential for seismically induced flooding because of tsunami inundation is considered nonexistent. Enclosed bodies of water do not lie adjacent to the site, the potential for seiche induced flooding at the site is considered nonexistent.

\subsection*{7.0 GEOTECHNXCAL DESYGN PARAMETERS}

\subsection*{7.1 Shrinkage/Bulking and Subsidence}

Volumetric changes in earth quantities occur when excavated onsite soil are replaced as properly compacted fill. The following table, Table 3, is an estimate of the shrinkage and bulking factors for the various geologic units present onsite. These estimates are based on in-place densities of the various materials and on the estimated average degree of relative compaction that will be achieved during grading.

TABLE 3
Estimated Shrinkage/Bulking
\begin{tabular}{|c|c|}
\hline GEOLOGIC UNIT & SHRINKAGE PERCENT \\
\hline Artificial Fill, Undoctumented & \(6 \%\) to \(15 \%\) \\
\hline Alluvium & \(10 \%\) to \(15 \%\) \\
\hline Topsoil & \(10 \%\) to \(15 \%\) \\
\hline Older Alluvial Fan Deposits (Qoa) & \(9 \%\) to \(13 \%\) \\
\hline GEOLOGIC UNIT & BULKING PERCENT \\
\hline Bedrock: Bonzal Tonalite & \(0 \%\) TO \(10 \%\) \\
\hline
\end{tabular}

Subsidence of the older alluvial fan deposits and bedrock, because of recompaction of exposed soil or bedrock prior to fill placement, and placement of proposed fills, is estimated to be about 0.15 to 0.20 feet.

The above estimates of shrinkage are intended as an aid for project engineers in determining earthwork quantities. However, these estimates should be used with some caution since they are not absolute values. These are preliminary rough estimates which may vary with depth of removal, stripping losses, field conditions at the time of grading, etc. Handling losses, and reduction in volume due to removal of oversized material, are not included in the estimates.

\subsection*{7.2 Excavation Characteristics}

The following excavation characteristics of the various material types at the site have been developed based on LGC's geologic mapping and experience with these materials in the area and are presented in Table 4 below:

TABLE 4
Excavation Characteristics
\begin{tabular}{|c|c|c|c|}
\hline GEOLOGIC UNIT & \begin{tabular}{c} 
Easy* \\
Ripping
\end{tabular} & \begin{tabular}{c} 
Moderately** \\
Difficult \\
Ripping
\end{tabular} & \begin{tabular}{c} 
Oversized \\
Material \\
(>6 inches)
\end{tabular} \\
\hline Artificial Fill (Afu) & X & X & X \\
\hline Topsoil & X & & X \\
\hline Alluvium (Qal) & X & & X \\
\hline Alluvial Fan Deposits (Qf) & X & X \\
\hline Bedrock: Bonzal Tonalite (Qdi) & & X & X \\
\hline
\end{tabular}

To better determine if rip-ability with conventional equipment is feasible or if alternative excavation methods such as blasting is necessary, we recommend a seismic refraction survey.

\subsection*{7.3 Compressible/Collapsible Soil}

The results of our laboratory in-situ moisture and density testing indicate that the existing undocumented artificial fill, topsoil, alluvium and weathered portions of the older alluvial fan deposits and bedrock are susceptible to varying degrees of intolerable settlement and/or hydro-consolidation (collapse) when a load is applied, or the soil is saturated. Consequently, these materials should be collectively overexcavated to underlying competent older alluvial fan deposits or bedrock and replaced as engineered compacted fill.

\subsection*{8.0 SITE EARTHWORK}

\subsection*{8.1 General Earthwork and Grading Specifications}

Earthwork and grading should be performed in accordance with applicable requirements of the grading code of the County of Riverside and in accordance with the following recommendations prepared by this firm. Grading should also be performed in accordance with the applicable provisions of the attached "Standard Grading Specifications" prepared by LGC (Appendix D), unless specifically revised or amended herein. In case of conflict, the following recommendations shall supersede those included in as part of LGC's General Earthwork and Grading Specifications (Appendix D).

\subsection*{8.2 Geotechnical Observations and Testing}

Prior to the start of grading, a meeting should be held on the site with the owner or his representative, developer, grading contractor, civil engineer and geotechnical consultant to discuss the work schedule and geotechnical aspects of the grading. Rough grading, which includes clearing, overexcavation, scarification/processing and fill placement, should be accomplished under the full-time observation and testing of the geotechnical consultant. Fills should not be placed without prior approval from the geotechnical consultant.

A representative of the project geotechnical consultant should also be present onsite on a full-time basis during grading operations to document proper placement and compaction of fills, as well as to document excavations and compliance with the other recommendations presented herein.

\subsection*{8.3 Clearing and Grubbing}

Weeds/shrubs, grasses, boulders and trees in areas to be graded should be stripped and hauled offsite. Trees to be removed should be grubbed so that the stumps and major-root systems are removed and the organic materials hauled offsite. During site grading, roots, tree branches and other deleterious materials missed during clearing and grubbing operations should be removed from fill sources prior to placement.

The project geotechnical consultant or his qualified representative should be notified at the appropriate times to provide observation and testing services during clearing and grubbing operations to observe and document compliance with the above recommendations. In addition, buried structures, unusual or adverse soil conditions encountered that are not described or anticipated herein should be brought to the immediate attention of the geotechnical consultant. The existing drainage courses must be cleared of organics, debris, and sediment and widened to accommodate compaction equipment.

\subsection*{8.4 Private Sewage System Abandonment}

Private sewage systems and/or other subsurface structures that may be encountered should be located, removed and/or properly abandoned. Abandonment and/or removal of septic systems that may exist should be in accordance with local codes. Seepage pits, if abandoned in-place, should be pumped clean, backfilled with gravel or clean sand jetted into place, and then capped with 2 feet or more of at least a 2 -sack slurry for a minimum distance of 2 feet outside the edge of the seepage pit. The top of the slumy cap should be at least 10 feet below proposed grade.

\subsection*{8.5 Water-Well Capping}

Unknown water wells that are encountered within the site, which are to be abandoned, should be abandoned and capped under permit by the appropriate govemmental agency from Riverside County. In addition, a minimum 10 -foot thick compacted fill blanket, below proposed grade, should be placed above the previously or newly-capped water wells.

\section*{Overexcavation and Ground Preparation}

The site is underlain by approximately 2 feet to 7 feet and possibly as much as 10 feet of compressible materials. Existing undocumented artificial fill, topsoil, alluvium and weathered portions of the older alluvial fan deposits and bedrock are considered unsuitable for support of proposed fills, structures, and/or improvements, and should be overexcavated to expose underlying competent older alluvial fan deposits or bedrock. Where overexcavation and grading do not provide 5 feet or more of fill below finished pad-grade within areas for proposed structures, retaining walls, or fence walls, the area should be overexcavated to 5 feet or more below proposed grade or 2 feet or more below the bottom of footings for structures or walls, whichever is deeper. Actual depths of overexcavation should be evaluated upon review of final grading and foundation plans as well as during grading on the basis of observations and testing during grading by the project geotechnical consultant.

Prior to placing engineered fill, the exposed bottom surfaces in each overexcavated area should first be scarified to a depth of approximately 6 inches, watered or air-dried as necessary to achieve a uniform water content near optimum or slightly higher, and then compacted in place to a relative compaction of 90 percent or more (based on American Standard of Testing and Materials [ASTM] Test Method D1557).

The estimated locations, extent, and approximate depths for overexcavation of unsuitable materials are indicated on the enclosed Geotechnical Map (Plate 1). The geotechnical consultant should be provided with appropriate survey staking during grading to document that depths and/or locations of recommended overexcavation are adequate.

Sidewalls for overexcavations greater than 4 feet in height should not be steeper than 1:1 horizontal to vertical (h:v) and should be periodically slope-boarded during excavation to remove loose surficial debris and facilitate geologic mapping. Flatter excavations may be necessary for stability.

The grading contractor will need to consider appropriate measures necessary to excavate existing improvements adjacent to the site without endangering those because of caving or sloughing.

\subsection*{8.7 Subdrains}

Following overexcavation of the topsoil, alluvium and weathered portions of the older alluvial fan deposits or bedrock, in the existing drainage course of the site a subdrain should be installed where the ultimate depth of fill below proposed grade exceeds approximately 10 feet. Tentative locations of the recommended subdrains should be evaluated once actual grading plans are developed. Actual locations should also be determined by the geotechnical consultant once conditions are exposed during grading. The subdrains will help mitigate potential buildup of hydrostatic pressures below compacted fill due to infiltration of sub-surface and surface waters.

\subsection*{8.8 Fill Suitability}

Soil materials excavated during on-site grading are generally considered suitable for use as compacted fill provided that such soil does not contain significant amounts of trash, vegetation, organic material, construction debris, and oversize material.

\subsection*{8.9 Oversized Material}

Oversized material that may be encountered during grading, greater than 6 inches, should be reduced in size or removed from the site

\subsection*{8.10 Cut/Fill Transitions and Differentlal Fill Thicknesses}

To mitigate distress to structures and walls related to the detrimental effect of differential settlement, the cut portions should be eliminated from cut/fill transition areas in order that the entire structure or wall be founded on a approved uniform material. This should be accomplished by overexcavating the "cut" portions and shallow fill portions 5 feet or more below proposed pad grade or 2 feet below proposed
footings for structures or walls, whichever is deeper and replacing the excavated materials as properly compacted fill. Recommended depths of overexcavation are provided in the following table:
\begin{tabular}{|c|c|}
\hline DEPTH OF FTLL ("Fill" portion) & DEPTH OF OVEREXCAVATION ("cut" portion) \\
\hline Up to 15 feet & 5 feet (minimum) \\
\hline Greater than 15 feet & \begin{tabular}{c} 
One-third the maximum thickness of fill placed on the "fill" \\
portion (12 feet maximum)
\end{tabular} \\
\hline
\end{tabular}

\subsection*{8.11 Benching}

Where compacted fills are to be placed on natural slope surfaces inclining at 5:1 (h:v) or greater, the ground should be excavated to create a series of level benches, which have at least a minimum height of 4 feet, excavated into competent bedrock or existing compacted engineered materials. Typical benching details are described in the attached LGC "Standard Grading Specifications" (Appendix D).

\subsection*{8.12 Flll Placement}

Fills should be placed in lifts not greater than 6 inches in uncompacted thickness, watered or air-dried as necessary to achieve a uniform water content of at least optimum moisture content, and then compacted in place to relative compaction of 90 percent or more. Fills should be maintained in a relatively level condition. The laboratory maximum dry density and optimum moisture content for each change in soil type should be determined in accordance with ASTM Test Method D1557.

\subsection*{8.13 Inclement Weather}

Inclement weather may cause rapid erosion during mass grading and/or construction. Proper erosion and drainage control measures should be in-place during periods of inclement weather in accordance with Riverside County and California State requirements.

\subsection*{9.0 SLOPE CONSTRUCTION}

\subsection*{9.1 Slope Stability}

Cut slopes and fill slopes at the proposed heights at slope ratios of approximately 2:1 (H:V) or flatter and should be grossly and surficially stable.

\subsection*{9.2 Fill Slopes}

Following overexcavation of unsuitable materials, fill slopes and fill over cut slopes should be initiated on a minimum 15 feet wide key excavated into competent older alluvial fan deposits or bedrock if the ground gradient is steeper than \(5: 1(\mathrm{H}: \mathrm{V})\) as approved by LGC. The bottom of the fill keys should be tilted at 2 percent back into the slope.

\subsection*{9.3 Cut Slopes}

Proposed cut slopes may expose low-density, dry and/or cohesionless soil or bedrock with out-of-slope planner features, which will likely require stabilization by overexcavation and replacement with compacted fill.

\subsection*{9.4 Temporary Excavations}

Temporary excavations varying up to a height of approximately 2 feet to 10 feet below existing grades will be necessary to accommodate the recommended overexcavation of the unsuitable soil. Based on the physical properties of the onsite soil, temporary excavations exceeding 4 feet in height should be cut back at a ratio of \(1: 1\) (h:v) or flatter, for the duration of the overexcavation and recompaction of unsuitable soil material. Temporary slopes excavated at the above slope configurations are expected to remain stable during grading operations. However, temporary excavations should be observed by a representative of the project geotechnical consultant for any evidence of potential instability. Depending on the results of these observations, revised slope configurations may be necessary.

Other factors which should be considered with respect to the stability of the temporary slopes include construction traffic and storage of materials on or near the tops of the slopes, construction scheduling, presence of nearby walls or structures on adjacent properties, and weather conditions at the time of construction. Applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1970, and the Construction Safety Act should also be followed.

\subsection*{10.0 POST-GRADING CONSIDERATIONS}

\subsection*{10.1 Control of Surface Water and Drainage Control}

Positive-drainage devices such as sloping sidewalks, graded-swales, and/or area drains, should be provided to collect and direct water away from the structure and slopes. Neither rain nor excess irrigation water should be allowed to collect or pond against building foundations. Drainage should be directed to adjacent driveways, adjacent streets or storm-drain faculties and maintained at all times. The site is in a semi-arid climate area, from a geotechnical standpoint, thus the ground surface adjacent to the structures should be sloped at a gradient of at least 2 percent for a distance of at least 10 feet. Each graded lot should be further maintained by a swale or drainage path at a gradient of at least 1 percent. Where necessary, drainage paths may be shortened by use of area drains and collector pipes. Planters with open bottoms adjacent to buildings should be avoided. Over watering must be avoided.

\subsection*{10.2 Utility Trenches}

Utility-trench backfill within roadways, utility easements, under walls, sidewalks, driveways, floor slabs and any other structures or improvements should be mechanical compacted. The onsite soil should generally be suitable as trench backfill provided those are screened of rocks and other material over 3 inches in diameter and organic matter. Trench backfill should be compacted in uniform lifts (generally not exceeding 6 inches to 8 inches in uncompacted thickness) by mechanical means to at least 90 percent relative density (per ASTM Test Method D1557). Density testing, along with probing, should be performed by the project geotechnical consultant or his representative, to document proper compaction.

If trenches are shallow, the use of conventional equipment may result in damage to the utilities. Clean sand, having a sand equivalent (SE) of 30 or greater should be used to bed and shade the utilities. Sand backfill should be densified. The densification may be accomplished by jetting or flooding and then tamping to ensure adequate compaction. A representative from LGC should observe, probe, and test the backfill to verify compliance with the project specifications.

Utility-trench sidewalls deeper than 4 feet should be laid back at a ratio of \(1: 1\) (h:v) or flatter or braced. A trench box may be used in lieu of shoring. If shoring is anticipated, LGC should be contacted to provide design parameters.

To avoid point-loads and subsequent distress to clay, cement or plastic pipe, imported sand bedding should be placed 1 -foot or more above pipe in areas where excavated trench materials contain significant cobbles. Sand-bedding materials should be compacted and tested prior to placement of backfill.

Where utility trenches are proposed parallel to building footings (interior and/or exterior trenches), the bottom of the trench should not be located within a \(1: 1\) (h:v) plane projected downward from the outside bottom edge of the adjacent footing.

\subsection*{11.0 PRELIMTNARY FOUNDATTON DESYGN RECOMMENDATIONS}

\section*{1.1 .1}

General
Provided that site grading is performed in accordance with the recommendations of this report, conventional shallow foundations are considered feasible for support of the proposed residential structures. Tentative foundation recommendations are provided herein. However, these recommendations may require modification depending on existing as-graded conditions within the building sites upon completion of grading.

\subsection*{11.2 Allowable-Bearing Values}

An allowable-bearing value of 2,500 pounds per square foot ( psf ) may be used for 12 -inch wide or greater continuous footings or 24 -inch square pad footings, founded completely within in competent compacted fill at a depth of 12 -inches or more below the lowest adjacent compacted pad grade. This value may be increased by 20 percent for each additional foot of width and depth, to a value not greater than \(3,500 \mathrm{psf}\). The recommended allowable-bearing value includes both dead and live loads. The bearing capacities should be re-evaluated when loads and footing sizes have been finalized.

\subsection*{11.3 Settlement}

Based on the general settlement characteristics of compacted fill, the previous overexcavation recommendations in this report and anticipated loading, it is estimated the site would be subjected to a total settlement about 0.50 -inch, and a differential settlement of about 0.25 -inch over a distance of about 30 feet. It is anticipated that the majority of the settlement will occur during construction or shortly thereafter as building loads are applied.

The above settlement estimates are based on the assumption that a actual rough grading plan will be submitted to LGC for review, that additional soil tests may be deemed necessary, that revised settlement prediction may result and that grading will be performed in accordance with the final grading recommendations presented in a supplemental report and that the project geotechnical consultant will observe and/or test the soil conditions in the footing trenches.

\subsection*{11.4 Lateral Resistance}

Lateral forces on footings should be resisted by passive earth resistance and friction at the bottom of the footing. Foundations should be designed for a passive earth pressure of 330 psf per foot of depth to a maximum value of \(3,300 \mathrm{psf}\) and a coefficient of friction of 0.40 . The passive earth pressure incorporates a minimum factor of safety of 1.5 . The above values may be increased by \(1 / 3\) when designing for short-duration wind or seismic forces.

The above values are based on footings placed directly against compacted fill. In the case where footing sides are formed, backfill placed against the footings should be compacted to 90 percent or more of maximum dry density as determined by ASTM D1557.

\subsection*{11.5 Footing Sethacks from Descending Slopes}

Where structures are proposed near the tops of descending graded or natural slopes, the footing setbacks from the slope face should conform to the 2016 CBC, Figure 1808.7.1. The required setback is H/3 (one-third the slope height) measured along a horizontal line projected from the lower outside face of the footing to the slope face. The footing setbacks should be 5 feet or more where the slope height is 15 feet or less and vary up to 40 feet where the slope height exceeds 15 feet.

\subsection*{11.6 Building Clearances from Ascending Slopes}

Building setbacks from ascending graded or natural slopes should conform with the 2016 CBC, Figure 1808.7.1, which requires a building clearance of \(\mathrm{H} / 2\) (one-half the slope height) varying from 5 to 15 feet. The building clearance is measured along a horizontal line projected from the toe of the slope to the face of the building. A retaining wall may be constructed at the base of the slope to achieve the required building clearance.

\subsection*{11.7 Footing Observations}

Footing trenches should be observed by the project geotechnical consultant to document that they have been excavated into competent bearing compacted fill soil. The foundation trenches should be observed prior to the placement of forms, reinforcement or concrete. The trenches should be trimmed neat, level and square. Loose, sloughed or moisture-softened soil should be removed prior to concrete placement.

Excavated materials from footing excavations should not be placed in slab-on-ground areas unless the soil are compacted to 90 percent or more of maximum dry density as determined by ASTM D1557.

\subsection*{11.8 Expansive Soil Considerations}

Results of preliminary laboratory tests by LGC indicate onsite soil materials exhibit expansion potentials of VERY LOW in accordance with 2016 CBC, Chapter 18. Given that generally the expansion index of the onsite soil is VERY LOW, recommendations to mitigate the effects of expansive soil may not be required. However, expansive soil conditions of the near surface finish grade soil should be evaluated and tested for individual building pads on a pad-by-pad basis during and at the completion of rough grading to verify and/or modify the anticipated conditions. The design and construction details presented herein are intended to provide recommendations for the levels of expansion potential which may be evident at the completion of rough grading. Furthermore, it should be noted that additional slab thickness, footing sizes and/or reinforcement more stringent than the recommendations that follow should be provided as recommended by the project structural engineer.

\subsection*{11.9 Footing/Floor Slabs - Very Low Expansion Potential}

The following are our recommendations where foundation soil exhibit VERY LOW expansion potential as classified in accordance with 2016 CBC. For this condition, it is recommended that footings and floors be constructed and reinforced in accordance with the following criteria. However, additional slab thickness, footing sizes and/or reinforcement may be required by the project architect or structural engineer.

\section*{- Footings}
- Exterior continuous footings should be founded entirely in compacted engineered fill below the lowest adjacent final exterior pad grade at minimum depths of 12 inches and 18 inches deep for one-story and for two-story construction, respectively. Interior continuous footings may be founded at a depth of 12 inches or greater for one-story and two-story structures. Continuous footings should have a minimum width of 12 inches for one-story and 15 inches for two-story structures.
- Continuous footings should be reinforced with a minimum of two (2) No. 4 bars, one near the top and one near the bottom.
- Interior isolated pad footings should be 24 inches or more square and founded at a depth of 12 inches or more for one-story and two-story structures and 18 -inches or more for threestory and four-story structures, below the lowest adjacent grade. Footings should be reinforced in accordance with the structural engineer's recommendation.
- Exterior pad footings should be 24 inches or more square and founded at a depth of 18 inches or more below the lowest adjacent grade. Isolated exterior footings should be connected with grade beams. Footings should be reinforced in accordance with the structural engineer's recommendations.
- Floor Slabs
- Concrete floor slabs should be 4 inches or more thick and reinforced with No. 3 bars spaced 24 inches or less on-centers, both ways. Slab reinforcement should be supported on concrete chairs or bricks so that the desired placement is near mid-depth.
- Concrete floors should be underlain with a moisture-vapor retarder consisting of 15 -mil thick vapor barrier. Laps within the membrane should be sealed and overlapped 12 inches. Two inches or more of clean sand should be placed above and below the membrane to promote uniform curing of the concrete.
- Prior to placing concrete, subgrade soil should be thoroughly moistened to approximately \(100 \%\) of optimum water content to promote uniform curing of the concrete and reduce the development of shrinkage cracks. The moisture content should penetrate to a minimum depth of 12 inches.

\subsection*{12.0 RETATNYNG WALLS}

\subsection*{12.1 Lateral Earth Pressures and Retaining Wall Design Parameters}

Conventional footings for retaining walls founded entirely in properly compacted fill should be embedded at least 18 inches below lowest adjacent grade. At this depth, an allowable uniform bearing capacity of 2,500 psf may be assumed for retaining walls founded in competent compacted fill.

The following are lateral earth pressures are recommended for retaining walls up to 10 feet high that may be proposed. The recommended lateral pressures for approved on-site or import soil (with an expansion index of \(\mathbf{2 0}\) or less and an angle of internal friction (phi) of at least \(\mathbf{3 6}\) degrees) for level or sloping backfill are presented in Table 5. Onsite soil should be screened of rocks and other material over 3 inches in diameter.

\section*{TABLE 5 \\ Lateral Earth Pressures}
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[b]{2}{*}{CONDITIONS} & \multicolumn{4}{|c|}{EQUIVALENT FLUID WEIGHT (pCf)} \\
\hline & Level Backfill (up to 6 feet) & Level Backfill Dynamic ( \(>6\) feet to 10 feet) & 2:1 Backfill Ascending (up to 6 feet) & 2:1 Backfill Ascending-Dynamic ( \(>6\) feet to 10 feet) \\
\hline Active & 35 & 55 & 50 & 70 \\
\hline At-Rest & 55 & 75 & 80 & 100 \\
\hline Passive & 330 & 330 & 190 & 190 \\
\hline
\end{tabular}

The friction coefficient of 0.40 may be used at the concrete footing and soil interface for sliding resistance. Wall footings should be designed in accordance with structural considerations.

Embedded structural walls should be designed to resist the lateral earth pressures. Restrained structural walls should be designed for at rest conditions. The magnitude of those pressures depends on the amount of deformation that the wall can yield under load. If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for "active" pressure. If the wall cannot yield under the applied load, the shear strength of the retained soil cannot be mobilized and the earth pressure will be higher. Such walls should be deslgned for "at-rest" conditions. If a structure moves toward the soil, the resulting resistance developed by the soil is the "passive" resistance.

The equivalent fluid pressure values assume free-draining conditions and a soil expansion index of \(\mathbf{2 0}\) or less. If conditions other than those assumed above are anticipated, revised equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer.

Surcharge loading effects from the adjacent structures should be evaluated by the geotechnical and structural engineers.

\subsection*{12.2 Footing Embedments}

The base of retaining wall footings constructed on level ground should be founded at a depth of 18 inches or more below the lowest adjacent final grade. Where retaining walls are proposed on or within 15 feet from the top of an adjacent descending fill slopes, the footings should be deepened such that a horizontal clearance of \(\mathrm{H} / 3\) or more (one-third the slope height) is maintained between the outside bottom edges of the footings and the face of the slope but not to exceed 15 feet nor be less than 5 feet. The above recommended footing setbacks are preliminary and may be revised based on site specific soil conditions. Footing or pier excavations should be observed by the project geotechnical representative to document that the footing trenches have been excavated into competent bearing soil and to the embedments recommended above. These observations should be performed prior to placing forms or reinforcing steel.

\subsection*{12.3 Drainage}

All retaining wall structures should be provided with appropriate wall drainage and appropriately waterproofed. Outlet pipes should be sloped to drain to a suitable outlet. It should be noted that that recommended wall drains does not provide protection against seepage through the face of the wall and/or efflorescence. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed to reduce this potential.

Weep holes or open vertical masonry joints should be provided in retaining walls 3 feet or less in height to reduce the likelihood of entrapment of water in the backfill. Weep holes, if used, should be 3 inches or more in diameter and provided at intervals of 6 feet or less along the wall. Open vertical masonry joints, if used, should be provided at 32 -inch or less intervals. A continuous gravel fill, 12 inches by 12 inches, should be placed behind the weep holes or open masonry joints. The gravel should be wrapped in filter fabric to reduce infiltration of fines and subsequent clogging of the gravel. Filter fabric may consist of Mirafi 140 N or equivalent.

In lieu of weep holes or open joints, for retaining walls less than 3 feet, a perforated pipe and gravel subdrain may be used. Perforated pipe should consist of 4 -inch or more diameter PVC Schedule 40 or ABS SDR-35, with the perforations laid down. The pipe should be embedded in 1.5 cubic feet per foot of 0.75 or 1.5 -inch open graded gravel wrapped in Mirafi 140N filter fabric.

Retaining walls greater than 3 feet high should be provided with a continuous backdrain for the mean full height of the wall. This drain could consist of geosynthetic drainage composite, such as Miradrain 6000 or equivalent, or a permeable drain material, placed against the entire backside of the wall. If a permeable drain material is used, the backdrain should be 1 or more feet thick. Caltrans Class II permeable material or open graded gravel or crushed stone may be used as permeable drain material. If gravel or crushed stone is used, it should have less than 5 percent material passing the No. 200 sieve. The drain should be
separated from the backfill with a geofabric. The upper 1 -foot of the backdrain should be covered with compacted fill. A drainage pipe consisting of 4 -inch diameter perforated pipe (described above) surrounded by 1 cubic foot per foot of gravel or crushed rock wrapped in a filter fabric should be provided along the back of the wall. The pipe should be placed with perforations down, sloped at 2 percent or more to discharge towards an appropriate outlet through a solid pipe. The pipe should outlet away from structures and slopes. The outside portions of retaining walls supporting backfill should be coated with an approved waterproofing compound to inhibit infiltration of moisture through the walls.

\subsection*{12.4 Temporary Excavations}

Retaining walls should be constructed and backfilled as soon as possible after backcuts are excavated. Prolonged exposure of backcut slopes may result in localized slope instability. To facilitate retaining wall construction, the lower 4 feet of temporary slopes may be cut vertical and the upper portions exceeding a height of 4 feet should be cut back at a gradient of \(1: 1\) (h:v) or flatter for the duration of construction. Temporary slopes should be observed by the project geotechnical consultant for evidence of potential instability. Depending on the results of these observations, flatter slopes may be necessary. The potential effects of various parameters such as weather, heavy equipment travel, storage near the tops of the temporary excavations and construction scheduling should also be considered in the stability of temporary slopes. Water should not be permitted to drain towards the slope. Surcharges from equipment, spoil piles, etc., should not be allowed within 10 feet of the top of the slope.

All excavations should be made in accordance with Cal/OSHA. Excavation safety is the sole responsibility of the contractor.

\subsection*{12.5 Retaining Wall BackfIII}

The retaining wall backfill soil (with an expansion index of 20 or less and an angle of internal friction of at least 36 degree) should be placed in 6 to 8 inch loose lifts, moisture-conditioned or air-dried as necessary to achieve near optimum water conditions, and compacted to at least 90 percent relative density (based on ASTM Test Methods D2922 and D3017).

\subsection*{13.0 MASONRY GARDEN WALLS}

\subsection*{13.1 Construction on Leve/ Ground}

Where masonry screen walls or garden walls are proposed on level ground and 5 feet or more from the tops of descending slopes, the footings for these walls may be founded at a depth of 18 inches or more below the lowest adjacent final grade. These footings should also be reinforced vith two No. 4 bars, one top and one bottom and in accordance with the structural engineer's recommendations.

\subsection*{13.2 Construction Joints}

In order to mitigate the potential for unsightly cracking related to the effects of differential settlement, positive separations (construction joints) should be provided in the walls at horizontal intervals of approximately 25 feet and at each corner. The separations should be provided in the blocks only and not extend through the footings. The footings should be placed monolithically with continuous rebar to serve as effective "grade beams" along the full lengths of the walls.

\subsection*{14.0 CONCRETE FLATWORK}

\subsection*{14.1 Nonstructural Concrete Flatwork}

Concrete flatwork (such as walkways, driveways, patios, bicycle trails, etc.) has a high potential for cracking because of changes in soil volume related to soil-moisture fluctuations. To reduce the potential for excessive cracking and lifting, concrete should be designed in accordance with the minimum guidelines outlined in Table 6. These guidelines will reduce the potential for irregular cracking and promote cracking along construction joints, but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress.

TABLE 6
Minimun Recommendations for Nonstructural Concrete Flatwork Over Very Low Expansive Soil
\begin{tabular}{|c|c|c|c|c|}
\hline & \begin{tabular}{c} 
Private \\
Sidewallss
\end{tabular} & Private Drives & \begin{tabular}{c} 
Patlos/ \\
Entryways
\end{tabular} & \begin{tabular}{c} 
Clty Sidewalk \\
Curb and Gutters
\end{tabular} \\
\hline \begin{tabular}{c} 
Minimum \\
Thickness (in.)
\end{tabular} & 4 (nominal) & 4 (full) & 4 (full) & \begin{tabular}{c} 
City/Agency \\
Standard
\end{tabular} \\
\hline Presaturatlon & Presoak to 12 inches & Presoak to 12 inches & Presoak to 12 inches & \begin{tabular}{c} 
City/Agency \\
Standard
\end{tabular} \\
\hline Reinforcement & - & \begin{tabular}{c} 
No. 3 at 24 inches on \\
centers
\end{tabular} & \begin{tabular}{c} 
No. 3 at 24 inches on \\
centers
\end{tabular} & \begin{tabular}{c} 
City/Agency \\
Standard
\end{tabular} \\
\hline Thickened \\
Edge & - & \(8^{\prime \prime} \times 8^{\prime \prime}\) & \(8^{\prime \prime} \times 8^{\prime \prime}\) & \begin{tabular}{c} 
City/Agency \\
Standard
\end{tabular} \\
\hline Crack Control & \begin{tabular}{c} 
Saw cut or deep open \\
tool joint to a \\
minimum of \(1 / 3\) the \\
concrete thickness
\end{tabular} & \begin{tabular}{c} 
Saw cut or deep open \\
tool joint to a \\
minimum of \(1 / 3\) the \\
concrete thickness
\end{tabular} & \begin{tabular}{c} 
Saw cut or deep open tool \\
joint to a minimum of \(1 / 3\) \\
the concrete thickness
\end{tabular} & \begin{tabular}{c} 
City/Agency \\
Standard
\end{tabular} \\
\hline \begin{tabular}{c} 
Maximum \\
Joint Spacing
\end{tabular} & 5 feet & \begin{tabular}{c}
10 feet or quarter cut \\
whichever is closer
\end{tabular} & 6 feet & \begin{tabular}{c} 
City/Agency \\
Standard
\end{tabular} \\
\hline
\end{tabular}

\subsection*{14.3 Subgrade Preparation}

As a further measure to reduce cracking of concrete flatwork, the upper 12 inches of subgrade soil below concrete-flatwork areas should first be compacted to a relative density of 90 percent of more and then thoroughly wetted to achieve a moisture content that is equal to or slightly greater than optimum moisture content. This moisture should extend to a depth of 12 inches or more below subgrade and maintained in the soil during placement of concrete. Pre-watering of the subgrade will promote uniform curing of the concrete and reduce the potential for the development of shrinkage cracks. A representative of the project geotechnical consultant should observe and document the density and moisture content of subgrade soil and depth of moisture penetration prior to placing concrete.

\subsection*{15.0 PLANTERS}

Area drains should be extended into planters that are located within 5 feet of building walls, foundations, retaining walls and masonry garden walls to reduce excessive infiltration of water into the underlying foundation soil. The surface of the ground in these areas should be sloped at a gradient of 2 percent or more away from the walls and foundations. Drip-irrigation systems are also recommended to reduce ovenwatering and subsequent saturation of the adjacent foundation soil.

\subsection*{16.0 SOIL CORROSTVITY}

\subsection*{16.1 Corrosivily to Concrete and Metal}

The National Association of Corrosion Engineers (NACE) defines corrosion as "a deterioration of a substance or its properties because of a reaction with its environment". From a geotechnical viewpoint, the "environment" is the prevailing foundation soil and the "substances" are the reinforced concrete foundations or various buried metallic elements such as rebar, piles, pipes, etc., which are in direct contact with or within close vicinity of the foundation soil.

In general, soil environments that are detrimental to concrete have high concentrations of soluble sulfates. ACI 318R-05, Table 4.3.1 provides specific guidelines for the concrete mix design based on different amount of soluble sulfate content. The minimum amount of chloride ions in the soil environment that are corrosive to steel, either in the form of reinforcement protected by concrete cover, or plain steel substructures such as steel pipes or piles, is 500 ppm per California Test 532 and ACI 318R-05, Table 4.4.1.

The corrosion potential of the onsite materials was evaluated for its effect on steel and concrete. The corrosion potential was evaluated using the results of laboratory tests on representative samples obtained during our field exploration. Laboratory testing was performed to evaluate pH , minimum electrical resistivity and chloride and soluble sulfate content. Based on testing performed during this investigation within the project site, the onsite soil are classified as having a negligible sulfate exposure condition in accordance with ACI 318R-05, Table 4.3.1, and negllgible chloride exposure condition in accordance with ACI 318R-05, Table 4.4.1. Based on laboratory testing of on-site soil it is also our opinion that onsite soil should be considered highly corrosive to buried metals due to the low resistivity. Metal piping should be corrosion-protected or consideration should be given to using plastic piping instead of metal or plastic sleeving around the metal pipe.

Despite the minimum recommendation above, LGC is not a corrosion-engineering firm. Therefore, we recommend that you consult with a competent corrosion engineer and conduct additional testing (if required) to evaluate the actual corrosion potential of the site and to provide recommendations to reduce the corrosion potential with respect to the proposed improvements. The recommendations of the corrosion engineer may supersede the above requirements.

These recommendations are based on the current and previous samples of the subsurface soil or bedrock. The initiation of grading at the site could blend various soil types and import soil may be used locally. These changes made to the foundation soil could alter sulfate-content levels. Accordingly, it is recommended that additional testing be performed at the completion of grading.

\subsection*{17.0 PLAN REVTEWS AND CONSTRUCTION SERVICES}

This report is a preliminary geotechnical investigation prepared for the exclusive use of Mr. Shizao Zheng to assist the project engineer and architect in the design of the proposed development. It is recommended that LGC be engaged to review the actual grading plans, foundation plans and final design drawings and specifications prior to construction. This is to document that the recommendations contained in this report have
been properly interpreted and/or are incorporated into the project specifications. LGC's review of such plans and those that might result from the recommended reviews may indicate that additional subsurface exploration, laboratory testing and analysis should be performed to address areas of concern. If LGC is not accorded the opportunity to review those documents, LGC cannot take responsibility for misinterpretation of our recommendations.

We recommend that LGC be retained to provide geotechnical engineering services during both the rough grading and construction phases of the work. This is to document compliance with the design, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

If the project plans change significantly (e.g., building loads or type of structures or grading), LGC should be retained to review our original design recommendations and applicability to the revised construction. If conditions are encountered during construction that appear to be different than those indicated in this report, this office should be notified immediately. Design and construction revisions may be required.

\subsection*{18.0 LTMXTATIONS}

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by engineers and geologists practicing in this or similar localities. The professional opinions contained herein were derived in accordance with current standards of practice for preliminary reports. Other warranties, expressed or implied, are not made or implied as to the conclusions and professional advice included in this report. The soil samples taken and submitted for laboratory testing, the observations made and the in-situ field testing performed are believed representative of the entire project; however, soil and geologic conditions can vary in characteristics between excavations, both laterally and vertically and may be different than our preliminary findings. If this occurs, the changed conditions must be evaluated by the project geotechnical engineer and engineering geologist and design adjustments may be required recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the project engineers and incorporated into the plans, and that necessary steps are taken to assure that the contractor and/or subcontractor properly implements the recommendations in the field during construction. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

The conclusions and opinions contained in this report are based on the results of our scope of work and represent our professional judgment. The findings, conclusions and recommendations presented in this report are to be considered preliminary only and subject to confirmation by LGC during the construction process. Without this confirmation, this report is to be considered incomplete; and LGC will not assume any responsibility for its use.

The conclusions and opinions contained in this report are valid up to a period of 2 years from the date of this report. Changes in the conditions of a property can and do occur with the passage of time, whether those be because of natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate codes or standards may occur, whether those result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside LGC's control. Therefore, pending such changes made or if the scope of this project changes, an update of this report should be completed.

This report was not prepared for use by parties or projects other than those named or designed above and is otherwise considered insufficient for other parties or other purposes.

\section*{APPENDIX A}

\section*{REFERENCES AND AERIAL PHOTOGRAPHS}


\section*{APPENDIX A}

\section*{References Reviewed}

Blake, T.F., 1998, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, Prepared by California Division of Mines and Geology.

Califomia Department of Water Resources, Water Data Library, Groundwater Levels for Station 335628N1171932W001, accessed September 14, 2018.

California Division of Mines and Geology, 2000, "Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region", CD 2000-003.

Dibble, Thomas W., 2003, Geologic Map of The Riverside East/South \(1 / 2\) of San Bemardino South Quadrangles, San Bernardino and Riverside County, California.

Greensfelder, R.W., 1974, Maximum Credible Rock Accelerations from Earthquakes in California, CDMG, MS-23.
EQFAULT, Seismic Hazard Analysis, (33.9582, -117.2955), accessed September 17, 2018.
Hart, Earl W., and William, A. Bryant, 1997, Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Map, Special Publication 42, Revised 1997, Supplements 1 and 2 added 1999.

Hayes, Walter W., 1980, Procedures for Estimating Earthquake Engineering, edited by R.W. Weigel.
Riverside County Open Data, http://data-countyofriverside.opendata.arcgis.com, Natural Hazards, Faults, accessed June 14, 2018.

Riverside County Open Data, http://data-countyofriverside.opendata.arcgis.com, Natural Hazards, Fault Zones, accessed June 14, 2018.

Riverside County Open Data, http://data-countyofriverside.opendata.arcgis.com, Natural Hazards, Liquefaction, accessed June 14, 2018.

Sikand Engineering, Conceptual Grading Plan Tract No. 37557, Scale \(1^{\prime \prime}=80^{\prime}\), Sheet 2 of 2 . Dated June 13, 2018.

Sikand Engineering, Preliminary Grading Plan Tract No. 37557, Scale \(1^{\prime \prime}=80^{\prime}\), Sheet 2 of 2. Dated June 13, 2018.

Soil Exploration Company, Inc., Rockfall Potential, Tentative Tract Map 33626, Amended Map No. 1 City of Moreno Valley, California plot dated 2/19/2007.

Southern California Earthquake Center, University of Southern California, Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines For Analyzing and Mitigating Liquefaction Hazards in California, March 1999.

\section*{Aerial Photographs Reviewed}
\begin{tabular}{|c|c|}
\hline SOURCE & FLIGHT DATE \\
\hline Google Earth Pro. & \(2 / 2018\) \\
\hline Google Earth Pro. & \(3 / 2017\) \\
\hline Google Earth Pro. & \(10 / 2016\) \\
\hline Google Earth Pro. & \(2 / 2016\) \\
\hline Google Earth Pro. & \(4 / 2014\) \\
\hline Google Earth Pro. & \(11 / 2013\) \\
\hline Google Earth Pro. & \(11 / 2012\) \\
\hline Google Earth Pro. & \(6 / 2012\) \\
\hline Google Earth Pro. & \(3 / 2011\) \\
\hline Google Earth Pro. & \(11 / 2009\) \\
\hline Google Earth Pro. & \(6 / 2009\) \\
\hline Google Earth Pro. & \(6 / 2008\) \\
\hline Google Earth Pro. & \(12 / 2006\) \\
\hline Google Earth Pro. & \(8 / 2006\) \\
\hline Google Earth Pro. & \(1 / 2006\) \\
\hline Google Earth Pro. & \(12 / 2005\) \\
\hline Google Earth Pro. & \(10 / 2005\) \\
\hline Google Earth Pro. & \(12 / 2004\) \\
\hline Google Earth Pro. & \(1 / 2004\) \\
\hline Google Earth Pro. & \(12 / 2003\) \\
\hline Google Earth Pro. & \(11 / 2003\) \\
\hline Google Earth Pro. & \(12 / 2002\) \\
\hline Google Earth Pro. & \(6 / 2002\) \\
\hline Google Earth Pro. & \(6 / 1994\) \\
\hline & \\
\hline & \\
\hline
\end{tabular}

\section*{APPENDIX B}

\section*{EXPLORATORY TRENCH LOGS}












\section*{APPENDTXB}

Field Exploration

\section*{B-1 General}

Geologic mapping of the site was performed by LGC's personnel. The locations of the exploratory excavations were chosen to obtain site and trench specific subsurface information needed to achieve the objective for this investigation.

A visual survey was conducted to verify that the proposed excavations would not encounter any subsurface utility lines. Underground utilities were not encountered during the field exploratory program.

\section*{B-2 Excavation and Sampling}

Surface geologic mapping of the site and accessible surrounding areas was completed by a geologist from this firm during September 2018, utilizing the referenced Conceptual Grading Plan Tract Map No. 37557 for plotting geologic units. This information is plotted on the enclosed Geotechnical Map (Plate 1).

Ten (10) exploratory trenches, TR-1 through TR-8 and \(\Pi-1\) through \(\Pi-2\), were excavated with a backhoe on September 4, 2018 and September 6, 2018 to depths of approximately 3.0 to 13.5 feet below the existing ground surface. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions at the subject site, which consisted of classification of site soil, determination of groundwater elevations (if present), and collection of representative soil and bedrock samples.

Prior to our subsurface work, an underground utilities clearance was obtained from Underground Service Alert of Southern California. At the conclusion of the subsurface investigation, test pits were backfilled with native materials. Minor settlement of the backfill soil may occur over time.

During our subsurface investigation, representative bulk samples were retained for laboratory testing. Laboratory testing was performed on selected representative samples of onsite soil and/or bedrock materials and included maximum dry density and optimum water content, expansion index, sulfate content, chloride content, pH , resistivity, grain size analysis, and direct shear. A discussion of the tests performed and a summary of the results are presented in Appendix C. Moisture and density test results are presented on the trench logs which are presented on the following pages.

\section*{B-3 Miscellaneous}

The trench logs describe the earth materials encountered, sampling method used, and the results of field and laboratory tests. The logs also show the test pit number, date of completion, and the name of the logger. A geologist logged the trenches in accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) ASTM D2488-93. The boundaries between soil types shown on the logs are approximate and the transition between different soil layers may be gradual. The logs of the trenches are presented on the following pages.

\section*{APPENDIXC}

\section*{LABORATORY TESTING PROCEDURES AND TEST RESULTS}


\section*{APPENDIX C}

\section*{Laboratory Testing Procedures and Test Results}

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the soil. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Soil Classification: Soil were classified according the Unified Soil Classification System (USCS) in accordance with ASTM Test Methods D2487 and D2488. The soil classifications (or group symbol) are shown on the laboratory test data, and boring logs.

Maximum Dry Density Tests: The maximum dry density and optimum water content of typical materials were determined in accordance with ASTM test method D1557. The test results are presented in the table below:
\begin{tabular}{|c|c|c|c|}
\hline \begin{tabular}{c} 
SAMPLE \\
LOCATION
\end{tabular} & \begin{tabular}{c} 
SAMPLE DESCRIPTION \\
(USCS)
\end{tabular} & \begin{tabular}{c} 
MAXIMUM DRY DENSITY \\
(\% by weight)
\end{tabular} & \begin{tabular}{c} 
OPTIMUM WATER \\
CONTENT (\%)
\end{tabular} \\
\hline\(\Pi-1 @ 0-2^{\prime}\) & Silty SAND/Clayey SILT (SM/ML) & 135.9 & 7.0 \\
\hline TR-4@ \(2-4^{\prime}\) & Bedrock; Quartz Diorite & 133.2 & 7.0 \\
\hline TR-8@ \(4-6^{\prime}\) & Silty SAND/Clayey SILT (SM/ML) & 128.3 & 9.0 \\
\hline
\end{tabular}

Expansion Index: The expansion potential of a selected sample was evaluated by the Expansion Index Test, U.B.C. Standard No. 18-2 and/or ASTM test method D4829. Specimens are molded under a given compactive energy at or near the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1 -inch thick by 4 -inch diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below:
\begin{tabular}{|c|c|c|c|}
\hline \begin{tabular}{c} 
SAMPLE \\
LOCATION
\end{tabular} & \begin{tabular}{c} 
SAMPLE \\
DESCRIPTION(USCS)
\end{tabular} & \begin{tabular}{c} 
EXPANSION \\
INDEX
\end{tabular} & \begin{tabular}{c} 
EXPANSTON \\
POTENTIAL*
\end{tabular} \\
\hline TR-8@4-6' & Silty SAND/Clayey SILT (SM/ML) & 19 & Very Low \\
\hline
\end{tabular}
*Per ASTM D4829
Soluble Sulfates: The soluble sulfate content of selected samples was determined by standard geotechnical methods (CTM 417). The soluble sulfate content is used to determine the appropriate cement type and maximum water-cement ratios. The test results are presented in the table below:
\begin{tabular}{|c|c|c|c|}
\hline \begin{tabular}{c} 
SAMPLE \\
LOCATION
\end{tabular} & SAMPLE & SULFATE CONTENT & \begin{tabular}{c} 
SULFATE \\
EXPOSUURE
\end{tabular} \\
\hline TR-8@ 4-6' & Silty SAND/Clayey SILT (SM/ML) & Non-Detect & Negligible \\
\hline
\end{tabular}
*Per ACI 318R-05 Table 4.3.1
Chloride Content: Chloride content was tested with CTM 422. The results are presented below:
\begin{tabular}{|c|c|c|}
\hline \hline SAMPLE LOCATION & SAMPLE DESCRIPTION(USCS) & CHLORIDE CONTENT (Ppm) \\
\hline \hline TR-8@ \(4-6^{\prime}\) & Silty SAND/Clayey SILT (SM/ML) & 128 \\
\hline
\end{tabular}

Minimum Resistivily and pH Tests: Minimum resistivity and pH tests were performed with CTM 643. The results are presented in the table below:
\begin{tabular}{|c|c|c|c|}
\hline \hline \begin{tabular}{c} 
SAMPLE \\
LOCATLON
\end{tabular} & \begin{tabular}{c} 
SAMPLE \\
DESCRTPTION(USCS)
\end{tabular} & \(p H\) & \begin{tabular}{c} 
MINYMUM RESISTIVITY \\
(ohm-cm)
\end{tabular} \\
\hline TR-8@4-6' & Silty SAND/Clayey SILT (SM/ML) & 7.5 & 1,100 \\
\hline
\end{tabular}

Direct Shear: Direct shear tests were performed on selected remolded samples, which were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads, a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of less than 0.001 to 0.5 inch per minute (depending upon the soil type). The graphical test results are presented in the table below:
\begin{tabular}{|c|c|c|c||}
\hline SAMPLE LOCATION & SAMPLE DESCRIPTION & \begin{tabular}{c} 
ANGLE OF XNTERNAL \\
FRICTION (degrees)
\end{tabular} & \begin{tabular}{c} 
COHESYON \\
(psf)
\end{tabular} \\
\hline \hline TR-8@4-6' & Silty SAND/Clayey SILT (SM/ML) & 36 & 20 \\
\hline
\end{tabular}

\section*{APPENDIX D}

\section*{GENERAL EARTHWORK AND GRADING SPECIFICATIONS}


\section*{APPENDIX D}

\section*{General Earthwork and Grading Specifications}

\subsection*{1.0 General}
1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).
1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.
1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading.

The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory
conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

\section*{2.0}

\section*{Preparation of Areas to be Filled}
2.1 Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 10 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material spedalist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.
2.2 Processing: Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soil are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.
2.3 Overexcavation: In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.
2.4 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.
2.5 Evaluation/Acceptance of Fill Areas: All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.
3.1 General: Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soil of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soil to achieve satisfactory fill material.
3.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are spedifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.
3.3 Zmport: If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours ( 2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

\subsection*{4.0 Fill Placement and Compaction}
4.1 Fill Lavers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.
4.2 Fill Moisture Conditioning: Fill soil shall be watered, dried back, blended, and/or mixed, as necessary to attain relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-91).
4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-91). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.
4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-91.
4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soil shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).
4.6 Frequency of Compaction Testing: Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soil embankment. In addition, as a
guideline, at least one (1) test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

\subsection*{4.7 Compaction Test Locations:}

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two (2) grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

\subsection*{5.0 Subdrain Installation}

Subdrain systems shall be installed in accordance with the approved geotechnical report(s) and grading plan. The Geotechnical Consultant may recommend additional subdrain and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.



CANYON \& STREET SUBDRAINS


TYPICAL BUTTRESS/ STABILIZATION FILL DETAIL



\section*{OVERSIZE ROCK DISPOSAL}

FILL SLOPE


\section*{FILL-OVER-CUT SLOPE}


\section*{CUT-OVER-FILL SLOPE}

KEYING AND BENCHING

\section*{Appendix F \\ Slope Stability Report}


\title{
DYNAMIC GEOTECHNICAL SOLUTIONS \\ Geotechnical • Environmental • Materials Testing
}

GLOBAL STABILTIY ANALYSIS OF PROPOSED CUT AND FILL SLOPES, RELATIVE TO PROPOSED GATEWAY HEIGHTS, 108 CLUSTER UNIT DEVELOPMENT, CITY OF MORENO VALLEY, COUNTY OF RTVERSIDE, CALIFORNIA.

Dated: June 15, 2021
Project No. D21-1029-10

Prepared For:

Mr. Beau Cooper
United Engineering Group
s885 Haven Ave, STE 195
Rancho Cucamonga, California 91730

\title{
DGS DYNAMIC GEOTECHNICAL SOLUTIONS \\ Geotechnical - Environmental - Materials Testing
}

\section*{Mr. Beau Cooper}

United Engineering Group
8885 Haven Ave, STE 195
Rancho Cucamonga, Califomia 91730

Subject: Global Stability Analysis of Proposed Cut and FIII Slopes, Relative to Proposed Gateway Heights, 108 Cluster Unit Development, City of Moreno Valley, County of Riverside, California.

\subsection*{1.0 Introduction}

Dynamic Geotechnical Solutions, Inc. (DGS) is pleased to submit herewith our slope global stability report for the proposed cut and fill slopes, relative to proposed Gateway Heights, 108 Cluster Unit Development, City of Moreno Valley, County of Riverside, Califomia. This report presents the results of our global stability analyses, conclusions, and recommendations pertaining to the proposed cut and fill slopes within the proposed residential development.

\subsection*{2.0 Background}

There are proposed cut slopes and fills slopes, per the referenced conceptual grading plans by United Engineering Group, which have proposed maximum heights of 32 feet and 39 feet above grade. The most critical cut and fill slopes were evaluated during DGS's global stability analysis.

\subsection*{3.0 Laboratory Analysis}

No additional laboratory testing was conducted for the global stability analysis. Parameters used in evaluating global stability for the subject cut and fill slopes were derived from previous laboratory testing presented in the referenced report by LGC Geo-Environmental (Appendix A).

\subsection*{4.0 Global Stability Analysis}

A global stability analysis was performed for the cut slope above lots \(10-12\) and the fill slope below lots \(4-5\). The slopes were modeled in the depicted location per sheet 2 of the referenced conceptual grading plans. The global stability analysis was performed under static and pseudo-static conditions, as presented in Appendix B.

\subsection*{4.1 Static Condition}

Static conditions that were modeled during the global stability analysis were intended to simulate the day-to-day functionality of the proposed graded slopes. These conditions do not incorporate earthquake loading into the analysis. Previous shear strength and cohesion values obtained from the referenced reports (Appendix A) were used in the global stability analysis.

\subsection*{4.2 Pseudo-Static Condition}

Pseudo-static conditions attempt to model the proposed graded slopes when earthquake loads are imposed on the slope face. All pseudo-static conditions were modeled with an earthquake acceleration coefficient of 0.15 g . Previous shear strength and apparent cohesion values were used in the global stability analysis.

\subsection*{5.0 Results and Conclusions}

Based on our slope global stability analyses, the proposed orientations, per the referenced conceptual grading plans, for proposed cut and fill slopes produce a minimum required factor of safety of 1.5 under static conditions, and a 1.15 factor of safety under pseudo-static (earthquake loading) conditions. Therefore, the proposed graded slopes are considered to be stable from a geotechnical engineering standpoint, provided the recommendations presented herein and the referenced geotechnical report are implemented.

\subsection*{6.0 Recommendations}

All engineered graded slopes should be landscaped to prevent erosion over time of the slope face. During rough grading and composite wall installation, a geologist from LGC should be onsite to ensure that any adverse slope conditions do not arise, inspect fill slope keys, and to give in-field recommendations, as necessary. Additionally, all recommendations per the referenced conceptual grading plans and referenced report should be adhered to.

DGS should review any changes in the design prior to implementation to determine if future construction will conform to these report recommendations and the previous recommendations in the referenced geotechnical report.

\subsection*{7.0 Limitations}

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report. The findings of this report are valid as of the present date. However, changes in the conditions of a property can and do occur with the passage of time, whether they be due to natural processes or the works of man, on this or adjacent properties.

\section*{Closure}

If you have any questions regarding the content of this report, please do not hesitate to contact this office at your earliest convenience.

Sincerely,


Distribution: (4) Addressee
Attachments: Appendix A - References (Rear of Text)
Appendix B - Global Stability Analysis and Results (Rear of Text)
Plate 1-Global Stability Cross Sections Location Map

\section*{APPENDIX A}

REFERENCES

\section*{F.1.c}

\section*{APPENDIXA}

\section*{REFERENCES}

LGC Geo-Environmental, Inc., "Prelliminary Geotechnical Investigation for the Proposed Single-Family Residential Development, Tentative Tract Map 37557, City of Moreno Valley, Riverside County, Calfomia, "dated September 22, 2018 (Project No. G18-1648-10).

Conceptual Grading Ptan (Preliminary) Sheet 5 of 7, Tract 37153, Riverside, California, Scale: 1 inch \(=40\) feet dated November 30, 2018.

\section*{APPENDIX B}

\section*{APPENDIX B}

\section*{GLOBAL STABILITY ANAL YSIS AND RESULTS}

\subsection*{1.0 Approach}

After a review of the referenced plans and reports, the two proposed segmental walls, labeled as Wall C and Wall E , were evaluated for the global stability analysis. The global stability analysis was conducted using the geotechnical program GSTABL7 with STEDwin (Version 2.002). The Modified Bishop's Method was used to analyze rotational failure modes. The slope face, segmental walls, and any the conditions above the segmental walls were modeled in GSTABL7 as per the referenced plans. Two separate conditions were modeled and evaluated in GSTABL7; a static condition in which there are no earthquake loads applied, and a pseudo-static condition, in which earthquake loads are applied to the model. A coefficient of horizontal acceleration of 0.15 g was used for the pseudo-static stability analysis. Additionally, all the conditions were evaluated without the proposed wall grids in place. If the proposed design meets or exceeds the minimum factors of safety (F.S.) without the grids modeled, then the design F.S. will be much greater.
2.0 Results

Table 1
Preliminary Design Global Stability Analysis Summary
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{2}{|c|}{ Section (Section A-A') } & \multicolumn{2}{c|}{ Section (Section \(\left.B^{-}-B^{\prime}\right)\)} \\
\hline Static & \begin{tabular}{c} 
Pseudo- \\
Static
\end{tabular} & Static & \begin{tabular}{c} 
Pseudo- \\
Static
\end{tabular} \\
\hline F.S. \(=1.73\) & F.S. \(=1.23\) & F.S. \(=1.79\) & F.S. \(=1.28\) \\
\hline
\end{tabular}

\subsection*{3.0 Presentation of Analysis and Conclusions}

A visual and textual summary of the slope stability analysis of LGC's proposed design, for both the static and pseudo-static conditions, are presented in the following pages. In conclusion, the proposed graded slopes is considered stable from a geotechnical engineering standpoint. Special care must be taken to ensure all drainage requirements are met and that erosion over time of the slope face does not occur.

```

                    *** GSTABL7 ***
    ```
** GSTABL? by Garry H. Gregory, P.E. .
** Original Version 1.0, January 1996; Current Version 2.002, December 2001 ** (All Rights Reserved-Unauthorized Use Prohibited)

SLOPE STABILITY ANALYSIS SYSTEM
Nodified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer \& Norgenstern-Price Type Inalysis)
Including Piex/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.

Analysis Run Date: \(\quad 6 / 13 / 2009\)
Time of Run: 1:55PM
Run By:
Input Data Eilename: C:staticaa.
Output Filename: C:staticaa.ouT
Onit System:
English
Plotted Output Filename: C:staticaa. PLT
pROBLEM DESCRTPTION: Gateway Heights Moreno Valley
Section A-A' Fill Slope Static Case
BOUNDARY COORDINATES
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline 4 Top & \multicolumn{6}{|l|}{Boundaries} \\
\hline 8 Total & \multicolumn{6}{|l|}{Boundaries} \\
\hline Boundary & X -Left & Y-Left & X -Right & Y-Right & t Soil & Type \\
\hline No. & (ft) & (ft) & (ft) & (ft) & Below & Bnd \\
\hline 1 & 0.00 & 1621.50 & 80.00 & 1621.50 & \(0 \quad 1\) & \\
\hline 2 & 80.00 & 1621.50 & 140.00 & 1653.00 & \(0 \quad 2\) & \\
\hline 3 & 140.00 & 1653.00 & 145.00 & 1653.00 & 0 & \\
\hline 4 & 145.00 & 1653.00 & 340.00 & 1653.00 & 0 & \\
\hline 5 & 80.00 & 1621.50 & 80.00 & 1615.00 & 0 & \\
\hline 6 & 80.00 & 1615.00 & 95.00 & 1615.00 & \(0 \quad 1\) & \\
\hline 7 & 95.00 & 1615.00 & 145.00 & 1645.00 & 0 & \\
\hline 8 & 145.00 & 1645.00 & 340.00 & 1645.00 & 0 1 & \\
\hline \multicolumn{7}{|l|}{User Specified Y-Origin \(=\quad 1560.00(\mathrm{ft})\)} \\
\hline \multicolumn{7}{|l|}{ISOTROPIC SOIL PARAMETERS} \\
\hline \multicolumn{7}{|l|}{2 Type (3) of Soil} \\
\hline Soil Total & Saturated & Cohesion & Friction & Pore P & Pressure & Piez. \\
\hline Type Unit Ht & t. Unit Wt. & Intercept & Angle & Pressure C & Constant S & Surface \\
\hline No. (pcf) & (pcf) & (psf) & (deg) & Param. & (psf) & No. \\
\hline \(1 \quad 127.6\) & 137.8 & 20.0 & 37.0 & 0.00 & 0.0 & 0 \\
\hline \(2 \quad 128.7\) & 138.1 & 20.0 & 36.0 & 0.00 & 0.0 & 0 \\
\hline
\end{tabular}

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
1000 Trial Surfaces Have Been Generated.
20 Surface(s) Initiate(s) From Each of 50 Points Equally Spaced
Along The Ground Surface Between \(X=0.00(f t)\)
and \(X=80.00(\mathrm{ft})\)
Each Surface Terminates Between \(X=140.00(\mathrm{ft})\)
and \(X=340.00(f t)\)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is \(Y=1560.00\) ( It )
\(20.00(\mathrm{ft})\) Line Sogments Define Each Trial Failure Surface.
Following Are Displayed The Ten Nost Critical of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Nodified Bishop Method * *

Total Number of Trial Surfaces Evaluated - 1000
Statistical Data on All Valid FS Values:
ES Max - 14.716 FS Min - 1.728 ES Ave - 5.601 Standard Deviation = 2.335 Coefficient of Variation - 41.69 \%
Failure Surface Specified By 6 Coordinate Points
\begin{tabular}{ccc} 
Point & X-Surf & Y-Surf \\
No. & (ft) & (ft) \\
1 & 80.00 & 1621.50
\end{tabular}
\(2 \quad 99.821624 .18\)

```

            ****tor of Safety,
    Failure Surface Specified By 6 Coordinate Points
Point X-Surf (ft) Y-Surf
No. (ft) (ft)
1 80.00 1621.50
99.94 1623.08
119.32 1628.03
137.58 1636.19
154.19 1647.33
160.14 1653.00
Circle Center At X = 81.16 ; Y = 1736.25 ; and Radius = 114.75
Factor of Safety
Eailure Surface Specified By 7 Coordinate Points
Point X-Surf Y-Surf
No. (ft) (ft)
1 47.35 1621.50
2 67.09 1618.30
87.04 1619.68
106.16 1625.56
123.44 1635.63
137.97 1649.37
140.36 1653.00
Circle Center At X = 71.10; Y = 1705.54 ; and Radius = 87.33
Factor of Safety
*** 1.981 ***
Failure Surface Specified By 6 Coordinate Points
Point X-Surf Y-Surf
No. (ft) (ft)
1 75.10 1621.50
2 94.90 1618.64
3
114.58
132.14
148.77 1653.00
Circle Center At X = 93.84 ; Y = 1679.57 ; and Radius - 61.02
Factor of Safety
*** 2.003 ***
Failure Surface Specified By 6 Coordinate Points
Point X-Sure Y-Sure
No. (ft) (ft)
1 75.10 1621.50
95.01 1619.53
114.76 1622.67
133.07 1630.72
148.74 1643.15
156.14 1653.00
Circle Center At X = 92.74 ; Y = 1696.11 ; and Radius = 76.67
Factor of Safety
** 2.041 ***
Failure Surface Specified By 7 Coordinate Points
Point X-Surf Y-Surf
No. (ft) (ft)
40.82 1621.50
60.51 1618.04
80.51 1618.19
100.15 1621.97
118.78 1629.25
135.79 1639.77
150.39 1653.00
Circle Center At X = 69.64 ; Y = 1727.64 ; and Radius = 109.99
Factor of Safety
*** 2.051 ***
**** END OF GSTABL7 OUYPUT ****

```




```

Circle Center At X = 92.74 ; Y - 1696.11 ; and Radius = 76.67
Factor of Safety
*** 1.457 *** (..* gat or gStabl/ OUTput .***

```



```

*** GSTABL7 ***
*) GST/BLT by Garxy H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.002, December 2001 **
(All Rights Reserved-Unauthorized Use Prohibited)
SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices,
(Includes Spencer \& Norgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Ticback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Force Options.
*********************************************************************************
Analysis Run Date: 6/13/2009
Time of Run: 1:54EM
Run By:
Input Data Filename: C:staticbb.
Output Eilename: C:staticbb.OUT
Unit System: English
Plotted Output Filename: C:staticbb.PLT
PROBLEM DESCRIPTION: Gateway Heights Noreno Valley
Section B-B' Cut Slope Static Case
BOUNDARY COORDINATES

```
    5 Top Boundaries
    5 Total Boundaries
\begin{tabular}{cccccc}
\begin{tabular}{c} 
Boundary \\
No.
\end{tabular} & \begin{tabular}{c} 
X-Left \\
\((\mathrm{ft})\)
\end{tabular} & \begin{tabular}{c} 
Y-Left \\
(ft)
\end{tabular} & \begin{tabular}{c} 
X-Right \\
(ft)
\end{tabular} & \begin{tabular}{c} 
Y-Right \\
\((\mathrm{ft})\)
\end{tabular} & \begin{tabular}{c} 
Soil Type \\
Below
\end{tabular} \\
1 & 0.00 & 1648.50 & 120.00 & 1648.50 & 1 \\
2 & 120.00 & 1648.50 & 177.00 & 1677.00 & 1 \\
3 & 177.00 & 1677.00 & 183.00 & 1677.00 & 1 \\
4 & 183.00 & 1677.00 & 197.00 & 1687.00 & 1 \\
5 & 197.00 & 1687.00 & 260.00 & 1700.00 & 1
\end{tabular}
User Specified Y-Origin - 1580.00 (ft)
ISOTROPIC SOIL PARAMETERS
    1 Type (s) of Soil
Soil Total Saturated Cohesion Eriction Pore Pressure Piez.
Type Unit wt. Unit Wt. Intercept Angle Pressure Constant Surface
\begin{tabular}{lllllll} 
No. (pcf) (pcf) & (psf) & (deg) Param. & (psf) & No.
\end{tabular}

A Critical Failuce Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
1000 Trial Surfaces Have Been Generated.
20 Surface (s) Initiate (s) From Each of 50 Points Equally Spaced
Along The Ground Surface Between \(X=0.00(f t)\)
and \(X=120.00(f t)\)
Each Surface Terminates Between \(X=180.00(f t)\) and \(x=260.00(f t)\)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is \(Y\) - 1600.00 ( ft )
20.00 (ft) Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *

Total Number of Trial Surfaces Evaluated \(=1000\)
Statistical Data On All Valid FS Values: FS Max = 8.363 ES Min = 1.790 FS Ave \(=3.547\) Standard Deviation = 1.000 Coefficient of Variation = 28.20 \% Failure Surface Specified By 6 Coordinate Points
\begin{tabular}{ccc}
\begin{tabular}{c} 
Point \\
No.
\end{tabular} & \begin{tabular}{c} 
X-Surf \\
\((\) ft \()\)
\end{tabular} & \begin{tabular}{c} 
Y-Surf \\
(ft)
\end{tabular} \\
1 & 120.00 & 1648.50 \\
2 & 139.87 & 1650.80 \\
3 & 158.95 & 1656.80 \\
4 & 176.56 & 1666.28 \\
5 & 192.07 & 1678.90 \\
6 & 199.25 & 1687.47
\end{tabular}

```

Failure Surface Specified By B Coordinate Points

| Point <br> No. | X-Surf <br> (ft) | Y-Surf |
| :---: | :---: | :---: |
| (ft) |  |  |
| 1 | 107.76 | 1648.50 |
| 2 | 127.56 | 1645.69 |
| 3 | 147.51 | 1647.01 |
| 4 | 166.78 | 1652.38 |
| 5 | 184.53 | 1661.60 |
| 6 | 200.01 | 1674.26 |
| 7 | 212.57 | 1689.83 |
| 8 | 212.79 | 1690.26 |

Circle Center At X = 131.21; Y = 1742.49 ; and Radius = 96.87
Bactor of Safety
Failure Surface Specified By }7\mathrm{ Coordinate Points
Point X-Surf Y-Surf
No.
125.05 1645.33
145.02 1646.53
164.24 1652.04
181.81 1661.61
196.87 1674.77
207.44 1689.15
Circle Center At X = 129.58 ; Y = 1736.61 ; and Radius = 91.39
Factor of Safety
*** 1.980 ***
Failure Surface Specified By }7\mathrm{ Coordinate Points
Point X-Surf Y-Surf
No. (ft) (ft)
107.76 1648.50
127.52 1645.45
147.47 1646.84
166.62 1652.60
184.03 1662.45
198.83 1675.91
208.20 1689.31
Circle Center At X = 131.28; Y = 1735.33 ; and Radius = 89.96
Factor of Safety
*** 1.984 ***
Failure Surface Specified By 6 Coordinate Points
Point X-Sure Y-Surf
No. (ft) (ft)
1 105.31 1648.50
2 125.13 1645.85
144.97 1648.37
163.50 1655.89
179.49 1667.91
191.31 1682.94
Circle Center At X = 125.38 ; Y = 1722.98 ; and Radius = 77.14
Factor of Safety
*** 1.985 ***
Failure Surface Specified By 8 Coordinate Points
Point X-Surf Y-Surf
No. (ft) (ft)
102.86 1648.50
122.62 1645.40
142.60 1646.12
162.09 1650.63
180.36 1658.77
196.74 1670.24
210.65 1684.61
214.56 1690.62
Circle Center At X = 128.91 ; Y = 1748.60 ; and Radius = 103.43
Factor of Safety
*** 1.994 ***

```

```

                *** GSTABL7 ***
            ** GSTABL? by Garry H. Gregory, P, B. **
    ** Original Version 1.0, January 1996; Current Version 2.002, December 2001 **
(Al1 Rights Reserved-Unauthorized Use Prohibited)
*********************************************************************************
SLORE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer \& Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static Earthquake, and Applied Eorce Options.

| Analysis Run Date: | 5/15/2009 |
| :---: | :---: |
| Time of Run: | 1:52PM |
| Run By: | RS |
| Input Data Eilename: | Cipsuedobb. |
| Output Filename: | C:psuedobb.OUT |
| Unit System: | English |
| Plotted Output Filename: | C:psuedobb. PLT |
| PROBLEM DESCRIPTION: Gat | eway Heights Moreno Valley <br> tion B-B' Cut Slope PsuedoStatic Case |

BOUNDARY COORDINATES
5 Top Boundaries
5 Total Boundaries
Boundary X-Left Y-Left X-Right Y-Right Soil Type
No. (ft) (ft) (ft) Below Bnd
1 0.00 1648.50 120.00
2 120.00 1.648.50 17%.00
177.00 1.677.00 183.00 1677.00
183.00 1677.00 197.00 1687.00 1
197.00 1687.00 260.00 1700.00 1
User Specified Y-Origin = 1580.00(ft)
ISOTROPIC SOIL PARAMETERS
1 Type(3) of Soil
Soil Total Saturated Cohesion Friction Pore Pressure Piez.
Type Unit Wt, Unit Wt. Intercept Angle Pressure Constant Suxface
No. (pef) (pcf) (psf) (deg) Param. (psf) No.
A 127.6 138.1 Horizontal Earthquake Loading Coefficient
of0.150 Has Been Assigned
A Vertical Earthquake Loading Coefficient
Of0.000 Has Been Assigned
Cavitation Pressure = 0.0(psf)
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circulax Surfaces, Has Been Specified.
1000 Trial Surfaces Have Been Generated.
2 0 Surface(s) Initiate(s) Erom Each of (50 Points Equally Spaced
Along The Ground Surface Between X = 0.00(ft)
and }x=120.00(ft
Each Surface Terminates Between X = 180.00(ft)
and }X=260.00(ft
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 1600.00 (ft)
20.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical Eirst.

*     * Safety Factors Are Calculated By The Modified Bishop Nethod * *
Total Number of Trial Surfaces Evaluated = 1000
Statistical Data On All Valid FS Values:
FS Max = 3.912 ES Min - 1.281 FS Ave = 2.294
Standard Deviation = 0.472 Coefficient of Variation - 20.57 8
Failure Surface Specified By 6 Coordinate Points
Foint
1 120.00 1648.50

```


```

    118.22 1646.03
    138.08 1648.40
    157.50 1653.16
        176.22 1660.21
        193.94 1669.47
        210.43 1680.80
        223.70 1692.51
    Circle Center At X = 108.48 ; Y = 1811.48 ; and Radius = 165.74
Factor of Safety
*** 1.419 ***
**** END OF GSTABLI7 OUTPUT ****

```


LEGEND (Locations are Approximate)

Symbols
\(A=A^{\prime} \quad\) - Global Stability Cross Section

DYNAMC GEOTECHNICAL SOLUTIONS \(\quad\) Global STABILITY cross sections location Ma
27570 Commerce Center Dr., \#28, Temeculca, CA 92590


\section*{Appendix G}

\section*{EDR Radius Map Report}

\section*{Gateway Heights Residential Project}

Not Reported
Moreno Valley, CA 92557
Inquiry Number: 6541790.2s
June 17, 2021

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Thank you for your business.

Please contact EDR at 1-800-352-0050 with any questions or comments.

\footnotetext{
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}

\section*{EXECUTIVE SUMMARY}

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

\section*{TARGET PROPERTY INFORMATION}

\section*{ADDRESS}

NOT REPORTED
MORENO VALLEY, CA 92557

\section*{COORDINATES}
\begin{tabular}{ll} 
Latitude (North): & \(33.9593590-33^{\circ} 57^{\prime} 33.69^{\prime \prime}\) \\
Longitude (West): & \(117.2946020-117^{\circ} 17^{\prime} 40.56^{\prime \prime}\) \\
Universal Tranverse Mercator: Zone 11 \\
UTM X (Meters): & 472780.5 \\
UTM Y (Meters): & 3757494.5 \\
Elevation: & 1680 ft. above sea level
\end{tabular}

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY
\(\begin{array}{ll}\text { Target Property Map: } & 5641312 \text { RIVERSIDE EAST, CA } \\ \text { Version Date: } & 2012\end{array}\)
AERIAL PHOTOGRAPHY IN THIS REPORT
Portions of Photo from: 20140603
Source:
USDA

MAPPED SITES SUMMARY

Target Property Address:
NOT REPORTED
MORENO VALLEY, CA 92557
Click on Map ID to see full detail.
\begin{tabular}{llllll} 
MAP & & & RELATIVE & DIST (ft. 8 \\
ID & SITE NAME & ADDRESS & DATABASE ACRONYMS & ELEVATION & DIRECTIC \\
\hline A1 & MARCH AFB RIFLE RANG & FUDS & Higher & \(1428,0.27(\) & st \\
A2 & MARCH AFB RIFLE RANG & ENVIROSTOR & Higher & \(1428,0.27(\) & st
\end{tabular}

\section*{EXECUTIVE SUMMARY}

\section*{TARGET PROPERTY SEARCH RESULTS}

The target property was not listed in any of the databases searched by EDR.

\section*{DATABASES WITH NO MAPPED SITES}

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

\section*{STANDARD ENVIRONMENTAL RECORDS}

\section*{Federal NPL site list}

NPL
Proposed NPL ----------- - - Proposed National Priority List Sites
NPL LIENS
Federal Superfund Liens
Federal Delisted NPL site list
Delisted NPL
National Priority List Deletions

\section*{Federal CERCLIS list}

FEDERAL FACILITY .-.-.-.... Federal Facility Site Information listing
SEMS.------------------------- Superfund Enterprise Management System

\section*{Federal CERCLIS NFRAP site list}

SEMS-ARCHIVE.-.---------- Superfund Enterprise Management System Archive

\section*{Federal RCRA CORRACTS facilities list}

CORRACTS \(\qquad\) Corrective Action Report

\section*{Federal RCRA non-CORRACTS TSD facilities list}

RCRA-TSDF \(\qquad\) RCRA - Treatment, Storage and Disposal

\section*{Federal RCRA generators list}

RCRA-LQG
RCRA - Large Quantity Generators
RCRA-SQG RCRA - Small Quantity Generators
RCRA-VSQG Generators)

Federal institutional controls / engineering controls registries
LUCIS \(\qquad\) Land Use Control Information System

\section*{EXECUTIVE SUMMARY}


\section*{EXECUTIVE SUMMARY}
\begin{tabular}{|c|c|}
\hline HIST Cal-Sites & Historical Calsites Database \\
\hline SCH. & School Property Evaluation Program \\
\hline CDL & Clandestine Drug Labs \\
\hline Toxic Pits & Toxic Pits Cleanup Act Sites \\
\hline CERS HAZ WASTE & CERS HAZ WASTE \\
\hline US CDL & National Clandestine Laboratory Register \\
\hline PFAS & PFAS Contamination Site Location Listing \\
\hline
\end{tabular}

\section*{Local Lists of Registered Storage Tanks}
\begin{tabular}{|c|c|}
\hline SWEEPS UST. & SWEEPS UST Listing \\
\hline HIST UST. & Hazardous Substance Storage Container Database \\
\hline CERS TANKS & California Environmental Reporting System (CERS) Tanks \\
\hline CA FID UST & Facility Inventory Database \\
\hline
\end{tabular}

\section*{Local Land Records}
\begin{tabular}{|c|c|}
\hline LIENS & Environmental Liens Listing \\
\hline LIENS 2 & CERCLA Lien Information \\
\hline DEED & Deed Restriction Listing \\
\hline
\end{tabular}

\section*{Records of Emergency Release Reports}
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|l|}{HMIRS} \\
\hline \multicolumn{2}{|l|}{CHMIRS} \\
\hline \multicolumn{2}{|l|}{LDS} \\
\hline \multicolumn{2}{|l|}{MCS} \\
\hline \multicolumn{2}{|l|}{SPILLS 90} \\
\hline \multicolumn{2}{|l|}{Other Ascertainable Records} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|}
\hline RCRA NonGen / NLR & RCRA - Non Generators / No Longer Regulated \\
\hline DOD. & Department of Defense Sites \\
\hline SCRD DRYCLEANERS & State Coalition for Remediation of Drycleaners Listing \\
\hline US FIN ASSUR & Financial Assurance Information \\
\hline EPA WATCH LIST & EPA WATCH LIST \\
\hline 2020 COR ACTION & 2020 Corrective Action Program List \\
\hline TSCA & Toxic Substances Control Act \\
\hline TRIS & Toxic Chemical Release Inventory System \\
\hline SSTS & Section 7 Tracking Systems \\
\hline ROD. & Records Of Decision \\
\hline RMP & Risk Management Plans \\
\hline RAATS & RCRA Administrative Action Tracking System \\
\hline PRP & Potentially Responsible Parties \\
\hline PADS & PCB Activity Database System \\
\hline ICIS & Integrated Compliance Information System \\
\hline FTTS & FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, \& Rodenticide Act)/TSCA (Toxic Substances Control Act) \\
\hline MLTS & Material Licensing Tracking System \\
\hline COAL ASH DOE & Steam-Electric Plant Operation Data \\
\hline COAL ASH EPA & . Coal Combustion Residues Surface Impoundments List \\
\hline PCB TRANSFORMER & PCB Transformer Registration Database \\
\hline RADINFO & Radiation Information Database \\
\hline HIST FTTS & FIFRA/TSCA Tracking System Administrative Case Listing \\
\hline DOT OPS & Incident and Accident Data \\
\hline
\end{tabular}

\section*{EXECUTIVE SUMMARY}
\begin{tabular}{|c|c|c|}
\hline CONSEN & Superfund (CERCLA) Consent Decrees & \\
\hline INDIAN RESERV & Indian Reservations & \\
\hline FUSRAP & Formerly Utilized Sites Remedial Action Program & \\
\hline UMTRA & Uranium Mill Tailings Sites & \\
\hline LEAD SMELTERS. & Lead Smelter Sites & \\
\hline US AIRS. & Aerometric Information Retrieval System Facility Subsystem & \\
\hline US MINES & Mines Master Index File & \\
\hline ABANDONED MINES & Abandoned Mines & \\
\hline FINDS. & Facility Index System/Facility Registry System & \\
\hline ECHO & Enforcement \& Compliance History Information & \\
\hline UXO & Unexploded Ordnance Sites & \\
\hline DOCKET HWC & Hazardous Waste Compliance Docket Listing & \\
\hline FUELS PROGRAM & EPA Fuels Program Registered Listing & \\
\hline CA BOND EXP. PLAN & Bond Expenditure Plan & \\
\hline Cortese & "Cortese" Hazardous Waste \& Substances Sites List & \\
\hline CUPA Listings & CUPA Resources List & 0 \\
\hline DRYCLEANERS & Cleaner Facilities & ¢ \\
\hline EMI & Emissions Inventory Data & - \\
\hline ENF & Enforcement Action Listing & - \\
\hline Financial Assurance. & Financial Assurance Information Listing & 끈 \\
\hline HAZNET & Facility and Manifest Data & \\
\hline ICE & ICE & ¢ \\
\hline HIST CORTESE & Hazardous Waste \& Substance Site List & - \\
\hline HWP. & EnviroStor Permitted Facilities Listing & - \\
\hline HWT & Registered Hazardous Waste Transporter Database & \\
\hline MINES & Mines Site Location Listing & ส \\
\hline MWMP & Medical Waste Management Program Listing & 3 \\
\hline NPDES & NPDES Permits Listing & \% \\
\hline PEST LIC & Pesticide Regulation Licenses Listing & \(\bigcirc\) \\
\hline PROC & Certified Processors Database & \\
\hline Notify 65 & Proposition 65 Records & \% \\
\hline UIC & UIC Listing & © \\
\hline UIC GEO & UIC GEO (GEOTRACKER) & \\
\hline WASTEWATER PITS & Oil Wastewater Pits Listing & - \\
\hline WDS & Waste Discharge System & \(\stackrel{\square}{4}\) \\
\hline WIP & Well Investigation Program Case List & ¢ \\
\hline MILITARY PRIV SITES. & MILITARY PRIV SITES (GEOTRACKER) & - \\
\hline PROJECT & PROJECT (GEOTRACKER) & 잉 \\
\hline WDR & Waste Discharge Requirements Listing & ¢ \\
\hline CIWQS & California Integrated Water Quality System & 응 \\
\hline CERS & CERS & ¢ \\
\hline NON-CASE INFO & NON-CASE INFO (GEOTRACKER) & - \\
\hline OTHER OIL GAS & OTHER OIL \& GAS (GEOTRACKER) & ¢ \\
\hline PROD WATER PONDS & PROD WATER PONDS (GEOTRACKER) & E \\
\hline SAMPLING POINT. & SAMPLING POINT (GEOTRACKER) & ¢ \\
\hline WELL STIM PROJ. & Well Stimulation Project (GEOTRACKER) & \(\underset{ \pm}{\text { I }}\) \\
\hline MINES MRDS & Mineral Resources Data System & ¢ \\
\hline HWTS. & Hazardous Waste Tracking System & \\
\hline
\end{tabular}

\section*{EDR HIGH RISK HISTORICAL RECORDS}

\section*{EDR Exclusive Records}

EDR MGP. EDR Proprietary Manufactured Gas Plants

\section*{EXECUTIVE SUMMARY}

\author{
EDR Hist Auto \\ \(\qquad\) EDR Exclusive Historical Auto Stations \\ EDR Hist Cleaner \\ \(\qquad\) EDR Exclusive Historical Cleaners
}

\section*{EDR RECOVERED GOVERNMENT ARCHIVES}

\section*{Exclusive Recovered Govt. Archives}

RGA LF - -------------------- Recovered Government Archive Solid Waste Facilities List
RGA LUST.----------------. Recovered Government Archive Leaking Underground Storage Tank

\section*{SURROUNDING SITES: SEARCH RESULTS}

Surrounding sites were identified in the following databases.
Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in bold italics are in multiple databases.
Unmappable (orphan) sites are not considered in the foregoing analysis.

\section*{STANDARD ENVIRONMENTAL RECORDS}

\section*{State- and tribal - equivalent CERCLIS}

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/25/2021 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.
\begin{tabular}{|c|c|c|c|c|}
\hline Equal/Higher Elevation & Address & Direction / Distance & Map ID & Page \\
\hline MARCH AFB RIFLE RANG & & E 1/4-1/2 (0.270 mi.) & A2 & 9 \\
\hline
\end{tabular}

\section*{EXECUTIVE SUMMARY}

\section*{ADDITIONAL ENVIRONMENTAL RECORDS}

\section*{Other Ascertainable Records}

FUDS: The Listing includes locations of Formerly Used Defense Sites Properties where the US Army Corps Of Engineers is actively working or will take necessary cleanup actions.

A review of the FUDS list, as provided by EDR, and dated 02/11/2021 has revealed that there is 1 FUDS site within approximately 1 mile of the target property.
\begin{tabular}{|c|c|c|c|c|}
\hline Equal/Higher Elevation & Address & Direction / Distance & Map ID & Page \\
\hline MARCH AFB RIFLE RANG & & E 1/4-1/2 (0.270 mi.) & A1 & 9 \\
\hline
\end{tabular}

\section*{EXECUTIVE SUMMARY}

There were no unmapped sites in this report.

This report includes Interactive Map Layers display and/or hide map information. The legend includes only those icons for the default map view.
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{\begin{tabular}{l}
SITE NAME: ADDRESS: \\
LAT/LONG:
\end{tabular}} & \multirow[t]{2}{*}{\begin{tabular}{l}
Gateway Heights Residential Project Not Reported \\
Moreno Valley CA 92557 \\
33.959359 / 117.294602
\end{tabular}} & \multicolumn{2}{|l|}{\multirow[t]{2}{*}{\begin{tabular}{ll} 
& \\
CLIENT: & Psomas \\
CONTACT: & Sean Noonan \\
INQUIRY \#: & 6541790.2 s \\
DATE: & June \(17,20213: 46 \mathrm{pm}\)
\end{tabular}}} & \\
\hline & & & & Packet Pg. 1039 \\
\hline
\end{tabular}

\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{SITE NAME: ADDRESS:} & Gateway Heights Residential Project & \multicolumn{3}{|l|}{CLIENT: Psomas} \\
\hline & Not Reported & CONTACT: & Sean Noonan & \\
\hline & Moreno Valley CA 92557 & INQUIRY \#: & 6541790.2 s & \\
\hline LAT/LONG: & \(33.959359 / 117.294602\) & DATE: & June 17, 2021 3:50 pm & Packet Pg. 1040 \\
\hline
\end{tabular}

\section*{MAP FINDINGS SUMMARY}
\begin{tabular}{lllllllll} 
& \begin{tabular}{l} 
Search \\
Distance \\
(Miles)
\end{tabular} & \(\underline{l}\) & \begin{tabular}{l} 
Target \\
Property
\end{tabular} & \(\underline{<1 / 8}\) & \(\underline{1 / 8-1 / 4}\) & \(\underline{1 / 4-1 / 2}\) & \(\underline{1 / 2-1}\) & \(\underline{>1}\)
\end{tabular}

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list
\begin{tabular}{llllllll} 
NPL & 1.000 & 0 & 0 & 0 & 0 & NR & 0 \\
Proposed NPL & 1.000 & 0 & 0 & 0 & 0 & NR & 0 \\
NPL LIENS & 1.000 & 0 & 0 & 0 & 0 & NR & 0
\end{tabular}

Federal Delisted NPL site list
\begin{tabular}{llllllll} 
Delisted NPL & 1.000 & 0 & 0 & 0 & 0 & NR & 0
\end{tabular}
\begin{tabular}{ll} 
Federal CERCLIS list & \\
FEDERAL FACILITY & 0.500 \\
SEMS & 0.500
\end{tabular}

Federal CERCLIS NFRAP site list
\(\begin{array}{ll}\text { SEMS-ARCHIVE } & 0.500 \\ \text { Federal RCRA CORRACTS facilities list }\end{array}\)
CORRACTS 1.000
Federal RCRA non-CORRACTS TSD facilities list
\begin{tabular}{lc} 
RCRA-TSDF & 0.500 \\
Federal RCRA generators list \\
RCRA-LQG & 0.250 \\
RCRA-SQG & 0.250 \\
RCRA-VSQG & 0.250
\end{tabular}

Federal institutional controls /
engineering controls registries
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline LUCIS & 0.500 & 0 & 0 & 0 & NR & NR & 0 \\
\hline US ENG CONTROLS & 0.500 & 0 & 0 & 0 & NR & NR & 0 \\
\hline US INST CONTROLS & 0.500 & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{8}{|l|}{Federal ERNS list} \\
\hline ERNS & 0.001 & 0 & NR & NR & NR & NR & 0 \\
\hline \multicolumn{8}{|l|}{State- and tribal - equivalent NPL} \\
\hline RESPONSE & 1.000 & 0 & 0 & 0 & 0 & NR & 0 \\
\hline \multicolumn{8}{|l|}{State- and tribal - equivalent CERCLIS} \\
\hline ENVIROSTOR & 1.000 & 0 & 0 & 1 & 0 & NR & 1 \\
\hline \multicolumn{8}{|l|}{State and tribal landfill and/or solid waste disposal site lists} \\
\hline SWF/LF & 0.500 & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{8}{|l|}{State and tribal leaking storage tank lists} \\
\hline LUST & 0.500 & 0 & 0 & 0 & NR & NR & 0 \\
\hline
\end{tabular}

\section*{MAP FINDINGS SUMMARY}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline Database & Search Distance (Miles) & Target Property & < 1/8 & 1/8-1/4 & 1/4-1/2 & 1/2-1 & > 1 & Total Plotted \\
\hline INDIAN LUST & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline CPS-SLIC & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{State and tribal registered storage tank lists} \\
\hline FEMA UST & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline UST & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline AST & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline INDIAN UST & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{State and tribal voluntary cleanup sites} \\
\hline VCP & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline INDIAN VCP & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{State and tribal Brownfields sites} \\
\hline BROWNFIELDS & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{ADDITIONAL ENVIRONMENTAL RECORDS} \\
\hline \multicolumn{9}{|l|}{Local Brownfield lists} \\
\hline US BROWNFIELDS & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{Local Lists of Landfill / Solid Waste Disposal Sites} \\
\hline WMUDS/SWAT & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline SWRCY & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline HAULERS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline INDIAN ODI & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline ODI & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline DEBRIS REGION 9 & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline IHS OPEN DUMPS & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{Local Lists of Hazardous waste / Contaminated Sites} \\
\hline US HIST CDL & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline HIST Cal-Sites & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline SCH & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline CDL & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline Toxic Pits & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline CERS HAZ WASTE & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline US CDL & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline PFAS & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{Local Lists of Registered Storage Tanks} \\
\hline SWEEPS UST & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline HIST UST & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline CERS TANKS & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline CA FID UST & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{Local Land Records} \\
\hline LIENS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline
\end{tabular}

MAP FINDINGS SUMMARY
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline Database & Search Distance (Miles) & Target Property & <1/8 & 1/8-1/4 & \(\underline{1 / 4-1 / 2}\) & 1/2-1 & >1 & Total Plotted \\
\hline LIENS 2 & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline DEED & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{Records of Emergency Release Reports} \\
\hline HMIRS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline CHMIRS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline LDS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline MCS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline SPILLS 90 & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{Other Ascertainable Records} \\
\hline RCRA NonGen / NLR & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline FUDS & 1.000 & & 0 & 0 & 1 & 0 & NR & 1 \\
\hline DOD & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline SCRD DRYCLEANERS & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline US FIN ASSUR & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline EPA WATCH LIST & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline 2020 COR ACTION & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline TSCA & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline TRIS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline SSTS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline ROD & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline RMP & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline RAATS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline PRP & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline PADS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline ICIS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline FTTS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline MLTS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline COAL ASH DOE & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline COAL ASH EPA & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline PCB TRANSFORMER & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline RADINFO & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline HIST FTTS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline DOT OPS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline CONSENT & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline INDIAN RESERV & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline FUSRAP & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline UMTRA & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline LEAD SMELTERS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline US AIRS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline US MINES & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline ABANDONED MINES & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline FINDS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline ECHO & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline UXO & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline DOCKET HWC & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline FUELS PROGRAM & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline CA BOND EXP. PLAN & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline Cortese & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline CUPA Listings & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline
\end{tabular}

MAP FINDINGS SUMMARY
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline Database & Search Distance (Miles) & Target Property & < 1/8 & 1/8-1/4 & 1/4-1/2 & 1/2-1 & > 1 & Total Plotted \\
\hline DRYCLEANERS & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline EMI & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline ENF & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline Financial Assurance & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline HAZNET & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline ICE & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline HIST CORTESE & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline HWP & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline HWT & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline MINES & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline MWMP & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline NPDES & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline PEST LIC & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline PROC & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline Notify 65 & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline UIC & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline UIC GEO & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline WASTEWATER PITS & 0.500 & & 0 & 0 & 0 & NR & NR & 0 \\
\hline WDS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline WIP & 0.250 & & 0 & 0 & NR & NR & NR & 0 \\
\hline MILITARY PRIV SITES & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline PROJECT & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline WDR & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline CIWQS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline CERS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline NON-CASE INFO & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline OTHER OIL GAS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline PROD WATER PONDS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline SAMPLING POINT & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline WELL STIM PROJ & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline MINES MRDS & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline HWTS & TP & & NR & NR & NR & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{EDR HIGH RISK HISTORICAL RECORDS} \\
\hline \multicolumn{9}{|l|}{EDR Exclusive Records} \\
\hline EDR MGP & 1.000 & & 0 & 0 & 0 & 0 & NR & 0 \\
\hline EDR Hist Auto & 0.125 & & 0 & NR & NR & NR & NR & 0 \\
\hline EDR Hist Cleaner & 0.125 & & 0 & NR & NR & NR & NR & 0 \\
\hline \multicolumn{9}{|l|}{EDR RECOVERED GOVERNMENT ARCHIVES} \\
\hline \multicolumn{9}{|l|}{Exclusive Recovered Govt. Archives} \\
\hline RGA LF & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline RGA LUST & 0.001 & & 0 & NR & NR & NR & NR & 0 \\
\hline - Totals -- & & 0 & 0 & 0 & 2 & 0 & 0 & 2 \\
\hline
\end{tabular}

\title{
MAP FINDINGS SUMMARY
}
\begin{tabular}{lllllll}
\begin{tabular}{l} 
Search \\
Distance \\
(Miles)
\end{tabular} & \begin{tabular}{l} 
Target \\
Property
\end{tabular} & \(\underline{<1 / 8}\) & \(\underline{1 / 8-1 / 4}\) & \(\underline{1 / 4-1 / 2}\) & \(\underline{1 / 2-1}\) & \(\geq 1\)
\end{tabular}

NOTES:
TP = Target Property
NR = Not Requested at this Search Distance
Sites may be listed in more than one database
\begin{tabular}{|c|c|c|c|}
\hline & MAP FINDINGS & & \\
\hline Site & & Database(s) & EDR ID Number EPA ID Number \\
\hline
\end{tabular}

A1
East
1/4-1/2
0.270 mi . 1428 ft .

Relative: Higher Actual: 2109 ft .

\section*{A2}

East
1/4-1/2
0.270 mi . 1428 ft .
Relative: Higher Actual: 2109 ft .
\begin{tabular}{ll} 
MARCH AFB RIFLE RANGE & \\
RIVERSIDE, CA & \\
Site \(\mathbf{1}\) of \(\mathbf{2}\) in cluster A & \\
FUDS: & \\
EPA Region: & \\
N/A
\end{tabular}

\section*{MARCH AFB RIFLE RANGE}

RIVERSIDE, CA

\section*{Site 2 of 2 in cluster A}

ENVIROSTOR:
Name: MARCH AFB RIFLE RANGE

Address: Not reported
City,State,Zip: RIVERSIDE, CA
Facility ID: 80000313
Status: Inactive - Needs Evaluation
Status Date: 07/01/2005
Site Code: \(\quad\) Not reported
Site Type: Military Evaluation
Site Type Detailed: FUDS
Acres: 0
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: \(\quad\) Not reported
Supervisor: Douglas Bautista
Division Branch: Cleanup Cypress
Assembly: 61
Senate: 31
Special Program: Not reported
Restricted Use: NO
\begin{tabular}{lll} 
Distance & Site & Database(s) \begin{tabular}{l} 
EDR ID Number \\
Elevation \\
EPA ID Number
\end{tabular}
\end{tabular}
\begin{tabular}{ll} 
Site Mgmt Req: & NONE SPECIFIED \\
Funding: & DERA \\
Latitude: & 33.95833 \\
Longitude: & -117.2875 \\
APN: & NONE SPECIFIED \\
Past Use: & NONE SPECIFIED \\
Potential COC: & Explosives (UXO, MEC \\
Confirmed COC: & NONE SPECIFIED \\
Potential Description: & NONE SPECIFIED \\
Alias Name: & CA99799F551400 \\
Alias Type: & Federal Facility ID \\
Alias Name: & Jo9CAO476 \\
Alias Type: & INPR \\
Alias Name: & 80000313 \\
Alias Type: & Envirostor ID Number \\
Completed Info: & \\
Completed Area Name: & PROJECT WIDE \\
Completed Sub Area Name: & Not reported \\
Completed Document Type: & Inventory Project Report (INPR) \\
Completed Date: & 09/28/1992 \\
Comments: & Not reported \\
& \\
Future Area Name: & Not reported \\
Future Sub Area Name: & Not reported \\
Future Document Type: & Not reported \\
Future Due Date: & Not reported \\
Schedule Area Name: & Not reported \\
Schedule Sub Area Name: & Not reported \\
Schedule Document Type: & Not reported \\
Schedule Due Date: & Not reported \\
Schedule Revised Date: & Not reported
\end{tabular}

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

\section*{STANDARD ENVIRONMENTAL RECORDS}

\section*{Federal NPL site list}

NPL: National Priority List
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.
Date of Government Version: 04/27/2021
Source: EPA
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16
Telephone: N/A
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly
NPL Site Boundaries
Sources:
EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333
EPA Region 1
Telephone 617-918-1143
EPA Region 6
EPA Region 3
Telephone 215-814-5418
Telephone: 214-655-6659
EPA Region 7
Telephone: 913-551-7247
EPA Region 4
Telephone 404-562-8033
EPA Region 8
Telephone: 303-312-6774
EPA Region 5
Telephone 312-886-6686
EPA Region 9
Telephone: 415-947-4246
EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites
A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens
Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

\section*{Federal Delisted NPL site list}

Delisted NPL: National Priority List Deletions
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

\section*{Federal CERCLIS list}

FEDERAL FACILITY: Federal Facility Site Information listing
A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 03/30/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System
SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/27/2021
Source: EPA
Date Data Arrived at EDR: 05/03/2021
Telephone: 800-424-9346
Date Made Active in Reports: 05/19/2021
Last EDR Contact: 06/04/2021
Number of Days to Update: 16
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Quarterly

\section*{Federal CERCLIS NFRAP site list}

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Quarterly

\section*{Federal RCRA CORRACTS facilities list}

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

\section*{Federal RCRA non-CORRACTS TSD facilities list}

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.
Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57
Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

\section*{Federal RCRA generators list}

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms ( kg ) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and \(1,000 \mathrm{~kg}\) of hazardous waste per month.
Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Source: Environmental Protection Agency
Date Data Arrived at EDR. 03/23/2021
Telephone: (415) 495-8895
Date Made Active in Reports: 05/19/2021
Last EDR Contact: 03/23/2021
Number of Days to Update: 57
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly
RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators) RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/22/2021 Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/23/2021
Telephone: (415) 495-8895
Date Made Active in Reports: 05/19/2021
Last EDR Contact: 03/23/2021
Number of Days to Update: 57
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

\section*{Federal institutional controls / engineering controls registries}

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/09/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 39

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List
A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 02/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 85

Source: Environmental Protection Agency Telephone: 703-603-0695
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List
A listing of sites with institutional controls in place. Institutional controls include administrative measures,
such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 02/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

\section*{Federal ERNS list}

ERNS: Emergency Response Notification System
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/15/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 7

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

\section*{State- and tribal - equivalent NPL}

RESPONSE: State Response Sites
Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

\section*{State- and tribal - equivalent CERCLIS}

\section*{ENVIROSTOR: EnviroStor Database}

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

\section*{State and tribal landfill and/or solid waste disposal site lists}

SWF/LF (SWIS): Solid Waste Information System
Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/08/2021
Date Data Arrived at EDR: 02/09/2021
Date Made Active in Reports: 05/03/2021
Number of Days to Update: 83

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Quarterly

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.
Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned
LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.
Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30 Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned
LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.
Date of Government Version: 02/01/2001
Source: California Regional Water Quality Control Board North Coast (1)
Date Data Arrived at EDR: 02/28/2001
Telephone: 707-570-3769
Date Made Active in Reports: 03/29/2001
Last EDR Contact: 08/01/2011
Number of Days to Update: 29
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned
LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6) Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (i Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8) Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources
Control Board's LUST database.
Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned
LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El
Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas,
Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.
Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9
Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned
INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 11/12/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/07/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/09/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in lowa, Kansas, and Nebraska

Date of Government Version: 09/30/2020
Date Data Arrived at EDR: 12/22/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/02/2020
Date Data Arrived at EDR: 12/18/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 84

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.
Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Source: EPA Region 1
Date Made Active in Reports: 03/12/2021
Telephone: 617-918-1313
Number of Days to Update: 86
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.
Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Source: California Regional Water Quality Control Board, North Coast Region (1)
Date Made Active in Reports: 04/25/2003 Telephone: 707-576-2220

Number of Days to Update: 18 Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned
SLIC REG 2: Spills, Leaks, Investigation \& Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.
Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30
Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned
SLIC REG 3: Spills, Leaks, Investigation \& Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28
Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned
SLIC REG 4: Spills, Leaks, Investigation \& Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47
Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned
SLIC REG 5: Spills, Leaks, Investigation \& Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.
Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Source: Regional Water Quality Control Board Central Valley Region (5)
Date Made Active in Reports: 04/21/2005
Telephone: 916-464-3291
Number of Days to Update: 16
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned
SLIC REG 6V: Spills, Leaks, Investigation \& Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.
Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Source: California Regional Water Quality Control Board, Lahontan Region
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35 Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.
Date of Government Version: 11/24/2004 Source: California Regional Quality Control Board, Colorado River Basin Region
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36 Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned
SLIC REG 8: Spills, Leaks, Investigation \& Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Source: California Region Water Quality Control Board Santa Ana Region (8)
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned
SLIC REG 9: Spills, Leaks, Investigation \& Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Source: California Regional Water Quality Control Board San Diego Region (9)
Date Data Arrived at EDR: 09/11/2007
Telephone: 858-467-2980
Date Made Active in Reports: 09/28/2007
Last EDR Contact: 08/08/2011
Number of Days to Update: 17
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

\section*{State and tribal registered storage tank lists}

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.
Date of Government Version: 01/29/2021
Source: FEMA
Date Data Arrived at EDR: 02/17/2021
Telephone: 202-646-5797
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 33
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies
UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60 -day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 03/05/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 04/01/2021
Number of Days to Update: 23

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/09/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)
Date of Government Version: 10/02/2020
Date Data Arrived at EDR: 12/18/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 84
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 11/12/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).
Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Source: EPA, Region 1
Telephone: 617-918-1313
Number of Days to Update: 86
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (lowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/30/2020
Date Data Arrived at EDR: 12/22/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/07/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

\section*{State and tribal voluntary cleanup sites}

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/15/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.
Date of Government Version: 01/25/2021 Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77
Telephone: 916-323-3400
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

\section*{State and tribal Brownfields sites}

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 03/22/2021
Source: State Water Resources Control Board
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 06/10/2021
Telephone: 916-323-7905
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

\section*{ADDITIONAL ENVIRONMENTAL RECORDS}

\section*{Local Brownfield lists}

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/15/2021
Date Data Arrived at EDR: 03/16/2021
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/10/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: Semi-Annually

\section*{Local Lists of Landfill / Solid Waste Disposal Sites}

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/21/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.
Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.
Date of Government Version: 11/23/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 06/15/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.
Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/22/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies
ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health \& Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

\section*{Local Lists of Hazardous waste / Contaminated Sites}

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 03/02/2021
Number of Days to Update: 83

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/22/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.
Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Source: Department of Toxic Substances Control
Date Made Active in Reports: 04/13/2021
Telephone: 916-323-3400
Number of Days to Update: 77
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly
CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2019
Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 01/20/2021
Telephone: 916-255-6504
Date Made Active in Reports: 04/08/2021
Last EDR Contact: 04/14/2021
Number of Days to Update: 78
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

\section*{CERS HAZ WASTE: CERS HAZ WASTE}

List of sites in the California Environmental Protection Agency (CaIEPA) Regulated Site Portal which fall under
the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 01/20/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites
Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 03/02/2021
Number of Days to Update: 83

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing
A listing of PFAS contaminated sites included in the GeoTracker database.
Date of Government Version: 02/24/2021
Source: State Water Resources Control Board
Date Data Arrived at EDR: 02/24/2021
Date Made Active in Reports: 05/14/2021
Number of Days to Update: 79
Telephone: 866-480-1028
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

\section*{Local Lists of Registered Storage Tanks}

\section*{SWEEPS UST: SWEEPS UST Listing}

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.
Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Source: State Water Resources Control Board
Date Made Active in Reports: 02/12/1991
Telephone: 916-341-5851
Number of Days to Update: 18
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned
SAN FRANCISCO AST: Aboveground Storage Tank Site Listing Aboveground storage tank sites

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CaIEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 01/20/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.
Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24
Source: California Environmental Protection Agency
Telephone: \(916-341-5851\)
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

\section*{Local Land Records}

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.
Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Source: Environmental Protection Agency
Telephone: 202-564-6023
Date Made Active in Reports: 05/19/2021
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Semi-Annually

\section*{DEED: Deed Restriction Listing}

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions \& Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 77

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 05/28/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Semi-Annually

\section*{Records of Emergency Release Reports}

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/16/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 85

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/24/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2020
Source: Office of Emergency Services
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Telephone: 916-845-8400
Last EDR Contact: 04/20/2021
Number of Days to Update: 78
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Semi-Annually
LDS: Land Disposal Sites Listing (GEOTRACKER)
Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.
Date of Government Version: 03/08/2021 Source: State Water Qualilty Control Board
Date Data Arrived at EDR: 03/09/2021
Telephone: 866-480-1028
Date Made Active in Reports: 03/31/2021
Last EDR Contact: 06/03/2021
Number of Days to Update: 22
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly
MCS: Military Cleanup Sites Listing (GEOTRACKER)
Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/08/2021
Source: State Water Resources Control Board
Date Data Arrived at EDR: 03/09/2021
Telephone: 866-480-1028
Date Made Active in Reports: 03/31/2021
Last EDR Contact: 06/03/2021
Number of Days to Update: 22
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly
SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

\section*{Other Ascertainable Records}

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 47

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

DOD: Department of Defense Sites
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/16/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing
The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies
US FIN ASSUR: Financial Assurance Information
All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 04/30/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/07/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.
Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Source: EPA
Date Made Active in Reports: 09/10/2020
Telephone: 202-260-5521
Number of Days to Update: 85
Last EDR Contact: 03/19/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: Every 4 Years
TRIS: Toxic Chemical Release Inventory System
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/17/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1 st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/20/2021
Date Data Arrived at EDR: 01/21/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 60

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Annually

ROD: Records Of Decision
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Annually

RMP: Risk Management Plans
When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.
Date of Government Version: 01/22/2021
Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/11/2021
Number of Days to Update: 82
Telephone: 202-564-8600
Last EDR Contact: 04/19/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
RAATS: RCRA Administrative Action Tracking System
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 12/30/2020
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 03/05/2021
Number of Days to Update: 50

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/19/2020
Date Data Arrived at EDR: 01/08/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 73

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, \& Rodenticide Act)/TSCA (Toxic Substances Control Act) FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA,
TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned
FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, \& Rodenticide Act)/TSCA (Toxic Substances Control Act, A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.
Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Source: EPA
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned
MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.
Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/11/2021
Date Made Active in Reports: 05/11/2021
Number of Days to Update: 61
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/16/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly
COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.
Date of Government Version: 12/31/2019
Source: Department of Energy
Date Data Arrived at EDR: 12/01/2020
Telephone: 202-586-8719
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 70
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies
COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency Telephone: N/A
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/07/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 03/25/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection \& Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/13/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 68

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

BRS: Biennial Reporting System
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.
Date of Government Version: 12/31/2017
Source: EPA/NTIS
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 151
Telephone: 800-424-9346
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Biennially
INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546
Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/06/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually
FUSRAP: Formerly Utilized Sites Remedial Action Program
DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.
Date of Government Version: 08/08/2017
Source: Department of Energy
Date Data Arrived at EDR: 09/11/2018
Telephone: 202-586-3559
Date Made Active in Reports: 09/14/2018
Last EDR Contact: 04/28/2021
Number of Days to Update: 3
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies
UMTRA: Uranium Mill Tailings Sites
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.
Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Source: Department of Energy
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74
Telephone: 505-845-0011
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies
LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.
Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16
Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Varies
LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.
Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Source: EPA
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually
US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.
Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually
US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/01/2021
Date Data Arrived at EDR: 02/24/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 84

Source: Department of Labor, Mine Safety and Health Administration Telephone: 303-231-5959
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety \& Health Administration.

Date of Government Version: 05/27/2021
Date Data Arrived at EDR: 05/27/2021
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 14

Source: DOL, Mine Safety \& Health Admi
Telephone: 202-693-9424
Last EDR Contact: 05/26/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

US MINES 3: Active Mines \& Mineral Plants Database Listing
Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines
An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 12/11/2020
Date Data Arrived at EDR: 12/11/2020
Date Made Active in Reports: 03/02/2021
Source: Department of Interior
Telephone: 202-208-2609
Number of Days to Update: 81
Last EDR Contact: 06/14/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly
FINDS: Facility Index System/Facility Registry System
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/03/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 33

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations
Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Source: Department of Defense
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77
Telephone: 703-704-1564
Last EDR Contact: 04/13/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies
ECHO: Enforcement \& Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 01/02/2021
Date Data Arrived at EDR: 01/08/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/06/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/17/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels
Programs. All companies now are required to submit new and updated registrations.
Date of Government Version: 02/17/2021
Source: EPA
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 03/22/2021
Telephone: 800-385-6164
Last EDR Contact: 05/14/2021
Number of Days to Update: 33
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Quarterly
CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned
CORTESE: "Cortese" Hazardous Waste \& Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 79

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/04/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 77

Source: Department of Toxic Substance Control Telephone: 916-327-4498
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Annually

Date of Government Version: 02/26/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 02/23/2021
Date Data Arrived at EDR: 02/25/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 83

Source: South Coast Air Quality Management District Telephone: 909-396-3211
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.
Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/10/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: Varies
ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.
Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/09/2021
Number of Days to Update: 79
Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information
Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77
Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/08/2021
Date Data Arrived at EDR: 02/12/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 82

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data
Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically \(700,000-1,000,000\) annually, representing approximately 350,000-500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Annually

ICE: ICE
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/16/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 05/07/2021
Number of Days to Update: 79

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste \& Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.
Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Source: Department of Toxic Substances Control
Date Made Active in Reports: 04/08/2009
Telephone: 916-323-3400
Number of Days to Update: 76
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned
HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.
Date of Government Version: 02/16/2021
Date Data Arrived at EDR: 02/17/2021
Source: Department of Toxic Substances Control
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 82
Telephone: 916-323-3400
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Quarterly
HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.
Date of Government Version: 01/05/2021 Source: Department of Toxic Substances Control
Date Data Arrived at EDR: 01/05/2021
Date Made Active in Reports: 03/18/2021
Number of Days to Update: 72
Telephone: 916-440-7145
Last EDR Contact: 04/06/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Quarterly
MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.
Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Source: Department of Conservation
Date Made Active in Reports: 03/30/2021
Telephone: 916-322-1080
Number of Days to Update: 21
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly
MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 01/29/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 05/28/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 02/08/2021
Date Data Arrived at EDR: 02/09/2021
Date Made Active in Reports: 05/04/2021
Number of Days to Update: 84

Source: State Water Resources Control Board Telephone: 916-445-9379
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Number of Days to Update: 78
Last EDR Contact: 05/28/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly
PROC: Certified Processors Database
A listing of certified processors.
Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly
NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/12/2021
Source: State Water Resources Control Board
Date Data Arrived at EDR: 03/16/2021
Date Made Active in Reports: 06/01/2021
Telephone: 916-445-3846
Number of Days to Update: 77
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: No Update Planned
UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites
Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board Telephone: 916-341-5227
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: No Update Planned
WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.
Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/15/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites
Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Source: State Water Resources Control Board
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies
PROJECT: Project Sites (GEOTRACKER)
Projects sites
Date of Government Version: 03/08/2021
Source: State Water Resources Control Board
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021 Telephone: 866-480-1028

Number of Days to Update: 21 Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies
WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 06/07/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 11/30/2020
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/12/2021
Number of Days to Update: 73

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 05/19/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies

CERS: CaIEPA Regulated Site Portal Data
The CaIEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 01/20/2021
Source: California Environmental Protection Agency
Date Data Arrived at EDR: 01/20/2021
Telephone: 916-323-2514
Date Made Active in Reports: 04/08/2021
Last EDR Contact: 04/20/2021
Number of Days to Update: 78
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)
Non-Case Information sites
Date of Government Version: 03/08/2021
Source: State Water Resources Control Board
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies
OTHER OIL GAS: Other Oil \& Gas Projects Sites (GEOTRACKER)
Other Oil \& Gas Projects sites
Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Source: State Water Resources Control Board
Date Made Active in Reports: 03/30/2021
Telephone: 866-480-1028
Number of Days to Update: 21
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies
PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 03/08/2021 Source: State Water Resources Control Board
Date Data Arrived at EDR: 03/09/2021 Telephone: 866-480-1028
Date Made Active in Reports: 03/30/2021 Last EDR Contact: 06/03/2021
Number of Days to Update: 21
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies
PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011 Source: EPA, Office of Water
Date Data Arrived at EDR: 08/05/2011
Telephone: 202-564-2496
Date Made Active in Reports: 09/29/2011
Last EDR Contact: 03/31/2021
Number of Days to Update: 55
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually
PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually

PCS ENF: Enforcement data
No description is available for this data
Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29
Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies
MINES MRDS: Mineral Resources Data System
Mineral Resources Data System
Date of Government Version: 04/06/2018
Source: USGS
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3
Telephone: 703-648-6533
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies
HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/08/2021
Date Data Arrived at EDR: 04/09/2021
Date Made Active in Reports: 04/20/2021
Number of Days to Update: 11

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

\section*{EDR HIGH RISK HISTORICAL RECORDS}

\section*{EDR Exclusive Records}

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Source: EDR, Inc.
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned
EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

\section*{Exclusive Recovered Govt. Archives}

RGA LF: Recovered Government Archive Solid Waste Facilities List
The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

\section*{COUNTY RECORDS}

ALAMEDA COUNTY:
CS ALAMEDA: Contaminated Sites
A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Source: Alameda County Environmental Health Services
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53
Telephone: 510-567-6700
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually
UST ALAMEDA: Underground Tanks Underground storage tank sites located in Alameda county.

Date of Government Version: 03/17/2021
Date Data Arrived at EDR: 03/18/2021
Date Made Active in Reports: 03/25/2021
Number of Days to Update: 7

Source: Alameda County Environmental Health Services Telephone: 510-567-6700
Last EDR Contact: 03/17/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:
CUPA AMADOR: CUPA Facility List
Cupa Facility List
Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 78
Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

\section*{BUTTE COUNTY:}

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: No Update Planned

\section*{CALVERAS COUNTY:}

CUPA CALVERAS: CUPA Facility Listing Cupa Facility Listing
Date of Government Version: 12/15/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 12/24/2020
Number of Days to Update: 8
Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/15/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Quarterly

COLUSA COUNTY:
CUPA COLUSA: CUPA Facility List
Cupa facility list.
Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78
Source: Health \& Human Services
Telephone: 530-458-0396
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Semi-Annually

\section*{CONTRA COSTA COUNTY:}

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/16/2021
Number of Days to Update: 80

DEL NORTE COUNTY:
CUPA DEL NORTE: CUPA Facility List Cupa Facility list
Date of Government Version: 12/17/2020
Date Data Arrived at EDR: 01/28/2021
Date Made Active in Reports: 04/16/2021
Number of Days to Update: 78

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Semi-Annually

EL DORADO COUNTY:

Source: Del Norte County Environmental Health Division Telephone: 707-465-0426
Last EDR Contact: 04/21/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

CUPA EL DORADO: CUPA Facility List CUPA facility list.

Date of Government Version: 02/09/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

\section*{FRESNO COUNTY:}

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 01/14/2021
Date Data Arrived at EDR: 01/15/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 80

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/01/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Semi-Annually

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: No Update Planned

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/10/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:
CUPA IMPERIAL: CUPA Facility List
Cupa facility list.
Date of Government Version: 01/19/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78
Source: San Diego Border Field Office Telephone: 760-339-2777
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021

Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

\section*{KERN COUNTY:}

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.
Date of Government Version: 10/29/2020 Source: Kern County Public Health
Date Data Arrived at EDR: 10/30/2020 Telephone: 661-321-3000
Date Made Active in Reports: 01/15/2021 Last EDR Contact: 04/27/2021
Number of Days to Update: 77
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites \& Tank Listing
Kern County Sites and Tanks Listing.
Date of Government Version: 01/19/2021
Date Data Arrived at EDR: 01/21/2021
Source: Kern County Environment Health Services Department

Date Made Active in Reports: 01/28/2021
Number of Days to Update: 7
Telephone: 661-862-8700
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

\section*{KINGS COUNTY:}

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary
for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Source: Kings County Department of Public Health
Date Data Arrived at EDR: 01/26/2021
Telephone: 559-584-1411
Date Made Active in Reports: 04/14/2021
Last EDR Contact: 05/25/2021
Number of Days to Update: 78
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

LAKE COUNTY:
CUPA LAKE: CUPA Facility List
Cupa facility list
Date of Government Version: 02/10/2021
Date Data Arrived at EDR: 02/12/2021
Date Made Active in Reports: 03/11/2021
Number of Days to Update: 27

Source: Lake County Environmental Health Telephone: 707-263-1164
Last EDR Contact: 04/07/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies

CUPA LASSEN: CUPA Facility List Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

\section*{LOS ANGELES COUNTY:}

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.
Date of Government Version: 01/11/2021 Source: Department of Public Works
Date Data Arrived at EDR: 01/12/2021 Telephone: 626-458-3517
Date Made Active in Reports: 03/25/2021 Last EDR Contact: 04/05/2021
Number of Days to Update: 72
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually
LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.
Date of Government Version: 01/11/2021
Source: La County Department of Public Works
Date Data Arrived at EDR: 01/12/2021
Date Made Active in Reports: 03/26/2021
Number of Days to Update: 73
Telephone: 818-458-5185
Last EDR Contact: 04/13/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies
LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.
Date of Government Version: 01/01/2021
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 81
Source: Engineering \& Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/07/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies
LOS ANGELES AST: Active \& Inactive AST Inventory
A listing of active \& inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/26/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 02/04/2021
Date Data Arrived at EDR: 04/16/2021
Date Made Active in Reports: 04/21/2021
Number of Days to Update: 5

Source: Los Angeles County Department of Public Works Telephone: 626-458-6973
Last EDR Contact: 04/16/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active \& Inactive Hazardous Materials Inventory A listing of active \& inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/26/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Varies
LOS ANGELES UST: Active \& Inactive UST Inventory
A listing of active \& inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Source: Los Angeles Fire Department
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Telephone: 213-978-3800
Last EDR Contact: 03/26/2021
Number of Days to Update: 58
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Varies
SITE MIT LOS ANGELES: Site Mitigation List Industrial sites that have had some sort of spill or complaint.
Date of Government Version: 10/19/2020
Source: Community Health Services
Date Data Arrived at EDR: 01/12/2021
Date Made Active in Reports: 03/26/2021
Telephone: 323-890-7806
Last EDR Contact: 04/16/2021
Number of Days to Update: 73
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Annually
UST EL SEGUNDO: City of El Segundo Underground Storage Tank Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/07/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank Underground storage tank sites located in the city of Torrance.

Date of Government Version: 09/11/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 77

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Semi-Annually

\section*{MADERA COUNTY:}

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Source: Madera County Environmental Health
Date Data Arrived at EDR: 08/12/2020
Telephone: 559-675-7823
Date Made Active in Reports: 10/23/2020
Last EDR Contact: 05/12/2021
Number of Days to Update: 72
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

MARIN COUNTY:
UST MARIN: Underground Storage Tank Sites Currently permitted USTs in Marin County.
Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29
Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/25/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:
UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/21/2020
Date Data Arrived at EDR: 12/21/2020
Date Made Active in Reports: 03/10/2021
Number of Days to Update: 79

MERCED COUNTY:
CUPA MERCED: CUPA Facility List
CUPA facility list.
Date of Government Version: 02/04/2021
Date Data Arrived at EDR: 02/09/2021
Date Made Active in Reports: 02/18/2021
Number of Days to Update: 9

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Annually

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

CUPA MONO: CUPA Facility List CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 06/02/2021
Next Scheduled EDR Contact: 09/06/3021
Data Release Frequency: Varies

\section*{MONTEREY COUNTY:}

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/08/2021
Date Data Arrived at EDR: 01/12/2021
Date Made Active in Reports: 03/25/2021
Number of Days to Update: 72

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 03/25/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Varies

NAPA COUNTY:
LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.
Date of Government Version: 01/09/2017 Source: Napa County Department of Environmental Management
Date Data Arrived at EDR: 01/11/2017 Telephone: 707-253-4269
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned
UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.
Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Source: Napa County Department of Environmental Management Telephone: 707-253-4269
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

NEVADA COUNTY:
CUPA NEVADA: CUPA Facility List
CUPA facility list.
Date of Government Version: 02/03/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 04/21/2021
Number of Days to Update: 78
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

ORANGE COUNTY:
IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/01/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 78

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 9

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).
Date of Government Version: 02/01/2021
Source: Health Care Agency
Date Data Arrived at EDR: 02/02/2021
Telephone: 714-834-3446
Date Made Active in Reports: 04/20/2021
Last EDR Contact: 04/30/2021
Number of Days to Update: 77
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

\section*{PLACER COUNTY:}

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 05/26/2021
Date Made Active in Reports: 06/01/2021
Number of Days to Update: 6

Source: Placer County Health and Human Services Telephone: 530-745-2363
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:
CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.
Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64
Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

\section*{RIVERSIDE COUNTY:}

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 03/10/2021
Number of Days to Update: 55

Source: Department of Environmental Health Telephone: 951-358-5055
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 03/10/2021
Number of Days to Update: 55

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/07/2021
Next Scheduled EDR Contact: 09/26/2021
Data Release Frequency: Quarterly

\section*{SACRAMENTO COUNTY:}

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76

Source: Sacramento County Environmental Management Telephone: 916-875-8406
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.
Date of Government Version: 02/24/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 78
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/01/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:
CUPA SAN BENITO: CUPA Facility List
Cupa facility list
Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 04/29/2021
Date Made Active in Reports: 05/03/2021
Number of Days to Update: 4
Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

\section*{SAN BERNARDINO COUNTY:}

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/19/2021
Date Data Arrived at EDR: 05/19/2021
Date Made Active in Reports: 06/07/2021
Number of Days to Update: 19

Source: San Bernardino County Fire Department Hazardous Materials Division

HMMD SAN DIEGO: Hazardous Materials Management Division Database
The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17-In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)
Date of Government Version: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Source: Hazardous Materials Management Division
Date Made Active in Reports: 05/21/2021
Telephone: 619-338-2268
Number of Days to Update: 79
Last EDR Contact: 05/28/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly
LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.
Date of Government Version: 10/01/2020
Source: Department of Health Services
Date Data Arrived at EDR: 11/23/2020
Telephone: 619-338-2209
Date Made Active in Reports: 02/08/2021 Last EDR Contact: 05/21/2021
Number of Days to Update: 77
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
SAN DIEGO CO LOP: Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75
Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies
SAN DIEGO CO SAM: Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:
CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities
Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 02/11/2021
Source: San Francisco County Department of Environmental Health Telephone: 415-252-3896
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies
LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

\section*{SAN JOAQUIN COUNTY:}

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.
Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: Semi-Annually

\section*{SAN LUIS OBISPO COUNTY:}

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.
Date of Government Version: 05/07/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 05/14/2021
Source: San Luis Obispo County Public Health Department

Number of Days to Update: 3

Telephone: 805-781-5596
Last EDR Contact: 05/06/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

SAN MATEO COUNTY:
BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.
Date of Government Version: 02/20/2020 Source: San Mateo County Environmental Health Services Division
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64 Telephone: 650-363-1921
Last EDR Contact: 06/10/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Annually
LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division Telephone: 650-363-1921
Last EDR Contact: 06/02/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Semi-Annually

CUPA SANTA BARBARA: CUPA Facility Listing CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: No Update Planned

\section*{SANTA CLARA COUNTY:}

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list
Date of Government Version: 02/24/2021
Date Data Arrived at EDR: 02/26/2021
Date Made Active in Reports: 05/19/2021
Source: Department of Environmental Health Telephone: 408-918-1973

Number of Days to Update: 82
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies
HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.
Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Source: Santa Clara Valley Water District
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.
Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned
SAN JOSE HAZMAT: Hazardous Material Facilities Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

SANTA CRUZ COUNTY:
CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.
Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Annually

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

CUPA SHASTA: CUPA Facility List Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

\section*{SOLANO COUNTY:}

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management Telephone: 707-784-6770
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.
Date of Government Version: 03/23/2021
Source: Solano County Department of Environmental Management
Date Data Arrived at EDR: 03/25/2021
Telephone: 707-784-6770
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 77
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/12/2021
Data Release Frequency: Quarterly

\section*{SONOMA COUNTY:}

CUPA SONOMA: Cupa Facility List
Cupa Facility list
Date of Government Version: 12/15/2020
Date Data Arrived at EDR: 12/16/2020
Source: County of Sonoma Fire \& Emergency Services Department Telephone: 707-565-1174
Date Made Active in Reports: 12/23/2020 Last EDR Contact: 06/15/2021
Number of Days to Update: 7
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/05/2021
Date Data Arrived at EDR: 01/06/2021
Date Made Active in Reports: 03/18/2021
Number of Days to Update: 71

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/15/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:
CUPA STANISLAUS: CUPA Facility List
Cupa facility list
Date of Government Version: 02/09/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83
Source: Stanislaus County Department of Ennvironmental Protection Telephone: 209-525-6751
Last EDR Contact: 04/21/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Semi-Annually

\section*{TEHAMA COUNTY:}

CUPA TEHAMA: CUPA Facility List
Cupa facilities
Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 04/06/2021
Number of Days to Update: 82
Source: Tehama County Department of Environmental Health Telephone: 530-527-8020
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

TRINITY COUNTY:
CUPA TRINITY: CUPA Facility List
Cupa facility list
Date of Government Version: 01/19/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78
Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

TULARE COUNTY:
CUPA TULARE: CUPA Facility List
Cupa program facilities
Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 78
Source: Tulare County Environmental Health Services Division Telephone: 559-624-7400
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:
CUPA TUOLUMNE: CUPA Facility List
Cupa facility list
Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health Telephone: 209-533-5633
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/28/2020
Date Data Arrived at EDR: 01/29/2021
Date Made Active in Reports: 04/22/2021
Number of Days to Update: 83

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/19/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/25/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.
Date of Government Version: 03/29/2021
Date Data Arrived at EDR: 04/21/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 2
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/19/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly
UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.
Date of Government Version: 03/01/2021
Source: Environmental Health Division
Date Data Arrived at EDR: 03/09/2021
Telephone: 805-654-2813
Date Made Active in Reports: 03/31/2021
Last EDR Contact: 06/04/2021
Number of Days to Update: 22
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly

\section*{YOLO COUNTY:}

UST YOLO: Underground Storage Tank Comprehensive Facility Report Underground storage tank sites located in Yolo county.

Date of Government Version: 12/21/2020
Date Data Arrived at EDR: 12/23/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 12

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/26/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Annually

CUPA YUBA: CUPA Facility List CUPA facility listing for Yuba County.

Date of Government Version: 04/21/2021
Date Data Arrived at EDR: 04/22/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 20

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/24/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

\section*{OTHER DATABASE(S)}

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.
Date of Government Version: 10/05/2020
Source: Department of Energy \& Environmental Protection
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 82
Telephone: 860-424-3375
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: No Update Planned
NJ MANIFEST: Manifest Information
Hazardous waste manifest information.
Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Source: Department of Environmental Protection
Telephone: N/A
Date Made Active in Reports: 05/16/2019
Last EDR Contact: 04/09/2021
Number of Days to Update: 36
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Annually
NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.
Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72
Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 04/30/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly
PA MANIFEST: Manifest Information
Hazardous waste manifest information.
Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53
Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Annually
RI MANIFEST: Manifest information
Hazardous waste manifest information
Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 02/24/2021
Number of Days to Update: 13
Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/13/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.
Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) \(\mathrm{N}=\) Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.
Medical Centers: Provider of Services Listing
Source: Centers for Medicare \& Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare \& Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.
Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary
and secondary public education in the United States. It is a comprehensive, annual, national statistical
database of all public elementary and secondary schools and school districts, which contains data that are
comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500 -year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

\section*{STREET AND ADDRESS INFORMATION}
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\section*{TARGET PROPERTY ADDRESS}
```

GATEWAY HEIGHTS RESIDENTIAL PROJECT NOT REPORTED
MORENO VALLEY, CA 92557

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\section*{TARGET PROPERTY COORDINATES}
\begin{tabular}{ll} 
Latitude (North): & \(33.959359-33^{\circ} 57^{\prime} 33.69^{\prime \prime}\) \\
Longitude (West): & \(117.294602-117^{\circ} 17 \prime 40.57^{\prime \prime}\) \\
Universal Tranverse Mercator: & Zone 11 \\
UTM X (Meters): & 472780.5 \\
UTM Y (Meters): & 3757494.5 \\
Elevation: & 1680 ft. above sea level
\end{tabular}

\section*{USGS TOPOGRAPHIC MAP}
\begin{tabular}{ll} 
Target Property Map: & 5641312 RIVERSIDE EAST, CA \\
Version Date: & 2012
\end{tabular}

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:
1. Groundwater flow direction, and

\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}

\section*{GROUNDWATER FLOW DIRECTION INFORMATION}

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

\section*{TOPOGRAPHIC INFORMATION}

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY
General Topographic Gradient: General SSW

\section*{SURROUNDING TOPOGRAPHY: ELEVATION PROFILES}


Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}

\section*{HYDROLOGIC INFORMATION}

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE
\begin{tabular}{lll} 
Flood Plain Panel at Target Property & & FEMA Source Type \\
\hline 0650740005A & & FEMA Q3 Flood data \\
Additional Panels in search area: & & \\
\hline 06065C0731G & & \\
0602450735A Source Type \\
0602600020A & FEMA FIRM Flood data \\
& FEMA Q3 Flood data \\
& &
\end{tabular}

\section*{NATIONAL WETLAND INVENTORY}

NWI Quad at Target Property
NWI Electronic
Data Coverage
YES - refer to the Overview Map and Detail Map

\section*{HYDROGEOLOGIC INFORMATION}

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.
\begin{tabular}{lr} 
Site-Specific Hydrogeological Data*: \\
Search Radius: & 1.25 miles \\
Status: & Not found
\end{tabular}

\section*{AQUIFLOW \({ }^{\circledR}\)}

Search Radius: 1.000 Mile.
EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.
\begin{tabular}{|c|c|c|}
\hline & LOCATION & GENERAL DIRECTION \\
\hline MAP ID & FROM TP & GROUNDWATER FLOW \\
\hline A12 & 1/2-1 Mile SSW & Not Reported \\
\hline 1G & 1/2-1 Mile SSW & Not Reported \\
\hline
\end{tabular}

For additional site information, refer to Physical Setting Source Map Findings.

\footnotetext{
* 1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation
}

\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}

\section*{GROUNDWATER FLOW VELOCITY INFORMATION}

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

\section*{GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY}

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT
\begin{tabular}{lll} 
Era: & Mesozoic & Category: \\
System: & Cretaceous & \\
Series: & Cretaceous granitic and Intrusive Rocks \\
Code: & \(\mathrm{Kg} \quad\) (decoded above as Era, System \& Series) &
\end{tabular}

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).


\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}

\section*{DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY}

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

\section*{Soil Map ID: 1}
\begin{tabular}{ll} 
Soil Component Name: & Cieneba \\
Soil Surface Texture: & sandy loam \\
Hydrologic Group: & \begin{tabular}{l} 
Class C - Slow infiltration rates. Soils with layers impeding downward \\
movement of water, or soils with moderately fine or fine textures.
\end{tabular} \\
Soil Drainage Class: & Somewhat excessively drained
\end{tabular}

Hydric Status: Not hydric

\section*{Corrosion Potential - Uncoated Steel: Low}
\begin{tabular}{ll} 
Depth to Bedrock Min: & \(>0\) inches \\
Depth to Watertable Min: & \(>0\) inches
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{8}{|c|}{Soil Layer Information} \\
\hline & \multicolumn{2}{|r|}{Boundary} & \multirow[b]{2}{*}{Soil Texture Class} & \multicolumn{2}{|r|}{Classification} & \multirow[t]{2}{*}{Saturated hydraulic conductivity micro m/sec} & \multirow[b]{2}{*}{Soil Reaction (pH)} \\
\hline Layer & Upper & Lower & & AASHTO Group & Unified Soil & & \\
\hline 1 & 0 inches & 14 inches & sandy loam & Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. & Not reported & \[
\begin{aligned}
& \text { Max: } 0.42 \\
& \text { Min: } 0
\end{aligned}
\] & Max: Min: \\
\hline 2 & 14 inches & 22 inches & weathered bedrock & Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. & Not reported & \[
\begin{aligned}
& \text { Max: } 0.42 \\
& \text { Min: } 0
\end{aligned}
\] & Max: Min: \\
\hline
\end{tabular}

\section*{Soil Map ID: 2}

Soil Component Name:
Soil Surface Texture:
Hydrologic Group:

ROCKLAND
unweathered bedrock
Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class:

\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}

Hydric Status: Not hydric
Corrosion Potential - Uncoated Steel: Not Reported
\begin{tabular}{ll} 
Depth to Bedrock Min: & \(>0\) inches \\
Depth to Watertable Min: & \(>0\) inches
\end{tabular}
\begin{tabular}{|l|l|l|l|l|l|l|l|}
\hline \multicolumn{2}{|c|}{ Soil Layer Information } \\
\hline & \multicolumn{2}{|c|}{ Boundary } & & \multicolumn{2}{|c|}{ Classification } & \begin{tabular}{l} 
Saturated \\
hydraulic \\
conductivity \\
micro m/sec
\end{tabular} & \begin{tabular}{l} 
Soil \\
(pH)
\end{tabular} \\
\hline Layer & Upper & Lower & Soil Texture Class & AASHTO Group & Unified Soil & \begin{tabular}{l} 
Max: \\
Min:
\end{tabular} & Max: Min: \\
\hline 1 & 0 inches & 59 inches & \begin{tabular}{l} 
unweathered \\
bedrock
\end{tabular} & Not reported & Not reported & \\
\hline
\end{tabular}

Soil Map ID: 3


\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{8}{|c|}{Soil Layer Information} \\
\hline & \multicolumn{2}{|r|}{Boundary} & \multirow[b]{2}{*}{Soil Texture Class} & \multicolumn{2}{|r|}{Classification} & \multirow[t]{2}{*}{Saturated hydraulic conductivity micro \(\mathrm{m} / \mathrm{sec}\)} & \multirow[b]{2}{*}{Soil Reaction
\[
(\mathrm{pH})
\]} \\
\hline Layer & Upper & Lower & & AASHTO Group & Unified Soil & & \\
\hline 2 & 14 inches & 22 inches & weathered bedrock & Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand. & Not reported & \[
\begin{aligned}
& \text { Max: } 0.42 \\
& \text { Min: } 0
\end{aligned}
\] & Max: Min: \\
\hline
\end{tabular}

\section*{Soil Map ID: 4}
\begin{tabular}{ll} 
Soil Component Name: & MONSERATE \\
Soil Surface Texture: & sandy loam \\
Hydrologic Group: & \begin{tabular}{l} 
Class C - Slow infiltration rates. Soils with layers impeding downward \\
movement of water, or soils with moderately fine or fine textures.
\end{tabular} \\
Soil Drainage Class: & Well drained
\end{tabular}

Hydric Status: Not hydric
Corrosion Potential - Uncoated Steel: Low
\(\begin{array}{ll}\text { Depth to Bedrock Min: } & >0 \text { inches } \\ \text { Depth to Watertable Min: } & >0 \text { inches }\end{array}\)
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{8}{|c|}{Soil Layer Information} \\
\hline & \multicolumn{2}{|r|}{Boundary} & \multirow[b]{2}{*}{Soil Texture Class} & \multicolumn{2}{|c|}{Classification} & \multirow[t]{2}{*}{Saturated hydraulic conductivity micro \(\mathrm{m} / \mathrm{sec}\)} & \multirow[b]{2}{*}{Soil Reaction (pH)} \\
\hline Layer & Upper & Lower & & AASHTO Group & Unified Soil & & \\
\hline 1 & 0 inches & 9 inches & sandy loam & Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils. & COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. & \begin{tabular}{l}
Max: 14 \\
Min: 4
\end{tabular} & \begin{tabular}{l}
Max: 8.4 \\
Min: 6.6
\end{tabular} \\
\hline 2 & 9 inches & 27 inches & sandy clay loam & \begin{tabular}{l}
Silt-Clay \\
Materials (more than 35 pct . passing No. 200), Silty Soils.
\end{tabular} & COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. & \begin{tabular}{l}
Max: 14 \\
Min: 4
\end{tabular} & \begin{tabular}{l}
Max: 8.4 \\
Min: 6.6
\end{tabular} \\
\hline
\end{tabular}

\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{8}{|c|}{Soil Layer Information} \\
\hline & \multicolumn{2}{|r|}{Boundary} & \multirow[b]{2}{*}{Soil Texture Class} & \multicolumn{2}{|c|}{Classification} & \multirow[t]{2}{*}{Saturated hydraulic conductivity micro \(\mathrm{m} / \mathrm{sec}\)} & \multirow[b]{2}{*}{Soil Reaction (pH)} \\
\hline Layer & Upper & Lower & & AASHTO Group & Unified Soil & & \\
\hline 3 & 27 inches & 44 inches & indurated & Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils. & COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. & \[
\text { Max: } 14
\]
\[
\text { Min: } 4
\] & \begin{tabular}{l}
Max: 8.4 \\
Min: 6.6
\end{tabular} \\
\hline 4 & 44 inches & 57 inches & cemented & Silt-Clay Materials (more than 35 pct . passing No. 200), Silty Soils. & \begin{tabular}{l}
COARSE-GRAINED \\
SOILS, Sands, Sands with fines, Silty Sand.
\end{tabular} & \[
\begin{aligned}
& \text { Max: } 14 \\
& \text { Min: } 4
\end{aligned}
\] & \begin{tabular}{l}
Max: 8.4 \\
Min: 6.6
\end{tabular} \\
\hline 5 & 57 inches & 70 inches & loamy coarse sand & Silt-Clay Materials (more than 35 pct . passing No. 200), Silty Soils. & COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. & \begin{tabular}{l}
Max: 14 \\
Min: 4
\end{tabular} & Max: 8.4 Min: 6.6 \\
\hline
\end{tabular}

\section*{Soil Map ID: 5}

Soil Component Name:
Soil Surface Texture:
Hydrologic Group:

Soil Drainage Class:
Hydric Status: Not hydric
Corrosion Potential - Uncoated Steel: Low
\begin{tabular}{ll} 
Depth to Bedrock Min: & \(>0\) inches \\
Depth to Watertable Min: & \(>0\) inches
\end{tabular}

\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{8}{|c|}{Soil Layer Information} \\
\hline & \multicolumn{2}{|r|}{Boundary} & \multirow[b]{2}{*}{Soil Texture Class} & \multicolumn{2}{|r|}{Classification} & \multirow[t]{2}{*}{Saturated hydraulic conductivity micro \(\mathrm{m} / \mathrm{sec}\)} & \multirow[b]{2}{*}{Soil Reaction (pH)} \\
\hline Layer & Upper & Lower & & AASHTO Group & Unified Soil & & \\
\hline 1 & 0 inches & 5 inches & fine sandy loam & \begin{tabular}{l}
Silt-Clay \\
Materials (more than 35 pct . passing No. 200), Silty Soils.
\end{tabular} & Not reported & \[
\begin{aligned}
& \text { Max: } 0.42 \\
& \text { Min: } 0
\end{aligned}
\] & Max: Min: \\
\hline 2 & 5 inches & 18 inches & sandy clay loam & \begin{tabular}{l}
Silt-Clay \\
Materials (more than 35 pct . passing No. 200), Silty Soils.
\end{tabular} & Not reported & \[
\begin{aligned}
& \text { Max: } 0.42 \\
& \text { Min: } 0
\end{aligned}
\] & Max: Min: \\
\hline 3 & 18 inches & 22 inches & weathered bedrock & \begin{tabular}{l}
Silt-Clay \\
Materials (more \\
than 35 pct. \\
passing No. \\
200), Silty \\
Soils.
\end{tabular} & Not reported & \[
\begin{aligned}
& \text { Max: } 0.42 \\
& \text { Min: } 0
\end{aligned}
\] & Max: Min: \\
\hline
\end{tabular}

\section*{Soil Map ID: 6}

Soil Component Name:
Soil Surface Texture:
Hydrologic Group:

Soil Drainage Class:
Hydric Status: Not hydric
Corrosion Potential - Uncoated Steel: Low
Depth to Bedrock Min: >0 inches
Depth to Watertable Min: >0 inches
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multicolumn{8}{|c|}{Soil Layer Information} \\
\hline & \multicolumn{2}{|r|}{Boundary} & \multirow[b]{2}{*}{Soil Texture Class} & \multicolumn{2}{|c|}{Classification} & \multirow[t]{2}{*}{Saturated hydraulic conductivity micro \(\mathrm{m} / \mathrm{sec}\)} & \multirow[b]{2}{*}{Soil Reaction (pH)} \\
\hline Layer & Upper & Lower & & AASHTO Group & Unified Soil & & \\
\hline 1 & 0 inches & 7 inches & coarse sandy loam & Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils. & COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand. & \begin{tabular}{l}
Max: 141 \\
Min: 42
\end{tabular} & \begin{tabular}{l}
Max: 7.8 \\
Min: 5.6
\end{tabular} \\
\hline 2 & 7 inches & 40 inches & fine sandy loam & Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils. & \begin{tabular}{l}
COARSE-GRAINED \\
SOILS, Sands, Sands with fines, Silty Sand.
\end{tabular} & \begin{tabular}{l}
Max: 141 \\
Min: 42
\end{tabular} & \begin{tabular}{l}
Max: 7.8 \\
Min: 5.6
\end{tabular} \\
\hline 3 & 40 inches & 59 inches & stratified loamy sand to coarse sandy loam & \begin{tabular}{l}
Silt-Clay \\
Materials (more \\
than 35 pct. \\
passing No. \\
200), Silty \\
Soils.
\end{tabular} & \begin{tabular}{l}
COARSE-GRAINED \\
SOILS, Sands, Sands with fines, Silty Sand.
\end{tabular} & \begin{tabular}{l}
Max: 141 \\
Min: 42
\end{tabular} & \begin{tabular}{l}
Max: 7.8 \\
Min: 5.6
\end{tabular} \\
\hline
\end{tabular}

\section*{LOCAL / REGIONAL WATER AGENCY RECORDS}

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION
\begin{tabular}{ll} 
DATABASE & SEARCH DISTANCE (miles) \\
Federal USGS & 1.000 \\
Federal FRDS PWS & Nearest PWS within 1 mile \\
State Database & 1.000
\end{tabular}

FEDERAL USGS WELL INFORMATION
\begin{tabular}{l} 
LOCATION \\
FROM TP \\
\hline
\end{tabular}

MAP ID
WELL ID
No Wells Found

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

\section*{MAP ID}

WELL ID
LOCATION
FROM TP

\section*{GEOCHECK \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE SUMMARY}

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION
\begin{tabular}{lll} 
MAP ID & WELL ID & \begin{tabular}{l} 
LOCATION \\
FROM TP
\end{tabular} \\
\hline
\end{tabular}

No PWS System Found
Note: PWS System location is not always the same as well location.

\section*{STATE DATABASE WELL INFORMATION}
\begin{tabular}{lll} 
MAP ID & WELL ID & \begin{tabular}{l} 
LOCATION \\
FROM TP
\end{tabular} \\
\cline { 1 - 1 } & 2462 & \begin{tabular}{l}
\(1 / 2-1\) Mile SSW
\end{tabular} \\
2 & CADDW0000011940 & \(1 / 2-1\) Mile SSE \\
3 & CADWR0000022168 & \(1 / 2-1\) Mile South \\
A4 & CAEDF0000076199 & \(1 / 2-1\) Mile SSW \\
A5 & CAEDF0000077278 & \(1 / 2-1\) Mile SSW \\
A6 & CAEDF0000098441 & \(1 / 2-1\) Mile SSW \\
B7 & CAEDF0000070472 & \(1 / 2-1\) Mile SSW \\
A8 & CAEDF0000010312 & \(1 / 2-1\) Mile SSW \\
A9 & CAEDF0000022883 & \(1 / 2-1\) Mile SSW \\
B10 & CAEDF0000004686 & \(1 / 2-1\) Mile SSW \\
B11 & CAEDF0000014192 & \(1 / 2-1\) Mile SSW \\
B13 & CAEDF0000123281 & \(1 / 2-1\) Mile SSW \\
B14 & CAEDF0000045914 & \(1 / 2-1\) Mile SSW \\
B15 & CAEDF0000001717 & \(1 / 2-1\) Mile SSW \\
B16 & CAEDF00000048545 & \(1 / 2-1\) Mile SSW \\
B17 & CAEDF0000059972 & \(1 / 2-1\) Mile SSW \\
B18 & CAEDF0000021016 & \(1 / 2-1\) Mile SSW \\
B19 & CAEDF0000046543 & \(1 / 2-1\) Mile SSW \\
B20 & CAEDF0000116557 & \(1 / 2-1\) Mile SSW \\
B21 & CAEDF0000142393 & \(1 / 2-1\) Mile SSW \\
B22 & CAEDF00000042577 & \(1 / 2-1\) Mile SSW \\
B23 & & \(1 / 2-1\) Mile SSW \\
B24 & & \(1 / 2-1\) Mile SSW
\end{tabular}


N County Boundary

Major Roads
Contour Lines
\& Earthquake Fault Lines
( - Earthquake epicenter, Richter 5 or greater
(1) Water Wells
(B) Public Water Supply Wells
- Cluster of Multiple Icons
\(\uparrow\) Groundwater Flow Direction
(GI) Indeterminate Groundwater Flow at Location
(GV) Groundwater Flow Varies at Location
(HD) Closest Hydrogeological Data
- Oil, gas or related wells
\begin{tabular}{ll}
\hline SITE NAME: & Gateway Heights Residential Project \\
ADDRESS: & Not Reported \\
& Moreno Valley CA 92557 \\
LAT/LONG: & \(33.959359 / 117.294602\)
\end{tabular}

\section*{GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS}

Map ID
Direction
Distance
\begin{tabular}{|c|c|c|c|c|}
\hline Distance Elevation & & & Database & EDR ID Number \\
\hline \[
\begin{aligned}
& \text { 1 } \\
& \text { SSW } \\
& \text { 1/2-1 Mile } \\
& \text { Lower }
\end{aligned}
\] & & & CA WELLS & 2462 \\
\hline Seq: & 2462 & Prim sta c : & 02S/04W & 204 \\
\hline Frds no: & 3301053001 & County: & 33 & \\
\hline District: & 63 & User id: & 33C & \\
\hline System no: & 3301053 & Water type: & G & \\
\hline Source nam: & WELL 01 & Station ty: & WELL/AN & T/MUN/INTAKE \\
\hline Latitude: & 335700.0 & Longitude: & 1171750. & \\
\hline Precision: & 3 & Status: & AR & \\
\hline Comment 1: & 20860 BOX SP & SIDE & & \\
\hline Comment 2: & Not Reported & Comment 3: & Not Repo & \\
\hline Comment 4: & Not Reported & Comment 5: & Not Repo & \\
\hline Comment 6: & Not Reported & Comment 7: & Not Repo & \\
\hline System no: & 3301053 & System nam: & Box Sprin & Canyon Apts \\
\hline Hqname: & Not Reported & Address: & Not Repo & \\
\hline City: & Not Reported & State: & Not Repo & \\
\hline Zip: & Not Reported & Zip ext: & Not Repo & \\
\hline Pop serv: & 0 & Connection: & 0 & \\
\hline
\end{tabular}


02S04W33R002S
Deplnion
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR\&s date=\&global_id=\&assigned_name=02S04W33R002S\&store_num= Not Reported

A4
SSW
\(1 / 2-1\) Mile
Lower
\begin{tabular}{ll} 
Well ID: & T0606548431-MW-14 \\
Source: & EDF
\end{tabular}

EDF

CA WELLS CAEDF0000076199

Well Type:
MONITORING
Other Name:
MW-14

\section*{GEOCHECK® \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE MAP FINDINGS}

GAMA PFAS Testing:
Groundwater Quality Data:
GeoTracker Data:

Not Reported
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&si date=\&global_id=T0606548431\&assigned_name=MW-14\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-14
A5
SSW
1/2-1 Mile
Lower
Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:
GeoTracker Data:

A6
SSW
Lower
\begin{tabular}{llll} 
Well ID: & T0606548431-MW-13 & Well Type: & MONITORING \\
Source: & EDF & Other Name: & MW-13 \\
GAMA PFAS Testing: & Not Reported & https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s: \\
Groundwater Quality Data: & \begin{tabular}{ll} 
date=\&global_id=T0606548431\&assigned_name=MW-13\&store_num \(=\)
\end{tabular} \\
GeoTracker Data: & & https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass \\
& gned_name=MW-13
\end{tabular}

B7
SSW
Lower
\begin{tabular}{llll} 
Well ID: & T0606548431-MW-5 & Well Type: & Other Name:
\end{tabular}
\begin{tabular}{lll} 
T0606548431-MW-15 & Well Type: & MONITORING \\
EDF & Other Name: & MW-15 \\
Not Reported & & \\
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s: \\
date=\&global_id=T0606548431\&assigned_name=MW-15\&store_num= \\
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass \\
gned_name=MW-15 &
\end{tabular}
\begin{tabular}{llll} 
Well ID: & T0606548431-MW-16 & Well Type: & MONITORING \\
Source: & EDF & Other Name: & MW-16 \\
GAMA PFAS Testing: & Not Reported & https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s: \\
Groundwater Quality & \\
& date=\&global_id=T0606548431\&assigned_name=MW-16\&store_num=
\end{tabular}

\section*{GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS}

GeoTracker Data: https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-16
\begin{tabular}{lll} 
Well ID: & T0606548431-MW-12 & Well Type: \\
Source: & EDF & Other Name: \\
GAMA PFAS Testing: & Not Reported & MONITORING \\
Groundwater Quality Data: & https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&si \\
& \begin{tabular}{ll} 
date=_global_id=T0606548431\&assigned_name=MW-12\&store_num= \\
GeoTracker Data: & https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass \\
& gned_name=MW-12
\end{tabular} &
\end{tabular}

CA WELLS CAEDF0000014192

\section*{1/2-1 Mile}

Lower
\begin{tabular}{lll} 
Well ID: & T0606548431-MW-6 & Well Type: \\
Source: & EDF & Other Name: \\
GAMA PFAS Testing: & Not Reported & MONITORING \\
Groundwater Quality Data: & \begin{tabular}{l} 
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&si \\
date=\&global_id=T0606548431\&assigned_name=MW-6\&store_num=
\end{tabular} \\
GeoTracker Data: & \begin{tabular}{ll} 
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass \\
gned_name=MW-6
\end{tabular} &
\end{tabular}
\begin{tabular}{lll} 
Well ID: & T0606548431-MW-4 & Well Type: \\
Source: & EDF & Other Name: \\
GAMA PFAS Testing: & Not Reported & \\
Groundwater Quality Data: & \begin{tabular}{l} 
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s \(i\) \\
date=\&global_id=T0606548431\&assigned_name=MW-4\&store_num= \\
GeoTracker Data:
\end{tabular} & \begin{tabular}{ll} 
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass \\
gned_name=MW-4
\end{tabular}
\end{tabular}

\section*{B10}

SSW
1/2-1 Mile
Lower

\section*{GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS}

Map ID
Direction
\begin{tabular}{|c|c|c|c|c|}
\hline Distance Elevation & & & Database & EDR ID Number \\
\hline \[
\begin{aligned}
& \hline \text { B13 } \\
& \text { SSW } \\
& \text { 1/2-1 Mile } \\
& \text { Lower }
\end{aligned}
\] & & & CA WELLS & CAEDF0000123281 \\
\hline Well ID: & T0606548431-MW-3 & Well Type: & & ORING \\
\hline Source: & EDF & Other Name: & MW & \\
\hline GAMA PFAS Testing: & \multicolumn{4}{|l|}{\multirow[t]{2}{*}{\begin{tabular}{l}
Not Reported \\
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s date=\&global_id=T0606548431\&assigned_name=MW-3\&store_num=
\end{tabular}}} \\
\hline Groundwater Quality Data: & & & & \\
\hline GeoTracker Data: & https://geotracker.wat gned name=MW-3 & profile_report. & MWEDFResu & global_id=T0606548 \\
\hline
\end{tabular}

\section*{B16}

SSW
1/2-1 Mile
Lower
Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:
T0606548431-MW-11
EDF

T0606548431-MW-9
EDF
Not Reported
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s date=\&global_id=T0606548431\&assigned_name=MW-9\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-9

CA WELLS CAEDF0000045914
1/2-1 Mile
Lower

Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:

GeoTracker Data:

0606548431-MW-3

Not Reported
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-3

\section*{B15}

SSW
Lower

Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:
GeoTracker Data:

\section*{Not Reported}
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s date=\&global_id=T0606548431\&assigned_name=MW-11\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-11

MONITORING
MW-11

GeoTracker Data

\section*{T0606548431-MW-8}

EDF
Not Reported
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s date=\&global_id=T0606548431\&assigned_name=MW-8\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-8

\section*{CA WELLS CAEDF0000059545}

\section*{GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS}

Map ID
Direction
\begin{tabular}{|c|c|c|c|c|}
\hline Distance Elevation & & & Database & EDR ID Number \\
\hline \[
\begin{aligned}
& \hline \text { B17 } \\
& \text { SSW } \\
& \text { 1/2-1 Mile } \\
& \text { Lower }
\end{aligned}
\] & & & CA WELLS & CAEDF0000048095 \\
\hline Well ID: & T0606548431-MW-7 & Well Type: & & ORING \\
\hline Source: & EDF & Other Name: & MW & \\
\hline GAMA PFAS Testing: & \multicolumn{4}{|l|}{\multirow[t]{2}{*}{\begin{tabular}{l}
Not Reported \\
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s date=\&global_id=T0606548431\&assigned_name=MW-7\&store_num=
\end{tabular}}} \\
\hline Groundwater Quality Data: & & & & \\
\hline GeoTracker Data: & https://geotracker.wat gned name=MW-7 & /profile_report. & MWEDFResul & global_id=T06065484 \\
\hline
\end{tabular}

\section*{B20}

\section*{SSW \\ 1/2-1 Mile}

Lower
Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:

T0606548431-MW-10
EDF
T0606548431-MW-2
EDF
Not Reported
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s date=\&global_id=T0606548431\&assigned_name=MW-2\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-2
\begin{tabular}{llll} 
Well ID: & T0606548431-MW-2 & Well Type: & MONITORING \\
Source: & EDF & Other Name: & MW-2 \\
GAMA PFAS Testing: & Not Reported & https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s \\
Groundwater Quality Data: & date=\&global_id=T0606548431\&assigned_name=MW-2\&store_num= \\
GeoTracker Data: & & https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass \\
& gned_name=MW-2
\end{tabular}

MONITORING
MW-10

CA WELLS CAEDF0000059972
1/2-1 Mile
Lower

\section*{B19}

SSW
Lower

Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:
GeoTracker Data:
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s: date=\&global_id=T0606548431\&assigned_name=MW-10\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-10

GeoTracker Data:

T0606548431-MW-19
EDF

\section*{Not Reported}
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s: date=\&global_id=T0606548431\&assigned_name=MW-19\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-19

CA WELLS CAEDF0000046543

\section*{GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS}

Map ID
Direction
\begin{tabular}{|c|c|c|c|c|}
\hline Distance Elevation & & & Database & EDR ID Number \\
\hline \multicolumn{5}{|l|}{\multirow[t]{4}{*}{B21
SSW
1/2-1 Mile
Lower}} \\
\hline & & & & \\
\hline & & & & \\
\hline & & & & \\
\hline Well ID: & T0606548431-MW-17 & Well Type: & & ORING \\
\hline Source: & EDF & Other Name: & & \\
\hline GAMA PFAS Testing: & \multicolumn{4}{|l|}{\multirow[t]{2}{*}{\begin{tabular}{l}
Not Reported \\
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s date=\&global_id=T0606548431\&assigned_name=MW-17\&store_num=
\end{tabular}}} \\
\hline Groundwater Quality Data: & & & & \\
\hline GeoTracker Data: & \multicolumn{4}{|l|}{https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned name=MW-17} \\
\hline
\end{tabular}

\section*{B24}

SSW
1/2-1 Mile
Lower
Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:

T0606548431-MW-20
EDF
T0606548431-MW-18
EDF
Not Reported
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s date=\&global_id=T0606548431\&assigned_name=MW-18\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-18

CA WELLS CAEDF0000142393

MONITORING MW-20

CA WELLS CAEDF0000116487
SSW-1 Mile
Lower

Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:
GeoTracker Data:

T0606548431-MW-17

Not Reported
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned name=MW-17

\section*{B23}

\section*{SSW \\ 1/2-1 Mile}

Lower
Well ID:
Source:
GAMA PFAS Testing:
Groundwater Quality Data:
GeoTracker Data:
Not Reported
https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=EDF\&s: date=\&global_id=T0606548431\&assigned_name=MW-20\&store_num=
https://geotracker.waterboards.ca.gov/profile_report.asp?cmd=MWEDFResults\&global_id=T0606548431\&ass gned_name=MW-20

\section*{GEOCHECK® \({ }^{\circledR}\) - PHYSICAL SETTING SOURCE MAP FINDINGS}

Map ID
Direction
Distance
Elevation
Database EDR ID Number
\begin{tabular}{lllll} 
1G & Site ID: & 083302855T & & \\
SSW & Groundwater Flow: & Not Reported & AQUIFLOW & \(\mathbf{5 0 7 8 2}\) \\
1/2-1 Mile & Shallow Water Depth: & Not Reported & & \\
Lower & Deep Water Depth: & Not Reported & & \\
& Average Water Depth: & 40 & & \\
& Date: & \(04 / 1997\) & &
\end{tabular}

\section*{GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS \\ RADON}

\section*{AREA RADON INFORMATION}

State Database: CA Radon
Radon Test Results
\begin{tabular}{lll} 
Zipcode & Num Tests & \(>4 \mathrm{pCi} / \mathrm{L}\) \\
\cline { 1 - 1 } & \begin{tabular}{ll}
82557 & 8
\end{tabular} & 0
\end{tabular}

Federal EPA Radon Zone for RIVERSIDE County: 2
Note: Zone 1 indoor average level \(>4 \mathrm{pCi} / \mathrm{L}\).
: Zone 2 indoor average level >= \(2 \mathrm{pCi} / \mathrm{L}\) and \(<=4 \mathrm{pCi} / \mathrm{L}\).
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA
Number of sites tested: 12
\begin{tabular}{|c|c|c|c|c|}
\hline Area & Average Activity & \% < \(4 \mathrm{pCi} / \mathrm{L}\) & \% 4-20 pCi/L & \% > \(20 \mathrm{pCi} / \mathrm{L}\) \\
\hline Living Area - 1st Floor & \(0.117 \mathrm{pCi} / \mathrm{L}\) & 100\% & 0\% & 0\% \\
\hline Living Area-2nd Floor & \(0.450 \mathrm{pCi} / \mathrm{L}\) & 100\% & 0\% & 0\% \\
\hline Basement & \(1.700 \mathrm{pCi} / \mathrm{L}\) & 100\% & 0\% & 0\% \\
\hline
\end{tabular}

\section*{TOPOGRAPHIC INFORMATION}

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

\section*{HYDROLOGIC INFORMATION}

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500 -year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015
NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

\section*{HYDROGEOLOGIC INFORMATION}

AQUIFLOW \({ }^{R}\) Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

\section*{GEOLOGIC INFORMATION}

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

\section*{LOCAL / REGIONAL WATER AGENCY RECORDS}

\section*{FEDERAL WATER WELLS}

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

\section*{OTHER STATE DATABASE INFORMATION}

Groundwater Ambient Monitoring \& Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

\section*{Water Well Database}

Source: Department of Water Resources
Telephone: 916-651-9648
California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.
California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

\section*{RADON}

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

\section*{Area Radon Information}

\section*{Source: USGS}

Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency
(USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey.
The study covers the years 1986-1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 \& 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration
California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

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\section*{INITIAL STUDY FOR THE GATEWAY HEIGHTS PROJECT}


GATEWAY HEIGHTS PROJECT PEN 21-0066

February 2023
Lead Agency
CITY OF MORENO VALLEY
14177 Frederick Street
Moreno Valley, California 92553
Prepared By
PSOMAS
Contact: Sean Noonan, AICP
5 Hutton Centre Drive, Suite 300
Santa Ana, California 92707
Volume 2b

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C Cultural Reports
D Energy Calculations
E Geotechnical Report
F Slope Stability Report
G EDR Radius Map Report
Volume 2B
H Preliminary Drainage Report
I Project Specific Water Quality Management Plan
J Planned Unit Development
K Traffic Impact Analysis
L Fire Hazard Analysis and Approach Memorandum

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\section*{Preliminary Drainage Report}

\title{
Preliminary Drainage Report
}

For Gateway Heights
Moreno Valley, CA

A Hillside Residential Cluster Unit Development Located 220'N of Jennings Ct and Morton Rd.

February 22, 2021
Revised March 28, 2022
Revised October 24, 2022
Revised November 29, 2022

UNITED ENGINEERING GROUP-CALIFORNIA, INC
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Rancho Cucamonga, CA 91730
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Provided for:

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Project \# 30182

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any employees that have provided data and calculations upon which the recommendations, conclusions, and decisions are based.


Christopher F. Lenz, PE 63001

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\section*{1 INTRODUCTION}

\subsection*{1.1. SITE DESCRIPTION}

\subsection*{1.1.1. LOCATION}

Gateway Heights is located 220 feet north of Jennings Court and east of Morton Road in the City of Moreno Valley, Riverside County. It is parcel 256-150-001.

\subsection*{1.1.2. EXISTING FEATURES}

The property contains 32.8 acres in the foothill of the Box Springs Mountain Reserve Park. The project proposes to develop approx. 15.43 acres of 32.8 into 108 detached condominium units with the dwelling units in an 8-unit "cluster" concept. The site drains northeast to southwest with steep slopes, especially in the hillside areas. It is bordered on three sides with vacant land, and of the south by existing single-family residences.

\subsection*{1.1.3. PROPOSED CONDITION}

It is proposed that the subject property be developed to permit development of residential lots per the request of the client. The site will contain 108 single family lots via Planned Unit Development. Access to the site will be from Morton Road. There will be open space area placed near the entrance at the base of the hill to provide flood and water quality mitigation.

\subsection*{1.2. PURPOSE OF REPORT}

The purpose of this report is to review the West End Moreno Master Drainage Plan (adopted 1991) and ensure design compatibility with the proposed project. This report will analyze the hydrology of the landscape and assess the hydraulic conditions of the subject parcel to verify consistency with the previously listed reports. Where necessary, control measures will be recommended to alleviate existing flood problems and provide for water quality concerns using the County of Riverside Flood Control processes.

\subsection*{1.3. FEMA INFORMATION}

The Flood Insurance Rate Maps (Panel 06065C0733G) for this subject property shows that the site falls within Zone X. Zone X denotes areas determined to be "Areas of Undermined Flood Hazard".

\section*{2. EXISTING DRAINAGE PATTERNS}

\subsection*{2.1. OFFSITE}

The West End Moreno Master Drainage Plan studied the drainage patterns for this overall area and identified Line A and Line B along the northwestern and southwestern edges of the property. Line \(A\) is to the north of the proposed development and thus no improvements are proposed. Line \(B\) is located offsite to the south and west of the property. The project area is within the contributory area of Line B. Flows that originate in the hillside areas drain southwesterly and some defined watercourses have formed. A portion of the site drains southwesterly to Line B, and the other portion drains westerly along another main flow path along the north side of Morton Road. This report analyzed three main watercourses affecting the development limits. Two of the watercourses continue southwesterly, join each other at point 305 , and then intersect with the large wash that runs along the southwest edge of the property at point 306. Points 304 and 403 have been determined at 90.6 cfs and 26.7 cfs respectively. Another smaller area impacts the northeastern edge of the development area and is contributory to Line A. Point 502 has been determined at 7.8 cfs . Refer to the Existing Conditions Exhibit. In addition to the the main washes that impact the eastern edge of the site and continue through the site, there are four concentrations of flow that originate onsite and discharge along the western property line. Those too are analyzed. Points 602, 702, 802, and 902 have been determined at \(5.8 \mathrm{cfs}, 1.8 \mathrm{cfs}, 5.7 \mathrm{cfs}\), and 8.0 cfs respectively. Refer to the Existing Conditions Exhibit.

\subsection*{2.2. ONSITE}

The site has been disturbed and graded in recent history (mostly for fire mitigation). There are existing concentrations of storm runoff traversing the site. There are defined jurisdictional watercourses along the southwestern edge of the property that has historically conveyed storm runoff along the back of the existing homes, and then across Morton Road. There are a few minor non jurisdictional concentrations of flow at the base of the hills that originate on site from the hillside. Using the proposed development limits, this report analyzed the 1,3,6, and 24hr, 2,5,10, and 100 year runoff events (per the RCFCWCD method). Refer to the Onsite Existing Conditions Exhibit

\section*{3. PROPOSED DRAINAGE PATTERNS}

\subsection*{3.1. OFFSITE}

For the offsite, hillside runoff, the project is proposing three storm drain collection points. Point 502 is along the northern edge, is 7.8 cfs , and will be carried by a 24 " pipe through the project, continuing westerly along the
existing flow path. The other two, points 403, and 304, are 26.7 cfs, and 90.6 cfs, respectively. 403 will be carried by a proposed 24 " pipe and connected to a proposed 36" pipe that carries the flow from point 304. That proposed storm drain system also connects to the historic flow path. Preliminary pipe capacity calculations are located in Appendix B. At time of final design additional design including HGL will be required.
The project is adjacent to the proposed MDP Line B crossing, which is just south of the projects entrance, but is offsite. The project has been designed to route the hillside flows through the project via a proposed 36 " pipe, then outlet to the Line \(B\) system. The project proposes to build the Line B Crossing. Two (2) 3' \(\times 6^{\prime}\) RCB culverts will be built under Morton Road. From there flows will outlet within an existing channel that carries the regional flows and mimicking the existing conditions just south of the project.

\subsection*{3.2. ONSITE}

The Gateway Heights project will provide developed roads, combination bio retention and detention basins of sufficient size to accept, clean, mitigate the increase, and route the runoff from the proposed site. Basins for Gateway Heights have been designed to detain the difference in runoff hydrograph volume between the "developed" condition and the "predeveloped" condition using basin routing calculations. Runoff will be routed to bio-retention basins throughout the project via storm drain inlets. The water quality basins will drain via underdrains into a storm drain system and eventually into the proposed Line B System. Outlet design to be provided with final routing calculations to match existing conditions. It is anticipated that existing conditions can be matched.

\section*{4. HYDROLOGIC CONDITIONS}

The Synthetic Unit Hydrograph and Rational Methods have been employed to determine peak runoff amounts and volumes. The Riverside County Flood Control and Water Conservation District (RCFCD \& WCD) Hydrology Manual (reference 1) was used to develop the hydrological parameters for the 1, 3, 6 , and \(24 \mathrm{hr}, 2,5,10\), and 100 year storm events. Refer to appendix A for detail.

\subsection*{4.1. OFFSITE}

The offsite runoff potential has been analyzed with the Rational Method per the Riverside County Flood Control and Water Conservation District (RCFCD \& WCD) Hydrology Manual (reference 1).

The Following Data is the result of the calculations;
\begin{tabular}{|c|c|c|c|}
\hline ज刀口－ & T\％ & S！口APRA Fiow & rGTAL FI． \\
\hline 102 & 8.2 解 & \(2 \pi 5\) CFS & 20.505 \\
\hline 103 & 11.1 UN & 39.3 OFS & 61．9 CFS \\
\hline 202 & \％M & 22.7 F & 22.7 CFS \\
\hline 20， & 00 Ma & \(27-6\) & 19.9 C15 \\
\hline 103＊ & it．i mid & & 108.7 Crs \\
\hline 104 & 1．3．4 \％\％ & 98.9 ¢ & 208.3 \％ \\
\hline 105 & 14．5 名据 & 6.3 Mrs & 29466 \\
\hline \(105 *\) & 12.3 Hiv & & 3362 ¢ 2 S \\
\hline & & & \\
\hline ．n？ & T19．7 1／19 & 25.485 & 25.4 CFS \\
\hline 303 & 125 man & \(35 \sim \mathrm{C}\) & 6\％．0 \％ \\
\hline 30．4 & 全．4 Min & 2966 & 90.5 CFS \\
\hline 305 &  & 3.3 Cr & 9.5 .96 \\
\hline 305\％ & 10.7 min & & 136.8 ct \\
\hline 306 & 7？．j min & 2.8 C．S & 176．6 6FS \\
\hline \multicolumn{4}{|l|}{＊SIREAM CONFLLENCE} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline bof & \％ & Subapir rom & Tha Fom \\
\hline 409 & 8.5 M \({ }^{\text {d }}\) & 6．0 Crs & 6.065 \\
\hline 403 & 10．0 & \(20 \%\) ¢\％ & 76.7 Crs \\
\hline 305 & ก¢，\％ & 5.3 CFS & 30.0 CF \\
\hline 502 & 9.0 Miv & 7.805 & 7.8 cFS \\
\hline 503 & 9.7 你 & 7.3 955 & 15.2 CFS \\
\hline \(50 ?\) & 11.3 Man & 8805 & 5.80 \\
\hline 702 & 8.8 N年 & 1.80 .5 & 1.8 C． 5 \\
\hline 802 & 0.9 MW & 0.7 Cr & 5.7 CFS \\
\hline 302 & 124 Ma & 80 & 8 E \\
\hline
\end{tabular}

\section*{4．2．ONSITE}

In the existing condition，the proposed development envelope is varying terrain with steeper areas．It is proposed to be developed into single family cluster lots．The onsite runoff potential has been analyzed with the Synthetic Unit Hydrograph Method per the Riverside County Flood Control and Water Conservation District（RCFCD \＆WCD）Hydrology Manual （reference 1）．
The Following Data is used in the calculations；
Soils Group－C
Pre－development Runoff Index－ 84 with 0\％impervious
Post－development Runoff Index－ 69 with \(65 \%\) impervious
Rainfall Data－Winchester Slope \(=0.52\)
2 yr － \(1 \mathrm{hr}=0.466\)＂
\(100 \mathrm{yr}-1 \mathrm{hr}=1.19\)＂
2 yr － \(3 \mathrm{hr}=0.799\)＂
100 yr －3hr＝1．89＂
2 yr － \(6 \mathrm{hr}=1.09\)＂
100 yr － \(6 \mathrm{hr}=2.55^{\prime \prime}\)
\(2 \mathrm{yr}-24 \mathrm{hr}=1.93\)＂
\(100 \mathrm{yr}-24 \mathrm{hr}=4.64\)＂
Per RCFCWCD method，the results of the hydrograph analysis are in the below tables．
basin routing is provided to show the proposed condition can be mitigated to less than the existing condition．The following tables summarize that volume calculations．
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{9}{|l|}{Moreno Valley 33 - Area A Pre-Development} \\
\hline & \multicolumn{8}{|c|}{Storm Duration} \\
\hline & \multicolumn{2}{|r|}{1 hour} & \multicolumn{2}{|r|}{3 hour} & \multicolumn{2}{|r|}{6 hour} & \multicolumn{2}{|r|}{24 hour.} \\
\hline Frequency & Q Peak & Volume & Q Peak & Volume & Q Peak & Volume & Q Peak & Volume \\
\hline 2 year & 5.4 & 0.13 & 2.9 & 0.14 & 2.5 & 0.15 & 0.5 & 0.12 \\
\hline 5 year & 7.8 & 0.20 & 4.1 & 0.23 & 3.6 & 0.24 & 1.0 & 0.25 \\
\hline 10 year & 9.6 & 0.26 & 5.1 & 0.31 & 4.5 & 0.32 & 1.4 & 0.37 \\
\hline 100 year & 16.2 & 0.51 & 8.9 & 0.75 & 7.9 & 0.94 & 3.1 & 1.35 \\
\hline
\end{tabular}

Moreno Valley 33 - Area A Post-Development
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline & \multicolumn{8}{|c|}{Storm Duration} \\
\hline & & our & & our & & our & & hour \\
\hline Frequency & Q Peak & Volume & Q Peak & Volume & Q Peak & Volume & Q Peak & Volume \\
\hline 2 year & 4.6 & 0.12 & 2.4 & 0.18 & 2.1 & 0.23 & 0.7 & 0.40 \\
\hline 5 year & 6.5 & 0.17 & 3.3 & 0.24 & 3.0 & 0.32 & 0.9 & 0.53 \\
\hline 10 year & 8.0 & 0.21 & 4.1 & 0.30 & 3.6 & 0.38 & 1.1 & 0.63 \\
\hline 100 year & 13.1 & 0.37 & 6.8 & 0.55 & 6.1 & 0.69 & 2.3 & 1.17 \\
\hline
\end{tabular}

Moseno Valley 33 - Area B Pre-Development
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{} & \multicolumn{8}{|c|}{Stormpuration} \\
\hline & \multicolumn{2}{|r|}{M hour} & \multicolumn{2}{|r|}{3 hour} & \multicolumn{2}{|c|}{6 bour} & \multicolumn{2}{|r|}{24. hour} \\
\hline Greguency & Q Peak & Volume & Q Peak & Volume & Q Peak & Volume & Q Peak & Volume \\
\hline 2 year & 8.2 & 0.18 & 4.1 & 0.20 & 3.5 & 0.21 & 0.7 & 0.18 \\
\hline 5 year & 11.8 & 0.29 & 6.0 & 0.33 & 5.1 & 0.35 & 1.4 & 0.37 \\
\hline 10 year & 14.5 & 0.38 & 7.4 & 0.45 & 6.3 & 0.47 & 2 & 0.54 \\
\hline 100 year & 24.4 & 0.74 & 12.9 & 1.09 & 11.2 & 1.37 & 4.5 & 1.96 \\
\hline
\end{tabular}

Moreno Valley 33 - Area B Post-Development (Area B and C Pre-Development)
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline & \multicolumn{8}{|c|}{StormDuration.} \\
\hline & & cur & & our & & our & & hour \\
\hline Frequency & Q Peak & Volume & Q Peak & Volume & Q Peak & Volume & QPeak & Volume \\
\hline 2 year & 11.4 & 0.31 & 6.4 & 0.48 & 5.6 & 0.64 & 1.8 & 1.09 \\
\hline 5 year & 16.2 & 0.45 & 8.9 & 0.66 & 7.9 & 0.86 & 2.4 & 1.44 \\
\hline 10 year & 19.9 & 0.56 & 10.9 & 0.80 & 9.6 & 1.04 & 3.1 & 1.73 \\
\hline 100 year & 32.7 & 1.01 & 18.2 & 1.5 & 16.2 & 1.89 & 6.2 & 3.18 \\
\hline
\end{tabular}

As seen in the above calculations, Area A post development runoff is less than the pre-development runoff. This is expected due to the reduced area in the post development area. The balance of the area is routed into Area B. Area B will still need to mitigate the developed condition of \(B\), plus the areas of \(A\) and \(C\) that are routed to the basin in the proposed condition, to less than the existing runoff from Area B. While Basin A does not require flood runoff mitigation it is still needed for water quality. Basin stage storage discharge details are in the below tables;
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multicolumn{6}{|l|}{Basin Stage-Storage-Outfall Chart} \\
\hline & \begin{tabular}{l}
Depth \\
[ft]
\end{tabular} & Area [sf] & Vol [acti] & Voltotal [acft] & \[
\begin{aligned}
& \text { Qout } \\
& {[\mathrm{cfs}]^{*}}
\end{aligned}
\] \\
\hline \multirow[t]{7}{*}{Basin B} & 0 & 8356 & & & \\
\hline & 1 & 8356 & 0.058 & 0.058 & 0.7 \\
\hline & 2 & 8356 & 0.058 & 0.115 & 0.7 \\
\hline & 3 & 9566 & 0.206 & 0.321 & 0.7 \\
\hline & 4 & 10831 & 0.234 & 0.555 & 0.7 \\
\hline & 5 & 12153 & 0.264 & 0.819 & 24.0 \\
\hline & 6 & 13532 & 0.265 & 1.084 & 24.0 \\
\hline
\end{tabular}
0.5 cfs limited by \(6^{\prime \prime}\) underdrain or Orafice to match 2yr 24 hr
\begin{tabular}{|cccccc|}
\hline Basin Stage-Storage-Outfall Chart & \\
\hline \begin{tabular}{c} 
Depth \\
[ft]
\end{tabular} & Area [sf] & Vol [acft] & \begin{tabular}{c} 
Vol Total \\
[acft]
\end{tabular} & \begin{tabular}{c} 
Qout \\
[cfs]
\end{tabular} \\
\hline Basin A & 0 & 2355 & & & \\
1 & 2355 & 0.016 & 0.016 & 0.5 \\
2 & 2355 & 0.016 & 0.032 & 0.5 \\
3 & 3229 & 0.064 & 0.097 & 0.5 \\
4 & 4223 & 0.086 & 0.182 & 0.5 \\
5 & 5318 & 0.110 & 0.292 & 24.0 \\
6 & 6422 & 0.111 & 0.402 & 24.0 \\
\hline
\end{tabular}
0.7 cfs limited by \(6^{11}\) underdrain or Orafice to match 2 yr 24 hr

Basin B is preliminarily sized at \(1.1 \mathrm{ac}-\mathrm{ft}\), and Basin A is sized at a volume of \(0.4 \mathrm{ac}-\mathrm{ft}\). The following tables show the results of routing the post development storms through the basins;
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{9}{|l|}{Moreno Valley 33-Area A Post-Development Routed} \\
\hline & \multicolumn{8}{|c|}{Storm Duration} \\
\hline & \multicolumn{2}{|r|}{1 hour} & \multicolumn{2}{|r|}{3 hour} & \multicolumn{2}{|r|}{6 hour} & \multicolumn{2}{|r|}{24 hour} \\
\hline Frequency & Q Peak & Volume & Q Peak & Volume & QPeak & Volume & Q Peak & Volume \\
\hline 2 year & & & & & & & 0.5* & 0.02 \\
\hline 100 year & 0.5 & 0.33 & 6.4 & 0.21 & 5.5 & 0.21 & 2.3 & 0.19 \\
\hline
\end{tabular}

By orafice control or \(6^{\prime \prime}\) underdrain slope
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{9}{|l|}{Moreno Valley 33 - Area B Post-Development Routed} \\
\hline & \multicolumn{8}{|c|}{Starm Duration} \\
\hline & \multicolumn{2}{|r|}{1 hour} & \multicolumn{2}{|r|}{3 hour} & \multicolumn{2}{|r|}{6 hour} & \multicolumn{2}{|r|}{24 hour} \\
\hline Frequency & Q Peak & Volume & Q Peak & volume & QPeak & Volume & Q Peak & Volume \\
\hline 2 year & & & & & & & 0.7* & 0.35 \\
\hline 100 year & 18.0 & 0.76 & 15.9 & 0.73 & 13.8 & 0.71 & 6.1 & 0.63 \\
\hline
\end{tabular}

\footnotetext{
*By orafice control or \(6^{\prime \prime}\) underdrain slope
}

\section*{5. HYDRAULIC CONDITIONS}

\subsection*{5.1. Existing Conditions}

There are 8 primary washes that were analyzed for hydraulic conditions in the existing condition. They are identified in the existing conditions maps at concentration points \(104,304,403,502,602,702,802\), and 902 . These are mountain/foothill washes with steep slopes. The velocities are \(15 \mathrm{ft} / \mathrm{s}\), \(12 \mathrm{ft} / \mathrm{s}, 8 \mathrm{ft} / \mathrm{s}, 11 \mathrm{ft} / \mathrm{s}, 7 \mathrm{ft} / \mathrm{s}, 5 \mathrm{ft} / \mathrm{s}, 6 \mathrm{ft} / \mathrm{s}\), and \(6 \mathrm{ft} / \mathrm{s}\) respectively.

\subsection*{5.2. Proposed Conditions}

The proposed condition for this site will be to construct a network of public roads within the site to convey storm runoff into the bioretention/water quality basins. The two Bio-retention basins (Basins A and B) are planned in the southwest corner of the site to clean and discharge the flood water. Basin \(B\) is north of the main entrance, and Bains \(A\) is within the enlarged median of the main entrance. These structures will be designed per Riverside County LID - Bioretention standards in more detail at time of final design. Refer to the Proposed Conditions Exhibit for a sample section. The flows will be discharged offsite via underdrains and overflow grates connected to stormdrain pipes and outlets designed aligned with existing washes. The eastern offsite concentrations identified in section 4.1 and 5.1 and on the existing conditions offsite exhibit, points 304,403 , and 502 , will be carried through the project by storm drain and discharged at or near historic flow paths. They are preliminarily sized as shown on Figure 2, with preliminary sizing in Appendix B. Point 503 will be diverted from its existing flow path slightly north within the same wash. This is a small diversion of flow. The discharge points at 602, 702, and 802 will be eliminated and all onsite drainage within area \(B\) will be routed through Basin B and outleted at point 902. This concentration of flow will require adjacent property owner approval. All of these concentration points join in the same stream within that owner's site, and it is preferable to have them controlled via one outlet and channel system. It is assumed the project will be required to build its half width along the limited frontage of Morton Road along with any required tapers. Control of drainage along the project's frontage is difficult. First, the project is well above grade from the road, eliminating any possibility to route road runoff northeasterly into the project. Second, there is a high point in Morton Road very near the project entrance, and thus the very minor road runoff ( 0.3 acre area total, <1cfs) will be routed northwesterly and southeasterly along the road as it is currently carried. Analysis and Design of drainage control facilities for this area will be provided at final design in conjunction with Morton Road design plans. The runoff carried by Morton Road will be reduced by the construction of the Project and the Line B System.

\subsection*{5.3. Roads}

Interior roads will consist of pavement thickness in conformance with the Geotechnical Report, when available, and per County of Riverside
Standards. Roads will have 36 foot widths measured curb face to curb face per County of Riverside Standards. Streets will be designed to pass the 10year storm water within the curb, with the 100 -year flows contained within the right-of-way. All interior roads will have cross slopes of two (2)
percent. With the high slopes due to the hillside on the proposed map, the 10 yr peak runoff calculated for the \(2.08 \%\) minimum slope can carry 76 cfs in the street. That exceeds the expected 100 year peak runoff for the onsite flows (28cfs). At final design storm drain may be placed to keep the intersections dry. Storm drain is also required for outlet from the bioretention basins. Minimum size for these lines is 24 " per City of Moreno Valley Standards, all lines are to be 24" unless otherwise noted. At time of final design, detailed storm drain calculations and sizing will be required. It is not anticipated that any onsite storm drain will require RCFCD maintenance, and thus will be reviewed by Moreno Valley.
Morton Road will be widened along the project entrance. Additionally, Line \(B\) will be constructed under Morton Road per the MDP just south of the project. This addition of Line B will remove a significant amount of existing runoff that enters Morton Road from the hillside ( 334 cfs ). That existing runoff that floods Morton Road and Jennings Court intersection will be routed by Line B to the west side of Morton and discharged to an existing natural channel.

\section*{6. WATER QUALITY}

All of the onsite water quality runoff volume is proposed to be collected within the proposed drainage system and treatment will be handled via combination bio-retention and flood storage basins at the southwestern edge. Detailed design of the basins, outlet structures, and any filter media will be prepared at final design but must treat the volume indicated in the Project Preliminary WQMP. Preliminary sizing and design for the basins is contained in Appendix C and as shown on the Proposed Conditions Exhibit Basin Detial. Final design of the basins, complete with landscaping and pipe plans will be provided with final construction plans and landscape plans.

\section*{7. MAINTENANCE}

It is proposed that all of the onsite features including internal project open space, basins, and storm drainpipes will be maintained by the property owner association.
Determination of the Line B facility's maintenance responsibility will be determined during the final design process.

\section*{REFERENCES}
1. Riverside County Flood Control and Water Conservation District Hydrology Manual, April 1978.

Figure 1

\section*{Existing Condition Exhibit}

F.1.d

Figure 2

\section*{Onsite Existing Condition Exhibit (Used for SCS Pre-post analysis)}


Figure 3

\section*{Proposed Condition Exhibit}


\section*{Appendix A}
Soil Map—Western Riverside Area, California


\section*{Map Unit Legend}
\begin{tabular}{|c|c|c|c|}
\hline Map Unit Symbol & Map Unit Name & Acres in AOI & Percent of AOI \\
\hline ChF2 & Cieneba sandy loam, 15 to 50 percent slopes, eroded & 4.2 & 2.0\% \\
\hline CkF2 & Cieneba rocky sandy loam, 15 to 50 percent slopes, eroded & 4.3 & 2.1\% \\
\hline FkD2 & Fallbrook fine sandy loam, shallow, 8 to 15 percent slopes, eroded & 0.0 & 0.0\% \\
\hline MmD2 & Monserate sandy loam, 8 to 15 percent slopes, eroded & 9.7 & 4.6\% \\
\hline RtF & Rockland & 189.4 & 91.2\% \\
\hline \multicolumn{2}{|l|}{Totals for Area of Interest} & 207.6 & 100.0\% \\
\hline
\end{tabular}



\section*{Western Riverside Area, California}
RtF—Rockland
Map Unit Setting
National map unit symbol: hcyn
Elevation: 650 to 4,000 feetMean annual precipitation: 8 to 15 inches
Mean annual air temperature: 45 to 52 degrees \(F\)
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland
Map Unit Composition
Rockland: 100 percent
Estimates are based on observations, descriptions, and transects ofthe mapunit.
Description of Rockland
Setting
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum derived from mixed sources
Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No
Data Source InformationSoil Survey Area: Western Riverside Area, CaliforniaSurvey Area Data: Version 13, May 27, 2020

NOAA Atlas 14, Volume 6, Version 2
Location name: Moreno Valley, California, USA*
Latitude: \(33.9583^{\circ}\), Longitude: - \(117.2954^{\circ}\)
Elevation: \(1628.79 \mathrm{ft}^{* \star}\)
source: ESRI Maps
** source: USGS

\section*{POINT PRECIPITATION FREQUENCY ESTIMATES}

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland
PF tabular | PF_graphical | Maps \& aerials

\section*{PF tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{11}{|r|}{PDS-based point precipitation frequency estimates with 90\% confidence intervals (in inches) \({ }^{1}\)} \\
\hline \multirow{2}{*}{Duration} & \multicolumn{10}{|c|}{Average recurrence interval (years)} \\
\hline & 1 & 2 & 5 & 10 & 25 & 50 & 100 & 200 & 500 & 1000 \\
\hline 5-min & \[
\begin{gathered}
0.092 \\
(0.077-0.112) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
\mathbf{0 . 1 2 1} \\
(0.101-0.147) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
\mathbf{0 . 1 6 0} \\
(0.133-0.194) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
\mathbf{0 . 1 9 2} \\
(0.158-0.235) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
0.237 \\
(0.188-0.300) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
\mathbf{0 . 2 7 2} \\
(0.212-0.353) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
0.309 \\
(0.234-0.411) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
0.348 \\
(0.257-0.477) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
\mathbf{0 . 4 0 2} \\
(0.284-0.576)
\end{gathered}
\] & \[
\begin{array}{|c|}
\hline \mathbf{0 . 4 4 6} \\
(0.304-0.661) \\
\hline
\end{array}
\] \\
\hline 10-min & \[
\begin{gathered}
0.133 \\
(0.111-0.16
\end{gathered}
\] & \[
\begin{gathered}
\mathbf{0 . 1 7 4} \\
(0.145-0.211)
\end{gathered}
\] & \begin{tabular}{|c|}
\hline \(\mathbf{0 . 2 2 9}\) \\
\((0.190-0.278)\) \\
\hline
\end{tabular} & \[
\begin{gathered}
0.275 \\
(0.227-0.337)
\end{gathered}
\] & \begin{tabular}{|c|}
\hline \(\mathbf{0 . 3 3 9}\) \\
\((0.270-0.430)\) \\
\hline
\end{tabular} & \begin{tabular}{|c|}
\hline 0.390 \\
\((0.304-0.506)\) \\
\hline
\end{tabular} & \begin{tabular}{|c|}
\hline \(\mathbf{0 . 4 4 3}\) \\
\((0.336-0.589)\) \\
\hline
\end{tabular} & \begin{tabular}{|c|}
\hline 0.499 \\
\((0.368-0.683)\) \\
\hline
\end{tabular} & \[
\begin{gathered}
\hline 0.577 \\
(0.407-0.825)
\end{gathered}
\] & \[
\begin{gathered}
\mathbf{0 . 6 4 0} \\
0.436-0.948)
\end{gathered}
\] \\
\hline 15-min & \[
\left(\begin{array}{c}
0.160 \\
(0.134-0.194)
\end{array}\right.
\] & \[
\left\lvert\, \begin{gathered}
\mathbf{0 . 2 1 0} \\
(0.175-0.255)
\end{gathered}\right.
\] & \[
\left(\begin{array}{c}
\mathbf{0 . 2 7 7} \\
(0.230-0.336)
\end{array}\right.
\] & \[
\left\lvert\, \begin{gathered}
0.332 \\
(0.274-0.408)
\end{gathered}\right.
\] & \[
\begin{gathered}
\mathbf{0 . 4 1 0} \\
(0.326-0.521)
\end{gathered}
\] & \[
\left\lvert\, \begin{gathered}
0.472 \\
(0.367-0.612)
\end{gathered}\right.
\] & \[
\begin{gathered}
0.535 \\
(0.406-0.713)
\end{gathered}
\] & \[
\left\lvert\, \begin{gathered}
\mathbf{0 . 6 0 3} \\
(0.445-0.826)
\end{gathered}\right.
\] & (0.493-0.998) & \[
\begin{gathered}
\mathbf{0 . 7 7 4} \\
(0.527-1.15)
\end{gathered}
\] \\
\hline 30-min & \[
\left\lvert\, \begin{gathered}
0.244 \\
(0.204-0.296)
\end{gathered}\right.
\] & \begin{tabular}{|c|}
\hline 0.320 \\
\((0.267-0.388)\) \\
\hline
\end{tabular} & \[
\mid(0.350-0.512)
\] & \[
\mid(0.417-0.621)
\] & \begin{tabular}{|c|}
\hline \(\mathbf{0 . 6 2 5}\) \\
\((0.497-0.793)\) \\
\hline
\end{tabular} & \[
\begin{gathered}
0.718 \\
(0.559-0.932)
\end{gathered}
\] & \[
\begin{gathered}
\mathbf{0 . 8 1 6} \\
(0.619-1.09)
\end{gathered}
\] & \[
\begin{gathered}
0.918 \\
(0.677-1.26)
\end{gathered}
\] & \[
\begin{gathered}
\hline \hline 1.06 \\
(0.750-1.52)
\end{gathered}
\] & \[
\begin{gathered}
1.18 \\
(0.803-1.75)
\end{gathered}
\] \\
\hline 60-min & \[
\begin{gathered}
0.356 \\
(0.297-0.431)
\end{gathered}
\] & \begin{tabular}{|c|}
\hline \(\mathbf{0 . 4 6 6}\) \\
\((0.389-0.565)\) \\
\hline
\end{tabular} & \[
\left(\begin{array}{c}
0.615 \\
(0.511-0.747)
\end{array}\right.
\] & \[
\left\lvert\, \begin{gathered}
\mathbf{0 . 7 3 8} \\
(0.608-0.905)
\end{gathered}\right.
\] & \[
\begin{array}{c|}
0.911 \\
(0.725-1.16) \\
\hline
\end{array}
\] & \[
\begin{gathered}
1.05 \\
(0.815-1.36)
\end{gathered}
\] & \[
\begin{gathered}
1.19 \\
(0.903-1.58)
\end{gathered}
\] & \[
\begin{gathered}
1.34 \\
(0.987-1.83)
\end{gathered}
\] & \[
\begin{gathered}
\hline 1.55 \\
(1.09-2.22)
\end{gathered}
\] & \[
\begin{gathered}
1.72 \\
(1.17-2.55)
\end{gathered}
\] \\
\hline 2-hr & \begin{tabular}{|c|}
\hline \(\mathbf{0 . 5 1 0}\) \\
\((0.426-0.618)\) \\
\hline
\end{tabular} & \begin{tabular}{c|}
\hline \(\mathbf{0 . 6 5 7}\) \\
\((0.548-0.797\) \\
\hline
\end{tabular} & \[
\begin{gathered}
0.852 \\
(0.708-1.04) \\
\hline
\end{gathered}
\] & \begin{tabular}{|c|}
\hline 1.01 \\
\((0.835-1.24)\) \\
\hline
\end{tabular} & \begin{tabular}{|c|}
\hline 1.24 \\
\((0.983-1.57)\) \\
\hline
\end{tabular} & \[
\begin{gathered}
1.41 \\
(1.10-1.83)
\end{gathered}
\] & \[
\begin{gathered}
\hline 1.59 \\
(1.20-2.11)
\end{gathered}
\] & \[
\begin{gathered}
\hline 1.77 \\
(1.31-2.43)
\end{gathered}
\] & \[
\begin{gathered}
\hline 2.03 \\
(1.43-2.90)
\end{gathered}
\] & \[
\begin{gathered}
2.23 \\
(1.52-3.31)
\end{gathered}
\] \\
\hline 3-hr & \begin{tabular}{|c|}
\hline \(\mathbf{0 . 6 2 4}\) \\
\((0.520-0.755)\) \\
\hline
\end{tabular} & \[
(0.666-0.96
\] & \[
\begin{gathered}
1.03 \\
(0.856-1.2
\end{gathered}
\] & \[
\begin{gathered}
1.22 \\
(1.00-1.5
\end{gathered}
\] & \[
\begin{gathered}
1.48 \\
(1.18-1.88) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
\hline 1.68 \\
(1.31-2.18)
\end{gathered}
\] & \[
\begin{gathered}
\hline 1.89 \\
(1.44-2.52)
\end{gathered}
\] & \[
\begin{gathered}
\hline 2.11 \\
(1.55-2.89)
\end{gathered}
\] & \[
\begin{gathered}
2.40 \\
(1.70-3.44)
\end{gathered}
\] & \[
\begin{gathered}
\hline \hline 2.64 \\
1.80-3.91)
\end{gathered}
\] \\
\hline 6-hr & (0.714-1.0 & (0.911-1.3) & \[
\begin{gathered}
\hline 1.40 \\
\text { (1.17-1.7 }
\end{gathered}
\] & (1.37-2.03) & \[
\begin{gathered}
2.01 \\
(1.60-2.5!
\end{gathered}
\] & \[
\begin{gathered}
2.27 \\
(1.77-2.95)
\end{gathered}
\] & \[
\begin{gathered}
\hline 2.55 \\
(1.93-3.39)
\end{gathered}
\] & \[
\begin{gathered}
2.83 \\
(2.09-3.87) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
\hline 3.21 \\
(2.27-4.59)
\end{gathered}
\] & \[
\begin{gathered}
3.51 \\
(2.39-5.20)
\end{gathered}
\] \\
\hline 12-hr & (0.939-1.36 & (1.21-1.75 & \[
\begin{gathered}
\hline 1.87 \\
(1.55-2.27)
\end{gathered}
\] & (1.82-2.7 & \[
\begin{gathered}
\hline 2.67 \\
(2.13-3.39)
\end{gathered}
\] & (2.36-3.93) & \[
\begin{gathered}
3.39 \\
(2.57-4.51)
\end{gathered}
\] & \[
\begin{gathered}
\hline 3.77 \\
(2.78-5.16)
\end{gathered}
\] & \[
(3.02-6.11)
\] & \[
\begin{gathered}
\hline 4.67 \\
3.18-6.92)
\end{gathered}
\] \\
\hline 24-hr & (1.32-1.7 & (1.71-2.23) & \[
\begin{gathered}
\hline \mathbf{2 . 5 2} \\
(2.22-2.91)
\end{gathered}
\] & (2.62-3.49) & \[
\begin{gathered}
\hline 3.64 \\
(3.08-4.39)
\end{gathered}
\] & (3.43-5.09) & \[
\begin{gathered}
\hline 4.64 \\
(3.76-5.85)
\end{gathered}
\] & \[
\begin{gathered}
5.17 \\
(4.07-6.69)
\end{gathered}
\] & \[
\begin{gathered}
\hline 5.88 \\
(4.45-7.92)
\end{gathered}
\] & \[
\begin{gathered}
\hline 6.43 \\
(4.70-8.96)
\end{gathered}
\] \\
\hline 2-day & \[
\begin{gathered}
\hline 1.79 \\
(1.58-2.06)
\end{gathered}
\] & (2.09-2.72) & \[
\begin{gathered}
\hline 3.12 \\
(2.75-3.61)
\end{gathered}
\] & \[
(3.26-4.35)
\] & (3.87-5.51) & \[
\begin{gathered}
5.22 \\
(4.33-6.43)
\end{gathered}
\] & \[
\begin{gathered}
5.89 \\
(4.77-7.42)
\end{gathered}
\] & \[
\begin{gathered}
\hline 6.57 \\
(5.18-8.51)
\end{gathered}
\] & \[
\begin{gathered}
\hline 7.50 \\
(5.68-10.1)
\end{gathered}
\] & \[
\begin{gathered}
8.23 \\
(6.02-11.5)
\end{gathered}
\] \\
\hline 3-day & \[
\begin{gathered}
\hline 1.91 \\
(1.69-2.21)
\end{gathered}
\] & (2.27-2.96) & \[
\begin{gathered}
\hline 3.42 \\
(3.02-3.96)
\end{gathered}
\] & (3.61-4.82) & \[
(4.31-6.14)
\] & (4.85-7.18) & (5.35-8.32) & \[
\begin{gathered}
7.40 \\
(5.83-9.57)
\end{gathered}
\] & \[
\begin{gathered}
8.48 \\
(6.42-11.4)
\end{gathered}
\] & \[
\begin{gathered}
9.32 \\
(6.83-13.0)
\end{gathered}
\] \\
\hline 4-day & \[
\begin{gathered}
\hline 2.07 \\
(1.83-2.39)
\end{gathered}
\] & (2.48-3.23) & \[
\begin{gathered}
\hline 3.77 \\
(3.32-4.36)
\end{gathered}
\] & \[
(3.99-5.32)
\] & (4.79-6.81) & \[
\begin{gathered}
\hline 6.50 \\
(5.39-7.99)
\end{gathered}
\] & (5.97-9.28) & (6.52-10.7) & \[
\begin{gathered}
\hline 9.51 \\
(7.20-12.8)
\end{gathered}
\] & 10.5
\((7.67-14.6)\) \\
\hline 7-day & \[
\begin{gathered}
2.38 \\
(2.10-2.74)
\end{gathered}
\] & \[
\begin{gathered}
3.26 \\
(2.88-3.76)
\end{gathered}
\] & \[
\begin{gathered}
\hline 4.43 \\
(3.90-5.13)
\end{gathered}
\] & \[
\begin{gathered}
5.39 \\
(4.72-6.29)
\end{gathered}
\] & \[
\begin{gathered}
6.72 \\
(5.69-8.10)
\end{gathered}
\] & (6.44-9.54) & \[
\begin{gathered}
8.82 \\
(7.15-11.1)
\end{gathered}
\] & \[
\begin{gathered}
9.93 \\
(7.83-12.9)
\end{gathered}
\] & \[
\begin{gathered}
11.5 \\
(8.67-15.4)
\end{gathered}
\] & \[
\begin{gathered}
12.6 \\
(9.26-17.6)
\end{gathered}
\] \\
\hline 10-day & \[
\begin{gathered}
\hline 2.57 \\
(2.27-2.96)
\end{gathered}
\] & \[
\begin{gathered}
\hline 3.55 \\
(3.14-4.10)
\end{gathered}
\] & \[
\begin{gathered}
\hline 4.85 \\
(4.28-5.62)
\end{gathered}
\] & 5.93
\((5.19-6.92)\) & \[
\begin{gathered}
\hline 7.42 \\
(6.28-8.94)
\end{gathered}
\] & \[
\begin{gathered}
\hline 8.58 \\
(7.12-10.6)
\end{gathered}
\] & \[
\begin{gathered}
9.78 \\
(7.93-12.3)
\end{gathered}
\] & \[
\begin{gathered}
11.0 \\
(8.70-14.3)
\end{gathered}
\] & \[
\begin{gathered}
12.8 \\
(9.66-17.2)
\end{gathered}
\] & \[
\begin{gathered}
\hline 14.1 \\
(10.3-19.7)
\end{gathered}
\] \\
\hline 20-day & \[
\begin{gathered}
\hline 3.10 \\
(2.75-3.58)
\end{gathered}
\] & \[
\begin{gathered}
4.34 \\
(3.83-5.01)
\end{gathered}
\] & \[
\begin{gathered}
\hline 5.99 \\
(5.28-6.93)
\end{gathered}
\] & 7.36
\((6.44-8.59)\) & 9.28
\((7.86-11.2)\) & \[
\begin{gathered}
10.8 \\
(8.95-13.3)
\end{gathered}
\] & 12.3
\((10.0-15.6)\) & \[
\begin{gathered}
14.0 \\
(11.0-18.1)
\end{gathered}
\] & 16.3
\((12.3-21.9)\) & \[
\begin{gathered}
\hline 18.1 \\
(13.2-25.2)
\end{gathered}
\] \\
\hline 30-day & \[
\begin{gathered}
3.70 \\
(3.28-4.27)
\end{gathered}
\] & \[
\begin{gathered}
5.17 \\
(4.57-5.97)
\end{gathered}
\] & \[
\begin{gathered}
\hline 7.15 \\
(6.30-8.28)
\end{gathered}
\] & \[
\begin{gathered}
8.81 \\
(7.70-10.3)
\end{gathered}
\] & 11.1
\((9.42-13.4)\) & \[
\begin{gathered}
13.0 \\
(10.8-15.9)
\end{gathered}
\] & \[
\begin{gathered}
14.9 \\
(12.1-18.7)
\end{gathered}
\] & \[
\begin{gathered}
16.9 \\
(13.3-21.9)
\end{gathered}
\] & \[
\begin{gathered}
19.7 \\
(14.9-26.6)
\end{gathered}
\] & \[
\begin{gathered}
\hline 22.0 \\
(16.1-30.7)
\end{gathered}
\] \\
\hline 45-day & \[
\begin{gathered}
\hline 4.43 \\
(3.92-5.10)
\end{gathered}
\] & \[
\begin{gathered}
\hline 6.14 \\
(5.42-7.08)
\end{gathered}
\] & \[
\begin{gathered}
\hline 8.46 \\
(7.46-9.79)
\end{gathered}
\] & \[
\begin{gathered}
10.4 \\
(9.11-12.1)
\end{gathered}
\] & \[
\begin{gathered}
13.2 \\
(11.1-15.9)
\end{gathered}
\] & \[
\begin{gathered}
15.4 \\
(12.7-18.9) \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
17.7 \\
(14.3-22.2)
\end{gathered}
\] & \[
\begin{gathered}
\hline 20.1 \\
(15.9-26.0)
\end{gathered}
\] & \[
\begin{gathered}
\hline 23.6 \\
(17.8-31.7)
\end{gathered}
\] & \[
\begin{gathered}
\hline \mathbf{2 6 . 3} \\
(19.3-36.7)
\end{gathered}
\] \\
\hline 60-day & \[
\begin{gathered}
\hline 5.18 \\
(4.58-5.97)
\end{gathered}
\] & \[
\begin{gathered}
7.10 \\
(6.28-8.20)
\end{gathered}
\] & \[
\begin{gathered}
9.72 \\
(8.57-11.3)
\end{gathered}
\] & \[
\begin{gathered}
11.9 \\
(10.4-13.9)
\end{gathered}
\] & \[
\begin{gathered}
15.1 \\
(12.8-18.2)
\end{gathered}
\] & \[
\begin{gathered}
17.6 \\
(14.6-21.6)
\end{gathered}
\] & \[
\begin{gathered}
\hline 20.2 \\
(16.4-25.5)
\end{gathered}
\] & \[
\begin{gathered}
\hline 23.0 \\
(18.2-29.8)
\end{gathered}
\] & \[
\begin{gathered}
\hline 27.0 \\
(20.5-36.4)
\end{gathered}
\] & \[
\begin{gathered}
30.3 \\
(22.1-42.2)
\end{gathered}
\] \\
\hline
\end{tabular}

\footnotetext{
\({ }^{1}\) Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS)
Numbers in parenthesis are PF estimates at lower and upper bounds of the \(90 \%\) confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is \(5 \%\). Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
Please refer to NOAA Atlas 14 document for more information.
}

\section*{PDS-based depth-duration-frequency (DDF) curves Latitude: 33.9583*. Longkude: -117.2954*}




Created (GMT): Fri jan 29 17:48:17 2021
\begin{tabular}{|cc}
\hline \multicolumn{2}{|c}{ Duration } \\
\hline\(-5-\mathrm{min}\) & -2 -day \\
\(-10-\mathrm{min}\) & -3 -day \\
\(-15-\mathrm{min}\) & -4 -day \\
\(-30-\mathrm{min}\) & -7 -day \\
\(-60-\mathrm{min}\) & -10 -day \\
\(-2-\mathrm{hr}\) & -20 -day \\
\(-3-\mathrm{hr}\) & -30 -day \\
\(-6-\mathrm{hr}\) & -45 -day \\
\(-12-\mathrm{hr}\) & -60 -day \\
\(-24-\mathrm{hr}\) & \\
\hline
\end{tabular}

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\section*{Maps \& aerials}

\section*{Small scale terrain}


Large scale aerial


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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov
Disclaimer


\section*{ACTUAL IMPERVIOUS COVER}
\begin{tabular}{|c|c|c|}
\hline Land Use (1) & Range-Percent & ```
    Recommended value
        For Average
Conditions-Percent(2
``` \\
\hline Natural or Agriculture & 0-10 & 0 \\
\hline Single Family Residential: (3) & & \\
\hline 40,000 S. F. (1 Acre) Lots & 10-25 & 20 \\
\hline 20,000 S. F. (4 Acre) Lots & \(30-45\) & 40 \\
\hline 7,200-10,000 S. F. Lots & \(45-55\) & 50 \\
\hline Multiple Family Residential: & & \\
\hline Condominiums & 45-70 & 65 \\
\hline Apartments & 65-90 & 80 \\
\hline Mobile Home Park & 60-85 & 75 \\
\hline Commercial, Downtown Business or Industrial & \(80-100\) & 90 \\
\hline
\end{tabular}

Notes:
1. Land use should be based on ultimate development of the watershed. Long range master plans for the county and incorporated cities should be reviewed to insure reasonable land use assumptions.
2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.
3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

\section*{Existing Condition Rationale Runoff}
```

            Riverside County Rational Hydrology Program
            CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
    8.0
Rational Hydrology Study Date: 11/08/21
File:moval33.out
Gateway Heights
Offsite Drainage
Area A - 100yr Peak Runoff

```
\(\qquad\)
```

        ********* Hydrology Study Control Information **********
        English (in-lb) Units used in input data file
    Program License Serial Number 6232
    Rational Method Hydrology Program based on
    Riverside County Flood Control & Water Conservation District
    1978 hydrology manual
    Storm event (year) = 100.00 Antecedent Moisture Condition = 3
    Standard intensity-duration curves data (Plate D-4.1)
    For the [ Riverside-Foothill ] area used.
    10 year storm 10 minute intensity = 2.140(In/Hr)
    10 year storm 60 minute intensity = 0.800(In/Hr)
    100 year storm 10 minute intensity = 3.210(In/Hr)
    1 0 0 ~ y e a r ~ s t o r m ~ 6 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 1 . 2 0 0 ( I n / H r )
    Storm event year = 100.0
    Calculated rainfall intensity data:
    1 hour intensity = 1.200(In/Hr)
    Slope of intensity duration curve = 0.5500
    ```
```

++++

```
++++
    Process from Point/Station 101.000 to Point/Station
    Process from Point/Station 101.000 to Point/Station
102.000
102.000
    **** INITIAL AREA EVALUATION ****
    **** INITIAL AREA EVALUATION ****
    Initial area flow distance = 714.000(Ft.)
    Top (of initial area) elevation = 2940.000(Ft.)
    Bottom (of initial area) elevation = 2520.000(Ft.)
    Difference in elevation = 420.000(Ft.)
```



```
    Rainfall intensity = 3.032(In/Hr) for a 100.0 year storm
    Subarea runoff = 39.314(CFS) for 14.700(Ac.)
Total runoff= 61.898(CFS) Total area = 21.800(Ac.)
Depth of flow = 0.677(Ft.), Average velocity = 5.403(Ft/s)
```

```
++++
```

++++
Process from Point/Station 102.000 to Point/Station
Process from Point/Station 102.000 to Point/Station
103.000
103.000
**** CONFLUENCE OF MAIN STREAMS ****

```
    **** CONFLUENCE OF MAIN STREAMS ****
```

- The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area $=$ 21.800(Ac.)
Runoff from this stream $=$ 61.898(CFS)
Time of concentration $=11.13 \mathrm{~min}$.
Rainfall intensity $=3.032(\mathrm{In} / \mathrm{Hr})$
Program is now starting with Main Stream No. 2
++++
Process from Point/Station 201.000 to Point/Station

202. 000
**** INITIAL AREA EVALUATION ****
Initial area flow distance $=$ 915.000(Ft.)
Top (of initial area) elevation $=$ 2910.000(Ft.)
Bottom (of initial area) elevation $=$ 2680.000(Ft.)
Difference in elevation $=$ 230.000(Ft.)
Slope $=0.25137 \mathrm{~s}($ percent $)=25.14$
TC $=\mathrm{k}(0.530) *\left[(\text { length^3)/(elevation change) }]^{\wedge} 0.2\right.$
Initial area time of concentration $=10.685 \mathrm{~min}$.
Rainfall intensity $=\quad 3.100(\mathrm{In} / \mathrm{Hr})$ for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.883
Decimal fraction soil group $A=0.000$
Decimal fraction soil group $B=0.000$
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3) $=95.60$
Pervious area fraction $=1.000$; Impervious fraction $=0.000$
Initial subarea runoff $=\quad 22.706(C F S)$
Total initial stream area $=$ 8.300(Ac.)
Pervious area fraction $=1.000$
++++
Process from Point/Station 202.000 to Point/Station
203. 000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
Estimated mean flow rate at midpoint of channel $=\quad 36.349(\mathrm{CFS})$
Depth of flow $=0.412(\mathrm{Ft}),$. Average velocity $=8.585(\mathrm{Ft} / \mathrm{s})$
******* Irregular Channel Data ***********
```
    Information entered for subchannel number 1 :
    Point number 'X' coordinate 'Y' coordinate
        0.00 1.00
        25.00 0.00
        50.00 1.00
    Manning's 'N' friction factor = 0.035
    Sub-Channel flow = 36.350(CFS)
        flow top width = 20.577(Ft.)
        velocity= 8.585(Ft/s)
        area = 4.234(Sq.Ft)
        Froude number = 3.335
    Upstream point elevation = 2680.000(Ft.)
    Downstream point elevation = 2460.000(Ft.)
    Flow length = 653.000(Ft.)
    Travel time = 1.27 min.
    Time of concentration = 11.95 min.
    Depth of flow = 0.412(Ft.)
    Average velocity = 8.585(Ft/s)
    Total irregular channel flow = 36.349(CFS)
    Irregular channel normal depth above invert elev. = 0.412(Ft.)
    Average velocity of channel(s) = 8.585(Ft/s)
    Adding area flow to channel
    UNDEVELOPED (poor cover) subarea
    Runoff Coefficient = 0.881
    Decimal fraction soil group A = 0.000
    Decimal fraction soil group B = 0.000
    Decimal fraction soil group C = 0.000
    Decimal fraction soil group D = 1.000
    RI index for soil(AMC 3) = 95.60
    Pervious area fraction = 1.000; Impervious fraction = 0.000
    Rainfall intensity = 2.914(In/Hr) for a 100.0 year storm
    Subarea runoff = 27.230(CFS) for 10.600(Ac.)
    Total runoff = 49.936(CFS) Total area = 18.900(Ac.)
    Depth of flow = 0.464(Ft.), Average velocity = 9.294(Ft/s)
++++
    Process from Point/Station 202.000 to Point/Station
203.000
    **** CONFLUENCE OF MAIN STREAMS ****
```

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area $=$ 18.900(Ac.)
Runoff from this stream $=$ 49.936(CFS)
Time of concentration $=11.95 \mathrm{~min}$.
Rainfall intensity $=\quad 2.914(\mathrm{In} / \mathrm{Hr})$
Summary of stream data:

| Stream | Flow rate | TC | Rainfall Intensity |
| :---: | :---: | :---: | :---: |
| No. | (CFS) | $($ min $)$ | $($ In/Hr $)$ |


| 1 | 61.898 | 11.13 | 3.032 |
| :--- | :--- | :--- | :--- |
| 2 | 49.936 | 11.95 | 2.914 |



Total of 2 main streams to confluence:
Flow rates before confluence point:
61.89849 .936

Area of streams before confluence: $21.800 \quad 18.900$

Results of confluence:
Total flow rate $=108.376($ CFS $)$
Time of concentration $=11.125 \mathrm{~min}$.
Effective stream area after confluence $=$ 40.700(Ac.)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
$++++$
Process from Point/Station 103.000 to Point/Station
104.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel $=158.384(C F S)$
Depth of flow $=0.910(F t$.$) , Average velocity =15.287(\mathrm{Ft} / \mathrm{s})$
******* Irregular Channel Data
Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
1
0.00
2.00

2
25.00
0.00

3 50.00
2.00

Manning's 'N' friction factor $=0.035$
Sub-Channel flow $=158.384$ (CFS)
' ' flow top width = 22.761(Ft.)
velocity= $15.287(\mathrm{Ft} / \mathrm{s})$
area $=10.361(S q . F t)$
Froude number $=3.993$
Upstream point elevation $=2460.000(F t$.
Downstream point elevation $=1680.000(F t$.
Flow length $=$ 2098.000(Ft.)
Travel time $=2.29 \mathrm{~min}$.
Time of concentration $=13.41 \mathrm{~min}$.
Depth of flow $=0.910(F t$.
Average velocity $=15.287(\mathrm{Ft} / \mathrm{s})$
Total irregular channel flow $=158.384(C F S)$
Irregular channel normal depth above invert elev. $=0.910(\mathrm{Ft}$.
Average velocity of channel(s) $=15.287(\mathrm{Ft} / \mathrm{s})$
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient $=0.880$
Decimal fraction soil group $A=0.000$
Decimal fraction soil group $B=0.000$
Decimal fraction soil group $C=0.000$
Decimal fraction soil group D $=1.000$


析
++++
Process from Point/Station 104.000 to Point/Station 105.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation $=1680.000(F t$.
End of natural channel elevation $=1584.000(F t$.
Length of natural channel = 1205.000(Ft.)
Estimated mean flow rate at midpoint of channel $=211.867(\mathrm{CFS})$
Natural valley channel type used
L.A. County flood control district formula for channel velocity:

Velocity $(\mathrm{ft} / \mathrm{s})=\left(7+8\left(q(E n g l i s h \text { Units })^{\wedge} .352\right)(\right.$ slope^0.5)
Velocity using mean channel flow $=16.85(F t / s)$
Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
Normal channel slope $=0.0797$
Corrected/adjusted channel slope $=0.0797$
Travel time $=1.19 \mathrm{~min} . \quad \mathrm{TC}=14.60 \mathrm{~min}$.

Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient $=0.854$
Decimal fraction soil group $A=0.000$
Decimal fraction soil group $B=0.000$
Decimal fraction soil group C = 1.000
Decimal fraction soil group $D=0.000$
RI index for soil(AMC 3) $=90.40$
Pervious area fraction $=1.000$; Impervious fraction $=0.000$
Rainfall intensity $=\quad 2.610(\mathrm{In} / \mathrm{Hr})$ for a 100.0 year storm
Subarea runoff $=$ 6.266(CFS) for 2.812(Ac.)
Total runoff $=214.571(\mathrm{CFS}) \quad$ Total area $=\quad$ 85.012 (Ac.)
End of computations, total study area $=85.01$ (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Area averaged pervious area fraction(Ap) $=1.000$
Area averaged RI index number $=88.7$

```
            Riverside County Rational Hydrology Program
            CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
                Rational Hydrology Study Date: 11/08/21
File:moval332.out
    Gateway Heights
    Offsite Drainage
    Area C - 100yr Peak Runoff
```

$\qquad$

```
        ********* Hydrology Study Control Information **********
        English (in-lb) Units used in input data file
    Program License Serial Number 6232
    Rational Method Hydrology Program based on
    Riverside County Flood Control & Water Conservation District
    1978 hydrology manual
    Storm event (year) = 100.00 Antecedent Moisture Condition = 3
    Standard intensity-duration curves data (Plate D-4.1)
    For the [ Riverside-Foothill ] area used.
    10 year storm 10 minute intensity = 2.140(In/Hr)
    10 year storm 60 minute intensity = 0.800(In/Hr)
    1 0 0 ~ y e a r ~ s t o r m ~ 1 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 3 . 2 1 0 ( I n / H r )
    1 0 0 ~ y e a r ~ s t o r m ~ 6 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 1 . 2 0 0 ( I n / H r )
    Storm event year = 100.0
    Calculated rainfall intensity data:
    1 hour intensity = 1.200(In/Hr)
    Slope of intensity duration curve = 0.5500
```

```
++++
```

++++
Process from Point/Station 301.000 to Point/Station
Process from Point/Station 301.000 to Point/Station
302.000
302.000
**** INITIAL AREA EVALUATION ****
**** INITIAL AREA EVALUATION ****
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 2980.000(Ft.)
Bottom (of initial area) elevation = 2680.000(Ft.)
Difference in elevation = 300.000(Ft.)

```

```

    Rainfall intensity = 2.839(In/Hr) for a 100.0 year storm
    Subarea runoff = 35.515(CFS) for 14.200(Ac.)
    Total runoff = 60.954(CFS) Total area = 23.500(Ac.)
    Depth of flow = 0.488(Ft.), Average velocity = 10.252(Ft/s)
    ++++
Process from Point/Station 303.000 to Point/Station
304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

```
```

    Estimated mean flow rate at midpoint of channel = 75.784(CFS)
    ```
    Estimated mean flow rate at midpoint of channel = 75.784(CFS)
    Depth of flow = 0.511(Ft.), Average velocity = 11.595(Ft/s)
    Depth of flow = 0.511(Ft.), Average velocity = 11.595(Ft/s)
        ******* Irregular Channel Data ***********
        ******* Irregular Channel Data ***********
    Information entered for subchannel number 1 :
    Information entered for subchannel number 1 :
    Point number 'X' coordinate 'Y' coordinate
    Point number 'X' coordinate 'Y' coordinate
        1 0.00 1.00
        1 0.00 1.00
        2 25.00 0.00
        2 25.00 0.00
        3 50.00 1.00
        3 50.00 1.00
    Manning's 'N' friction factor = 0.035
    Manning's 'N' friction factor = 0.035
    Sub-Channel flow = 75.784(CFS)
    Sub-Channel flow = 75.784(CFS)
        flow top width = 25.566(Ft.)
        flow top width = 25.566(Ft.)
        velocity= 11.595(Ft/s)
        velocity= 11.595(Ft/s)
        area = 6.536(Sq.Ft)
        area = 6.536(Sq.Ft)
        Froude number = 4.041
        Froude number = 4.041
Upstream point elevation = 2280.000(Ft.)
Upstream point elevation = 2280.000(Ft.)
Downstream point elevation = 1680.000(Ft.)
Downstream point elevation = 1680.000(Ft.)
Flow length = 1304.000(Ft.)
Flow length = 1304.000(Ft.)
Travel time = 1.87 min.
Travel time = 1.87 min.
Time of concentration = 14.41 min.
Time of concentration = 14.41 min.
Depth of flow = 0.511(Ft.)
Depth of flow = 0.511(Ft.)
Average velocity = 11.595(Ft/s)
Average velocity = 11.595(Ft/s)
Total irregular channel flow = 75.784(CFS)
Total irregular channel flow = 75.784(CFS)
Irregular channel normal depth above invert elev. = 0.511(Ft.)
Irregular channel normal depth above invert elev. = 0.511(Ft.)
Average velocity of channel(s) = 11.595(Ft/s)
Average velocity of channel(s) = 11.595(Ft/s)
    Adding area flow to channel
    Adding area flow to channel
    UNDEVELOPED (poor cover) subarea
    UNDEVELOPED (poor cover) subarea
    Runoff Coefficient = 0.879
    Runoff Coefficient = 0.879
    Decimal fraction soil group A = 0.000
    Decimal fraction soil group A = 0.000
    Decimal fraction soil group B = 0.000
    Decimal fraction soil group B = 0.000
    Decimal fraction soil group C = 0.000
    Decimal fraction soil group C = 0.000
    Decimal fraction soil group D = 1.000
    Decimal fraction soil group D = 1.000
    RI index for soil(AMC 3) = 95.60
    RI index for soil(AMC 3) = 95.60
    Pervious area fraction = 1.000; Impervious fraction = 0.000
    Pervious area fraction = 1.000; Impervious fraction = 0.000
    Rainfall intensity = 2.630(In/Hr) for a 100.0 year storm
    Rainfall intensity = 2.630(In/Hr) for a 100.0 year storm
Subarea runoff = 29.602(CFS) for 12.800(Ac.)
Subarea runoff = 29.602(CFS) for 12.800(Ac.)
Total runoff = 90.556(CFS) Total area = 36.300(Ac.)
Total runoff = 90.556(CFS) Total area = 36.300(Ac.)
Depth of flow = 0.547(Ft.), Average velocity = 12.123(Ft/s)
Depth of flow = 0.547(Ft.), Average velocity = 12.123(Ft/s)
++++
++++
    Process from Point/Station 304.000 to Point/Station
    Process from Point/Station 304.000 to Point/Station
305.000
305.000
    **** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
```

    **** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
    ```

```

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 90.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.535(In/Hr) for a 100.0 year storm
Subarea runoff = 2.810(CFS) for 1.300(Ac.)
Total runoff = 96.662(CFS) Total area = 39.100(Ac.)
End of computations, total study area = 39.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 88.3

```
```

            Riverside County Rational Hydrology Program
    CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
    8.0
Rational Hydrology Study Date: 11/08/21
File:moval333.out
Gateway Heights
Offsite Drainage
Area D - 100yr Peak Runoff

```
\(\qquad\)
```

        ********* Hydrology Study Control Information **********
        English (in-lb) Units used in input data file
    Program License Serial Number 6232
    Rational Method Hydrology Program based on
    Riverside County Flood Control & Water Conservation District
    1978 hydrology manual
    Storm event (year) = 100.00 Antecedent Moisture Condition = 3
    Standard intensity-duration curves data (Plate D-4.1)
    For the [ Riverside-Foothill ] area used.
    10 year storm 10 minute intensity = 2.140(In/Hr)
    10 year storm 60 minute intensity = 0.800(In/Hr)
    1 0 0 ~ y e a r ~ s t o r m ~ 1 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 3 . 2 1 0 ( I n / H r )
    1 0 0 ~ y e a r ~ s t o r m ~ 6 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 1 . 2 0 0 ( I n / H r )
    Storm event year = 100.0
    Calculated rainfall intensity data:
    1 hour intensity = 1.200(In/Hr)
    Slope of intensity duration curve = 0.5500
    ```
```

++++

```
++++
    Process from Point/Station 401.000 to Point/Station
    Process from Point/Station 401.000 to Point/Station
402.000
402.000
    **** INITIAL AREA EVALUATION ****
    **** INITIAL AREA EVALUATION ****
    Initial area flow distance = 760.000(Ft.)
    Top (of initial area) elevation = 2340.000(Ft.)
    Bottom (of initial area) elevation = 1930.000(Ft.)
    Difference in elevation = 410.000(Ft.)
```



```
Rainfall intensity = 3.206(In/Hr) for a 100.0 year storm
Subarea runoff = 20.666(CFS) for 7.300(Ac.)
Total runoff= 26.693(CFS) Total area = 9.240(Ac.)
Depth of flow = 0.356(Ft.), Average velocity = 8.420(Ft/s)
```

```
++++
305.000
```

    Process from Point/Station 403.000 to Point/Station
    ```
    Process from Point/Station 403.000 to Point/Station
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
```

**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

```

Top of natural channel elevation \(=\) 1660.000(Ft.)
End of natural channel elevation \(=1620.000(\mathrm{Ft}\). Length of natural channel = 402.000(Ft.)
Estimated mean flow rate at midpoint of channel \(=\quad 29.582(C F S)\)
Natural valley channel type used
L.A. County flood control district formula for channel velocity:

Velocity (ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow \(=10.52(\mathrm{Ft} / \mathrm{s})\)
Correction to map slope used on extremely rugged channels with drops and waterfalls (Plate D-6.2)

Normal channel slope \(=0.0995\)
Corrected/adjusted channel slope \(=0.0995\)
Travel time \(=0.64\) min. \(\quad\) TC \(=10.69 \mathrm{~min}\).
```

    Adding area flow to channel
    UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 90.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 3.099(In/Hr) for a 100.0 year storm
Subarea runoff = 5.335(CFS) for 2.000(Ac.)
Total runoff = 32.028(CFS) Total area = 11.240(Ac.)
End of computations, total study area = 11.24 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

```

Area averaged pervious area fraction(Ap) \(=1.000\)
Area averaged RI index number \(=87.2\)
```

            Riverside County Rational Hydrology Program
    CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
    8.0
Rational Hydrology Study Date: 11/08/21
File:moval334.out
Gateway Heights
Offsite Drainage
Area E - 100yr Runoff

```
\(\qquad\)
```

        ********* Hydrology Study Control Information **********
        English (in-lb) Units used in input data file
    Program License Serial Number 6232
    Rational Method Hydrology Program based on
    Riverside County Flood Control & Water Conservation District
    1978 hydrology manual
    Storm event (year) = 100.00 Antecedent Moisture Condition = 3
    Standard intensity-duration curves data (Plate D-4.1)
    For the [ Riverside-Foothill ] area used.
    10 year storm 10 minute intensity = 2.140(In/Hr)
    10 year storm 60 minute intensity = 0.800(In/Hr)
    1 0 0 ~ y e a r ~ s t o r m ~ 1 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 3 . 2 1 0 ( I n / H r )
    1 0 0 ~ y e a r ~ s t o r m ~ 6 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 1 . 2 0 0 ( I n / H r )
    Storm event year = 100.0
    Calculated rainfall intensity data:
    1 hour intensity = 1.200(In/Hr)
    Slope of intensity duration curve = 0.5500
    ```
```

++++

```
++++
    Process from Point/Station 501.000 to Point/Station
    Process from Point/Station 501.000 to Point/Station
502.000
502.000
    **** INITIAL AREA EVALUATION ****
    **** INITIAL AREA EVALUATION ****
    Initial area flow distance = 882.000(Ft.)
    Top (of initial area) elevation = 2160.000(Ft.)
    Bottom (of initial area) elevation = 1680.000(Ft.)
    Difference in elevation = 480.000(Ft.)
```

```
    Slope = 0.54422 s(percent)= 54.42
    TC = k(0.530)*[(length^3)/(elevation change)]^0.2
    Initial area time of concentration = 9.022 min.
    Rainfall intensity = 3.402(In/Hr) for a 100.0 year storm
    UNDEVELOPED (poor cover) subarea
    Runoff Coefficient = 0.884
    Decimal fraction soil group A = 0.000
    Decimal fraction soil group B = 0.000
    Decimal fraction soil group C = 0.000
    Decimal fraction soil group D = 1.000
    RI index for soil(AMC 3) = 95.60
    Pervious area fraction = 1.000; Impervious fraction = 0.000
    Initial subarea runoff = 7.820(CFS)
    Total initial stream area = 2.600(Ac.)
    Pervious area fraction = 1.000
++++
    Process from Point/Station 502.000 to Point/Station
503.000
    **** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
Top of natural channel elevation = 1680.000(Ft.)
End of natural channel elevation = 1631.000(Ft.)
Length of natural channel = 377.000(Ft.)
Estimated mean flow rate at midpoint of channel = 11.730(CFS)
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
    Velocity(ft/s)=(7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow = 9.38(Ft/s)
    Correction to map slope used on extremely rugged channels with
    drops and waterfalls (Plate D-6.2)
            Normal channel slope = 0.1300
Corrected/adjusted channel slope = 0.1300
Travel time = 0.67 min. TC = 9.69 min.
    Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.863
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 90.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 3.271(In/Hr) for a 100.0 year storm
Subarea runoff = 7.336(CFS) for 2.600(Ac.)
Total runoff = 15.156(CFS) Total area = 5.200(Ac.)
End of computations, total study area = 5.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Area averaged pervious area fraction(Ap) \(=1.000\)
Area averaged RI index number \(=84.0\)
```

```
                                    Riverside County Rational Hydrology Program
    CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
                Rational Hydrology Study Date: 03/29/22
File:moval33rev.out
    Gateway Heights
    Existing Conditions
    Area F - 100 yr
```

$\qquad$

```
        ********* Hydrology Study Control Information **********
        English (in-lb) Units used in input data file
    Program License Serial Number 6232
    Rational Method Hydrology Program based on
    Riverside County Flood Control & Water Conservation District
    1978 hydrology manual
    Storm event (year) = 100.00 Antecedent Moisture Condition = 3
    Standard intensity-duration curves data (Plate D-4.1)
    For the [ Riverside-Foothill ] area used.
    10 year storm 10 minute intensity = 2.140(In/Hr)
    10 year storm 60 minute intensity = 0.800(In/Hr)
    1 0 0 ~ y e a r ~ s t o r m ~ 1 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 3 . 2 1 0 ( I n / H r )
    1 0 0 ~ y e a r ~ s t o r m ~ 6 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 1 . 2 0 0 ( I n / H r )
    Storm event year = 100.0
    Calculated rainfall intensity data:
    1 hour intensity = 1.200(In/Hr)
    Slope of intensity duration curve = 0.5500
```

```
++++
```

++++
Process from Point/Station 601.000 to Point/Station
Process from Point/Station 601.000 to Point/Station
602.000
602.000
**** INITIAL AREA EVALUATION ****
**** INITIAL AREA EVALUATION ****
Initial area flow distance = 778.000(Ft.)
Top (of initial area) elevation = 1725.000(Ft.)
Bottom (of initial area) elevation = 1617.000(Ft.)
Difference in elevation = 108.000(Ft.)

```
```

Slope = 0.13882 s(percent)= 13.88
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.277 min.
Rainfall intensity = 3.009(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 94.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 5.806(CFS)
Total initial stream area = 2.200(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 2.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 86.0

```
```

                                    Riverside County Rational Hydrology Program
    CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
    8.0
Rational Hydrology Study Date: 03/29/22
File:moval33rev.out
Gateway Heights
Existing Conditions
Area G - 100 yr

```
\(\qquad\)
```

        ********* Hydrology Study Control Information **********
        English (in-lb) Units used in input data file
    Program License Serial Number 6232
    Rational Method Hydrology Program based on
    Riverside County Flood Control & Water Conservation District
    1978 hydrology manual
    Storm event (year) = 100.00 Antecedent Moisture Condition = 3
    Standard intensity-duration curves data (Plate D-4.1)
    For the [ Riverside-Foothill ] area used.
    10 year storm 10 minute intensity = 2.140(In/Hr)
    10 year storm 60 minute intensity = 0.800(In/Hr)
    1 0 0 ~ y e a r ~ s t o r m ~ 1 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 3 . 2 1 0 ( I n / H r )
    1 0 0 ~ y e a r ~ s t o r m ~ 6 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 1 . 2 0 0 ( I n / H r )
    Storm event year = 100.0
    Calculated rainfall intensity data:
    1 hour intensity = 1.200(In/Hr)
    Slope of intensity duration curve = 0.5500
    ```
```

++++

```
++++
    Process from Point/Station 701.000 to Point/Station
    Process from Point/Station 701.000 to Point/Station
702.000
702.000
    **** INITIAL AREA EVALUATION ****
    **** INITIAL AREA EVALUATION ****
    Initial area flow distance = 388.000(Ft.)
    Top (of initial area) elevation = 1646.000(Ft.)
    Bottom (of initial area) elevation = 1600.000(Ft.)
    Difference in elevation = 46.000(Ft.)
```

```
Slope = 0.11856 s(percent)= 11.86
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.811 min.
Rainfall intensity = 3.447(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 94.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 1.819(CFS)
Total initial stream area = 0.600(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 0.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 86.0
```

```
                                    Riverside County Rational Hydrology Program
    CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
                Rational Hydrology Study Date: 03/29/22
File:moval33rev.out
    Gateway Heights
    Existing Conditions
    Area H - 100 yr
```

$\qquad$

```
        ********* Hydrology Study Control Information **********
        English (in-lb) Units used in input data file
    Program License Serial Number 6232
    Rational Method Hydrology Program based on
    Riverside County Flood Control & Water Conservation District
    1978 hydrology manual
    Storm event (year) = 100.00 Antecedent Moisture Condition = 3
    Standard intensity-duration curves data (Plate D-4.1)
    For the [ Riverside-Foothill ] area used.
    10 year storm 10 minute intensity = 2.140(In/Hr)
    10 year storm 60 minute intensity = 0.800(In/Hr)
    1 0 0 ~ y e a r ~ s t o r m ~ 1 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 3 . 2 1 0 ( I n / H r )
    1 0 0 ~ y e a r ~ s t o r m ~ 6 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 1 . 2 0 0 ( I n / H r )
    Storm event year = 100.0
    Calculated rainfall intensity data:
    1 hour intensity = 1.200(In/Hr)
    Slope of intensity duration curve = 0.5500
```

```
++++
```

++++
Process from Point/Station 801.000 to Point/Station
Process from Point/Station 801.000 to Point/Station
802.000
802.000
**** INITIAL AREA EVALUATION ****
**** INITIAL AREA EVALUATION ****
Initial area flow distance = 589.000(Ft.)
Top (of initial area) elevation = 1678.000(Ft.)
Bottom (of initial area) elevation = 1587.000(Ft.)
Difference in elevation = 91.000(Ft.)

```
```

Slope = 0.15450 s(percent)= 15.45
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.875 min.
Rainfall intensity = 3.237(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 94.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 5.688(CFS)
Total initial stream area = 2.000(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 2.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 86.0

```
```

                                    Riverside County Rational Hydrology Program
    CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
    8.0
Rational Hydrology Study Date: 03/29/22
File:moval33rev.out
Gateway Heights
Existing Conditions
Area I - 100 yr

```
\(\qquad\)
```

        ********* Hydrology Study Control Information **********
        English (in-lb) Units used in input data file
    Program License Serial Number 6232
    Rational Method Hydrology Program based on
    Riverside County Flood Control & Water Conservation District
    1978 hydrology manual
    Storm event (year) = 100.00 Antecedent Moisture Condition = 3
    Standard intensity-duration curves data (Plate D-4.1)
    For the [ Riverside-Foothill ] area used.
    10 year storm 10 minute intensity = 2.140(In/Hr)
    10 year storm 60 minute intensity = 0.800(In/Hr)
    1 0 0 ~ y e a r ~ s t o r m ~ 1 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 3 . 2 1 0 ( I n / H r )
    1 0 0 ~ y e a r ~ s t o r m ~ 6 0 ~ m i n u t e ~ i n t e n s i t y ~ = ~ 1 . 2 0 0 ( I n / H r )
    Storm event year = 100.0
    Calculated rainfall intensity data:
    1 hour intensity = 1.200(In/Hr)
    Slope of intensity duration curve = 0.5500
    ```
```

++++

```
++++
    Process from Point/Station 901.000 to Point/Station
    Process from Point/Station 901.000 to Point/Station
902.000
902.000
    **** INITIAL AREA EVALUATION ****
    **** INITIAL AREA EVALUATION ****
    Initial area flow distance = 821.000(Ft.)
    Top (of initial area) elevation = 1664.000(Ft.)
    Bottom (of initial area) elevation = 1586.000(Ft.)
    Difference in elevation = 78.000(Ft.)
```

```
Slope = 0.09501 s(percent)= 9.50
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.430 min.
Rainfall intensity = 2.852(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 94.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 7.993(CFS)
Total initial stream area = 3.200(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 3.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 86.0
```

Existing Condition SCS Hydrograph Runoff

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea12.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
0.47
2.58

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum
calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value


| 0+40 | 0.0254 | 1.18 | 1 |  | v |  | \| | । |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+45 | 0.0396 | 2.07 | \| |  | Q |  | 1 |  |  |
| 0+50 | 0.0725 | 4.78 | \| |  |  | 1 | Q V | \| |  |
| 0+55 | 0.1099 | 5.43 | 1 |  |  | 1 | IQ |  | v |
| 1+ 0 | 0.1215 | 1.67 | 1 | Q |  | \| | \| | \| |  |
| 1+ 5 | 0.1241 | 0.39 | IQ |  |  | 1 | \| |  |  |
| 1+10 | 0.1248 | 0.09 | Q |  |  | \| | \| |  |  |
| 1+15 | 0.1248 | 0.01 | Q |  |  | \| | 1 |  |  |
| 1+20 | 0.1248 | 0.00 | Q |  |  | \| | 1 | \| |  |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea15.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
0.47
2.58

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum
calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 02/19/21 File: moval33prea110.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
0.47
2.58

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum
calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea1100.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Area A
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
0.47
2.58

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum
calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea32.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
0.80
4.42

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | $t$ Time | Pattern | Storm Rain | LossMax | In./Hr) | Effective <br> ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | (Hr.) | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) |  | Low |  |
| 1 | 0.08 | 1.30 | 0.125 | $0.198)$ | 0.112 | 0.012 |
| 2 | 0.17 | 1.30 | 0.125 | ( 0.198) | 0.112 | 0.012 |
| 3 | 0.25 | 1.10 | 0.105 | ( 0.198) | 0.095 | 0.011 |
| 4 | 0.33 | 1.50 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 5 | 0.42 | 1.50 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 6 | 0.50 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 7 | 0.58 | 1.50 | 0.144 | 0.198) | 0.129 | 0.014 |
| 8 | 0.67 | 1.80 | 0.173 | 0.198) | 0.155 | 0.017 |
| 9 | 0.75 | 1.80 | 0.173 | 0.198) | 0.155 | 0.017 |
| 10 | 0.83 | 1.50 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 11 | 0.92 | 1.60 | 0.153 | $0.198)$ | 0.138 | 0.015 |
| 12 | 1.00 | 1.80 | 0.173 | $0.198)$ | 0.155 | 0.017 |
| 13 | 1.08 | 2.20 | 0.211 | $0.198)$ | 0.190 | 0.021 |
| 14 | 1.17 | 2.20 | 0.211 | ( 0.198) | 0.190 | 0.021 |
| 15 | 1.25 | 2.20 | 0.211 | 0.198) | 0.190 | 0.021 |
| 16 | 1.33 | 2.00 | 0.192 | ( 0.198) | 0.173 | 0.019 |
| 17 | 1.42 | 2.60 | 0.249 | 0.198 | 0.224) | 0.051 |
| 18 | 1.50 | 2.70 | 0.259 | 0.198 | ( 0.233) | 0.060 |
| 19 | 1.58 | 2.40 | 0.230 | 0.198 | ( 0.207) | 0.032 |
| 20 | 1.67 | 2.70 | 0.259 | 0.198 | ( 0.233) | 0.060 |
| 21 | 1.75 | 3.30 | 0.316 | 0.198 | ( 0.285) | 0.118 |
| 22 | 1.83 | 3.10 | 0.297 | 0.198 | ( 0.267) | 0.099 |
| 23 | 1.92 | 2.90 | 0.278 | 0.198 | ( 0.250) | 0.080 |
| 24 | 2.00 | 3.00 | 0.288 | 0.198 | ( 0.259) | 0.089 |
| 25 | 2.08 | 3.10 | 0.297 | 0.198 | ( 0.267) | 0.099 |
| 26 | 2.17 | 4.20 | 0.403 | 0.198 | ( 0.362) | 0.204 |
| 27 | 2.25 | 5.00 | 0.479 | 0.198 | ( 0.431) | 0.281 |
| 28 | 2.33 | 3.50 | 0.336 | 0.198 | ( 0.302) | 0.137 |
| 29 | 2.42 | 6.80 | 0.652 | 0.198 | ( 0.587) | 0.454 |
| 30 | 2.50 | 7.30 | 0.700 | 0.198 | ( 0.630) | 0.502 |
| 31 | 2.58 | 8.20 | 0.786 | 0.198 | ( 0.708) | 0.588 |
| 32 | 2.67 | 5.90 | 0.566 | 0.198 | ( 0.509) | 0.367 |
| 33 | 2.75 | 2.00 | 0.192 | $0.198)$ | 0.173 | 0.019 |
| 34 | 2.83 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 35 | 2.92 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 36 | 3.00 | 0.60 | 0.058 | ( 0.198) | 0.052 | 0.006 |
|  | (Loss Rate Not Used) |  |  |  |  |  |
|  | Sum $=100.0$ Sum |  |  |  |  | 3.5 |
|  | Flood volume = Effective rainfall 0.29(In) |  |  |  |  |  |
|  | times area 5.5(Ac.)/[ |  |  | )/(Ft.)] = | 0.1(Ac | .Ft) |
|  | Total soil loss = 0.50(In) |  |  |  |  |  |
|  | Total soil loss $=0.232($ |  |  | Ft) |  |  |
|  | Total rainfall $=0.80$ (In) |  |  |  |  |  |
|  |  |  |  | Flood volume $=\quad 5921.7$ Cubic Feet |  |  |
|  | Total soil loss = 10117.0 Cubic Feet |  |  |  |  |  |
| Peak flow rate of this hydrograph $=$ 2.875(CFS |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++ |  |  |  |  |  |
|  |  |  | 3 - H O U R S T ORM |  |  |  |
| Runoff Hydrograph |  |  |  |  |  |  |
| Hydrograph in 5 Minute intervals ((CFS)) |  |  |  |  |  |  |


| Time <br> 10.0 | h+m) Volume Ac.Ft | Q(CFS) | 0 | 2.5 | 5.0 |
| :--- | :--- | :--- | :--- | :--- | :--- |




```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea35.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
0.80
4.42

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value




```
Unitt Hydrog r a p h A n a l y s i s
Copyright (c) CIVILCADD/CIVILDESIGN, 1989. 2012, Version 8.2
        Study date 02/19/21 File: moval33prea310.out
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978
Program License Serial Number 6232
    English (in-Ib) Input Units Used
    English Rainfall Data (Inches) Input Values Used
    English Units used i n output format
```

Gateway Heights
Existing Condition
Unit Hydrograph Runoff
Drainage Area $=$ 5.53(AC.) $=0.009 \mathrm{Sq} . \mathrm{Mi}$.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
$0.009 \mathrm{Sq} . \mathrm{Mi}$.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00(Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi .
Difference in el evation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./ Mi.
Average Manning's 'N' $=0.040$
Lag time $=0.053 \mathrm{Hr}$.
Lag time $=3.17 \mathrm{Min}$
$25 \%$ of lag time $=0.79 \mathrm{Min}$.
$40 \%$ of 1 ag time $=1.27 \mathrm{Min}$.
Unit time $=5.00 \mathrm{Min}$.
Duration of storm = 3 Hour (s)
User Entered Base Flow = $0.00(C F S)$
2 YEAR Area rainfall data:

| Area(AC.) [1] | Rainfall(1n)[2] | Weighting[ $1 * 2$ ] |
| :---: | :---: | :---: |
| 5. 53 | 0.80 | 4.42 |

100 YEAR Area rainfall data:
Area(AC.) $\begin{aligned} {[1] } \\ 5.53\end{aligned} \quad$ Rainfall $\underset{1.89}{ }(1 n)[2] \quad$ Weighting[1*2]
STORM EVENT (YEAR) $=10.00$
Area Averaged 2-Year Rainfall=0.799(In)
Area Averaged 100-Year Rainfall=1.890(In)
Page 1
moval 33 prea 310

```
Point rain (area averaged)=1.248(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain= 1.248(ln)
Sub-Area Data:
Area(AC.) Runoff Index I mpervious %
    5.530 84.00 0.000
    Total Area Entered = 5.53(Ac.)
```



Unit Hyd ror or a $p$ h FOOTHILL S-Curve


The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximumffective Rain value

| Unit | Ti me | Pattern | Storm Rain | Loss rate(l | n. / Hr ) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.) | Percent | ( $\mathrm{I} \mathrm{n} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{l} / \mathrm{n} / \mathrm{Hr}$ ) |
| 1 | 0.08 | 1.30 | 0.195 | $0.198)$ | 0.175 | 0.019 |
| 2 | 0.17 | 1.30 | 0.195 | 0.198) | 0.175 | 0.019 |
| 3 | 0.25 | 1.10 | 0.165 | (0.198) | 0.148 | 0.016 |
| 4 | 0.33 | 1.50 | 0.225 | 0.198 | 0.2021 | 0.026 |
| 5 | 0.42 | 1.50 | 0.225 | 0.198 | (0.202) | 0.026 |
| 6 | 0.50 | 1.80 | 0.270 | 0.198 | (0.243) | 0.071 |
| 7 | 0.58 | 1.50 | 0.225 | 0.198 | (0.202) | 0.026 |
| 8 | 0.67 | 1.80 | 0.270 | 0.198 | 0.2431 | 0.071 |
| 9 | 0.75 | 1.80 | 0.270 | 0.198 | 0.2431 | 0.071 |
| 10 | 0.83 | 1.50 | 0.225 | 0.198 | 0.2021 | 0.026 |
| 11 | 0.92 | 1.60 | 0.240 | 0.198 | $0.216)$ | 0.041 |
| 12 | 1. 00 | 1.80 | 0.270 | 0.198 | 0.2431 | 0.071 |
| 13 | 1.08 | 2.20 | 0.329 | 0.198 | 0.2961 | 0.131 |
| 14 | 1. 17 | 2.20 | 0.329 | 0.198 | 0.2961 | 0.131 |
| 15 | 1. 25 | 2.20 | 0.329 | 0.198 | 0.2961 | 0.131 |
| 16 | 1.33 | 2.00 | 0.299 | 0.198 | $0.270)$ | 0.101 |
| 17 | 1.42 | 2.60 | 0.389 | 0.198 | 0.3501 | 0.191 |
| 18 | 1. 50 | 2.70 | 0.404 | 0.198 | $0.364)$ | 0.206 |
| 19 | 1. 58 | 2.40 | 0.359 | 0.198 | 0.3231 | 0.161 |
| 20 | 1. 67 | 2.70 | 0.404 | 0.198 | $0.364)$ | 0.206 |




```
        U n i t H y d r o g r a p h A n a l y s i s
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                8.2
                Study date 11/09/21 File: moval33prea3100.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Area A
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
0.80
4.42

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value




```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea62.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
1.09
6.03

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



| 0+50 | 0.0029 | 0.05 | Q | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 0+55 | 0.0033 | 0.05 | Q | \| | \| |
| 1+ 0 | 0.0036 | 0.05 | QV | \| | \| |
| 1+ 5 | 0.0040 | 0.06 | QV | \| | \| |
| 1+10 | 0.0044 | 0.06 | QV | \| | \| |
| 1+15 | 0.0048 | 0.06 | QV | \| | \| |
| 1+20 | 0.0052 | 0.06 | QV | \| | \| |
| 1+25 | 0.0056 | 0.06 | QV | \| | \| |
| 1+30 | 0.0060 | 0.06 | QV | \| | \| |
| 1+35 | 0.0064 | 0.06 | QV | \| | 1 |
| 1+40 | 0.0068 | 0.06 | QV | \| | \| |
| 1+45 | 0.0072 | 0.06 | QV | \| | \| |
| 1+50 | 0.0076 | 0.06 | Q V | \| | \| |
| 1+55 | 0.0080 | 0.06 | Q V | \| | \| |
| 2+ 0 | 0.0085 | 0.06 | Q V | \| | \| |
| 2+ 5 | 0.0089 | 0.06 | Q V | \| | \| |
| 2+10 | 0.0093 | 0.06 | Q V | \| | \| |
| 2+15 | 0.0098 | 0.06 | Q V | \| | \| |
| 2+20 | 0.0102 | 0.07 | Q V | \| | \| |
| 2+25 | 0.0107 | 0.07 | Q V | \| | \| |
| 2+30 | 0.0111 | 0.07 | Q V | \| | \| |
| 2+35 | 0.0116 | 0.07 | Q V | \| | \| |
| 2+40 | 0.0120 | 0.07 | Q V | \| | \| |
| 2+45 | 0.0125 | 0.07 | Q V | \| | \| |
| 2+50 | 0.0130 | 0.07 | Q V | \| | \| |
| 2+55 | 0.0135 | 0.07 | Q V | \| | \| |
| $3+0$ | 0.0140 | 0.07 | Q V | \| | \| |
| 3+ 5 | 0.0145 | 0.07 | Q V | \| | \| |
| 3+10 | 0.0150 | 0.08 | Q V | \| | \| |
| 3+15 | 0.0156 | 0.08 | Q V | \| | \| |




```
        U n i t H y d r o g r a p h A n a l y s i s
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                Study date 11/09/21 File: moval33prea65.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
1.09
6.03

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



| $0+50$ | 0.0038 | 0.07 | $Q$ |
| :--- | :--- | :--- | :--- |
| $0+55$ | 0.0043 | 0.07 | $Q$ |
| $1+0$ | 0.0048 | 0.07 | $Q$ |
| $1+5$ | 0.0053 | 0.08 | $Q$ |
| $1+10$ | 0.0058 | 0.08 | $Q$ |

$1+15$
0.0064
0.08 QV

1+20
0.0069
0.08 QV
$1+25$
0.0074
0.08 QV

1+30
0.0079
0.08 QV

1+35
0.0085
0.08 QV
$1+40$
0.0090
0.08 QV
$1+45$
0.0095
0.08 QV
0.08 QV
$1+50$
$1+55$
0.0100
0.08 QV

2+ 0
0.0111
0.08 QV

2+ 5
2+10
0.0117
0.08 QV

2+15
0.0122
0.08 Q V

2+20
0.0128
0.09 Q V
0.09 Q V
$2+25$
2+30
2+35
0.0152
0.09 Q V
$2+40$
$2+45$
0.0158
0.09 Q V
0.09 Q V

2+50
0.0164
0.09 Q V

2+55
0.0171
0.10 Q V

3+ 0
0.017
0.10 Q V

3+ 5
0.0190
0.10 Q V

3+10
0.0197
0.10 Q V
$3+15$
0.0204
0.10 Q V



$$
\begin{aligned}
& \text { Unit Hydrograph A n alysics } \\
& \text { Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 8. } 2 \\
& \text { Study date 02/19/21 File: moval33prea610. out }
\end{aligned}
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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978
Program License Serial Number 6232
    English (in-lb) Input Units Used
    English Rainfall Data (Inches) Input Values Used
    English Units used in output format
Gateway Heights
Existing Condition
Unit Hydrograph Runoff
Drainage Area = 5.53(AC.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
Length along longest watercourse= 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00(Ft.)
Length along ongest watercourse = 0.161 Mi
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in el evation= 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./ Mi.
Average Manning's 'N'=0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Mi n
25% of lag time= 0.79 Min.
40% of lag time= 1.27 Min.
Unit time= 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow= 0.00(CFS)
2 YEAR Area rainfal| data:
Area(Ac.) \begin{tabular}{c}
{\([1]\)} \\
5.53
\end{tabular}\(\quad\) Rainfall \((1 . n)[2] \quad\) Weighting[1*2]
100 YEAR Area rainfall data:
Area(AC.)[1] 5.53 ( Rainfall(l|n)[2] 2.55 ( Weighting[1*2]
STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall= = 1.090(In)
Area Averaged 100-Year Rainfall= 2.550(In)
                                    Page 1
```

$0.009 \mathrm{Sq} . \mathrm{Mi}$.

```
Point rain (area averaged)= 1.691(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain= 1.691(In)
Sub-Area Data:
Area(AC.) Runoff Index Impervious %
    5.530 84.00 0.000
    Total Area Entered = 5.53(Ac.)
```


Unit Hyd ror or a $p$ h
FOOTHILL S-Curve
Unit Hydrograph Data
Unit time period Time \% of lag Distribution Unit Hydrograph
(hrs) Graph\% (CFS)

| 1 | 0.083 | 157.948 | 32.675 |  | 1.821 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 0.167 | 315.896 | 53.715 |  | 2. 994 |
| 3 | 0.250 | 473.844 | 10.920 |  | 0.609 |
| 4 | 0.333 | 631.792 | 2. 028 |  | 0.113 |
| 5 | 0.417 | 789.740 | 0.662 |  | 0.037 |
|  |  |  | Sum = 100.000 | Sum= | 5. 573 |

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximumeffective Rain value




Hydrograph in 5 Minute intervals ((CFS))



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea6100.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Area A
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

5.53
1.09
6.03

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rat | In./Hr) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | (In/Hr) |
| 1 | 0.08 | 0.50 | 0.153 | 0.086 | ( 0.138) | 0.067 |
| 2 | 0.17 | 0.60 | 0.184 | 0.086 | ( 0.165) | 0.098 |
| 3 | 0.25 | 0.60 | 0.184 | 0.086 | ( 0.165) | 0.098 |
| 4 | 0.33 | 0.60 | 0.184 | 0.086 | ( 0.165) | 0.098 |
| 5 | 0.42 | 0.60 | 0.184 | 0.086 | ( 0.165) | 0.098 |
| 6 | 0.50 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 7 | 0.58 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 8 | 0.67 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 9 | 0.75 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 10 | 0.83 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 11 | 0.92 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 12 | 1.00 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 13 | 1.08 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 14 | 1.17 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 15 | 1.25 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 16 | 1.33 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 17 | 1.42 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 18 | 1.50 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 19 | 1.58 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 20 | 1.67 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 21 | 1.75 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 22 | 1.83 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 23 | 1.92 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 24 | 2.00 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 25 | 2.08 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 26 | 2.17 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 27 | 2.25 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 28 | 2.33 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 29 | 2.42 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 30 | 2.50 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 31 | 2.58 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 32 | 2.67 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 33 | 2.75 | 1.00 | 0.306 | 0.086 | ( 0.275) | 0.220 |
| 34 | 2.83 | 1.00 | 0.306 | 0.086 | ( 0.275) | 0.220 |
| 35 | 2.92 | 1.00 | 0.306 | 0.086 | (0.275) | 0.220 |
| 36 | 3.00 | 1.00 | 0.306 | 0.086 | ( 0.275) | 0.220 |
| 37 | 3.08 | 1.00 | 0.306 | 0.086 | ( 0.275) | 0.220 |
| 38 | 3.17 | 1.10 | 0.337 | 0.086 | ( 0.303) | 0.251 |
| 39 | 3.25 | 1.10 | 0.337 | 0.086 | ( 0.303) | 0.251 |
| 40 | 3.33 | 1.10 | 0.337 | 0.086 | ( 0.303) | 0.251 |
| 41 | 3.42 | 1.20 | 0.367 | 0.086 | ( 0.330) | 0.281 |
| 42 | 3.50 | 1.30 | 0.398 | 0.086 | ( 0.358) | 0.312 |
| 43 | 3.58 | 1.40 | 0.428 | 0.086 | ( 0.386) | 0.343 |
| 44 | 3.67 | 1.40 | 0.428 | 0.086 | ( 0.386) | 0.343 |
| 45 | 3.75 | 1.50 | 0.459 | 0.086 | ( 0.413) | 0.373 |
| 46 | 3.83 | 1.50 | 0.459 | 0.086 | ( 0.413) | 0.373 |
| 47 | 3.92 | 1.60 | 0.490 | 0.086 | ( 0.441) | 0.404 |
| 48 | 4.00 | 1.60 | 0.490 | 0.086 | ( 0.441) | 0.404 |
| 49 | 4.08 | 1.70 | 0.520 | 0.086 | ( 0.468) | 0.434 |
| 50 | 4.17 | 1.80 | 0.551 | 0.086 | ( 0.496) | 0.465 |
| 51 | 4.25 | 1.90 | 0.581 | 0.086 | ( 0.523) | 0.496 |
| 52 | 4.33 | 2.00 | 0.612 | 0.086 | ( 0.551) | 0.526 |
| 53 | 4.42 | 2.10 | 0.643 | 0.086 | ( 0.578) | 0.557 |
| 54 | 4.50 | 2.10 | 0.643 | 0.086 | ( 0.578) | 0.557 |
| 55 | 4.58 | 2.20 | 0.673 | 0.086 | ( 0.606) | 0.587 |
| 56 | 4.67 | 2.30 | 0.704 | 0.086 | ( 0.633) | 0.618 |
| 57 | 4.75 | 2.40 | 0.734 | 0.086 | ( 0.661) | 0.649 |






```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea242.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | (In/Hr) |
| 1 | 0.08 | 0.07 | 0.015 | $0.352)$ | 0.014 | 0.002 |
| 2 | 0.17 | 0.07 | 0.015 | ( 0.350) | 0.014 | 0.002 |
| 3 | 0.25 | 0.07 | 0.015 | $0.349)$ | 0.014 | 0.002 |
| 4 | 0.33 | 0.10 | 0.023 | ( 0.348) | 0.021 | 0.002 |
| 5 | 0.42 | 0.10 | 0.023 | ( 0.346) | 0.021 | 0.002 |
| 6 | 0.50 | 0.10 | 0.023 | ( 0.345) | 0.021 | 0.002 |
| 7 | 0.58 | 0.10 | 0.023 | ( 0.344) | 0.021 | 0.002 |
| 8 | 0.67 | 0.10 | 0.023 | ( 0.342) | 0.021 | 0.002 |
| 9 | 0.75 | 0.10 | 0.023 | ( 0.341) | 0.021 | 0.002 |
| 10 | 0.83 | 0.13 | 0.031 | ( 0.340) | 0.028 | 0.003 |
| 11 | 0.92 | 0.13 | 0.031 | ( 0.338) | 0.028 | 0.003 |
| 12 | 1.00 | 0.13 | 0.031 | ( 0.337) | 0.028 | 0.003 |
| 13 | 1.08 | 0.10 | 0.023 | ( 0.336) | 0.021 | 0.002 |
| 14 | 1.17 | 0.10 | 0.023 | ( 0.334) | 0.021 | 0.002 |
| 15 | 1.25 | 0.10 | 0.023 | ( 0.333) | 0.021 | 0.002 |
| 16 | 1.33 | 0.10 | 0.023 | ( 0.332) | 0.021 | 0.002 |
| 17 | 1.42 | 0.10 | 0.023 | ( 0.330) | 0.021 | 0.002 |
| 18 | 1.50 | 0.10 | 0.023 | ( 0.329) | 0.021 | 0.002 |
| 19 | 1.58 | 0.10 | 0.023 | ( 0.328) | 0.021 | 0.002 |
| 20 | 1.67 | 0.10 | 0.023 | ( 0.326) | 0.021 | 0.002 |
| 21 | 1.75 | 0.10 | 0.023 | ( 0.325) | 0.021 | 0.002 |
| 22 | 1.83 | 0.13 | 0.031 | ( 0.324) | 0.028 | 0.003 |
| 23 | 1.92 | 0.13 | 0.031 | $0.322)$ | 0.028 | 0.003 |
| 24 | 2.00 | 0.13 | 0.031 | ( 0.321) | 0.028 | 0.003 |
| 25 | 2.08 | 0.13 | 0.031 | ( 0.320) | 0.028 | 0.003 |
| 26 | 2.17 | 0.13 | 0.031 | ( 0.318) | 0.028 | 0.003 |
| 27 | 2.25 | 0.13 | 0.031 | ( 0.317) | 0.028 | 0.003 |
| 28 | 2.33 | 0.13 | 0.031 | ( 0.316) | 0.028 | 0.003 |
| 29 | 2.42 | 0.13 | 0.031 | ( 0.315) | 0.028 | 0.003 |
| 30 | 2.50 | 0.13 | 0.031 | ( 0.313) | 0.028 | 0.003 |
| 31 | 2.58 | 0.17 | 0.039 | ( 0.312) | 0.035 | 0.004 |
| 32 | 2.67 | 0.17 | 0.039 | ( 0.311) | 0.035 | 0.004 |
| 33 | 2.75 | 0.17 | 0.039 | ( 0.310) | 0.035 | 0.004 |
| 34 | 2.83 | 0.17 | 0.039 | ( 0.308) | 0.035 | 0.004 |
| 35 | 2.92 | 0.17 | 0.039 | ( 0.307) | 0.035 | 0.004 |
| 36 | 3.00 | 0.17 | 0.039 | ( 0.306) | 0.035 | 0.004 |
| 37 | 3.08 | 0.17 | 0.039 | ( 0.304) | 0.035 | 0.004 |
| 38 | 3.17 | 0.17 | 0.039 | ( 0.303) | 0.035 | 0.004 |
| 39 | 3.25 | 0.17 | 0.039 | ( 0.302) | 0.035 | 0.004 |
| 40 | 3.33 | 0.17 | 0.039 | ( 0.301) | 0.035 | 0.004 |
| 41 | 3.42 | 0.17 | 0.039 | ( 0.299) | 0.035 | 0.004 |
| 42 | 3.50 | 0.17 | 0.039 | ( 0.298) | 0.035 | 0.004 |
| 43 | 3.58 | 0.17 | 0.039 | ( 0.297) | 0.035 | 0.004 |
| 44 | 3.67 | 0.17 | 0.039 | ( 0.296) | 0.035 | 0.004 |
| 45 | 3.75 | 0.17 | 0.039 | ( 0.294) | 0.035 | 0.004 |
| 46 | 3.83 | 0.20 | 0.046 | ( 0.293) | 0.042 | 0.005 |
| 47 | 3.92 | 0.20 | 0.046 | ( 0.292) | 0.042 | 0.005 |
| 48 | 4.00 | 0.20 | 0.046 | ( 0.291) | 0.042 | 0.005 |
| 49 | 4.08 | 0.20 | 0.046 | ( 0.289) | 0.042 | 0.005 |
| 50 | 4.17 | 0.20 | 0.046 | ( 0.288) | 0.042 | 0.005 |
| 51 | 4.25 | 0.20 | 0.046 | ( 0.287) | 0.042 | 0.005 |
| 52 | 4.33 | 0.23 | 0.054 | ( 0.286) | 0.049 | 0.005 |
| 53 | 4.42 | 0.23 | 0.054 | ( 0.285) | 0.049 | 0.005 |
| 54 | 4.50 | 0.23 | 0.054 | ( 0.283) | 0.049 | 0.005 |
| 55 | 4.58 | 0.23 | 0.054 | ( 0.282) | 0.049 | 0.005 |
| 56 | 4.67 | 0.23 | 0.054 | ( 0.281) | 0.049 | 0.005 |
| 57 | 4.75 | 0.23 | 0.054 | ( 0.280) | 0.049 | 0.005 |


| 58 | 4.83 | 0.27 | 0.062 | $0.278)$ | 0.056 | 0.006 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 59 | 4.92 | 0.27 | 0.062 | $0.277)$ | 0.056 | 0.006 |
| 60 | 5.00 | 0.27 | 0.062 | $0.276)$ | 0.056 | 0.006 |
| 61 | 5.08 | 0.20 | 0.046 | $0.275)$ | 0.042 | 0.005 |
| 62 | 5.17 | 0.20 | 0.046 | $0.274)$ | 0.042 | 0.005 |
| 63 | 5.25 | 0.20 | 0.046 | $0.272)$ | 0.042 | 0.005 |
| 64 | 5.33 | 0.23 | 0.054 | $0.271)$ | 0.049 | 0.005 |
| 65 | 5.42 | 0.23 | 0.054 | $0.270)$ | 0.049 | 0.005 |
| 66 | 5.50 | 0.23 | 0.054 | $0.269)$ | 0.049 | 0.005 |
| 67 | 5.58 | 0.27 | 0.062 | $0.268)$ | 0.056 | 0.006 |
| 68 | 5.67 | 0.27 | 0.062 | $0.267)$ | 0.056 | 0.006 |
| 69 | 5.75 | 0.27 | 0.062 | $0.265)$ | 0.056 | 0.006 |
| 70 | 5.83 | 0.27 | 0.062 | $0.264)$ | 0.056 | 0.006 |
| 71 | 5.92 | 0.27 | 0.062 | $0.263)$ | 0.056 | 0.006 |
| 72 | 6.00 | 0.27 | 0.062 | $0.262)$ | 0.056 | 0.006 |
| 73 | 6.08 | 0.30 | 0.069 | $0.261)$ | 0.063 | 0.007 |
| 74 | 6.17 | 0.30 | 0.069 | 0.260) | 0.063 | 0.007 |
| 75 | 6.25 | 0.30 | 0.069 | $0.258)$ | 0.063 | 0.007 |
| 76 | 6.33 | 0.30 | 0.069 | $0.257)$ | 0.063 | 0.007 |
| 77 | 6.42 | 0.30 | 0.069 | $0.256)$ | 0.063 | 0.007 |
| 78 | 6.50 | 0.30 | 0.069 | $0.255)$ | 0.063 | 0.007 |
| 79 | 6.58 | 0.33 | 0.077 | $0.254)$ | 0.069 | 0.008 |
| 80 | 6.67 | 0.33 | 0.077 | $0.253)$ | 0.069 | 0.008 |
| 81 | 6.75 | 0.33 | 0.077 | $0.252)$ | 0.069 | 0.008 |
| 82 | 6.83 | 0.33 | 0.077 | 0.250) | 0.069 | 0.008 |
| 83 | 6.92 | 0.33 | 0.077 | $0.249)$ | 0.069 | 0.008 |
| 84 | 7.00 | 0.33 | 0.077 | $0.248)$ | 0.069 | 0.008 |
| 85 | 7.08 | 0.33 | 0.077 | $0.247)$ | 0.069 | 0.008 |
| 86 | 7.17 | 0.33 | 0.077 | $0.246)$ | 0.069 | 0.008 |
| 87 | 7.25 | 0.33 | 0.077 | $0.245)$ | 0.069 | 0.008 |
| 88 | 7.33 | 0.37 | 0.085 | $0.244)$ | 0.076 | 0.008 |
| 89 | 7.42 | 0.37 | 0.085 | $0.243)$ | 0.076 | 0.008 |
| 90 | 7.50 | 0.37 | 0.085 | $0.241)$ | 0.076 | 0.008 |
| 91 | 7.58 | 0.40 | 0.093 | 0.240) | 0.083 | 0.009 |
| 92 | 7.67 | 0.40 | 0.093 | $0.239)$ | 0.083 | 0.009 |
| 93 | 7.75 | 0.40 | 0.093 | 0.238) | 0.083 | 0.009 |
| 94 | 7.83 | 0.43 | 0.100 | $0.237)$ | 0.090 | 0.010 |
| 95 | 7.92 | 0.43 | 0.100 | $0.236)$ | 0.090 | 0.010 |
| 96 | 8.00 | 0.43 | 0.100 | $0.235)$ | 0.090 | 0.010 |
| 97 | 8.08 | 0.50 | 0.116 | $0.234)$ | 0.104 | 0.012 |
| 98 | 8.17 | 0.50 | 0.116 | $0.233)$ | 0.104 | 0.012 |
| 99 | 8.25 | 0.50 | 0.116 | $0.232)$ | 0.104 | 0.012 |
| 100 | 8.33 | 0.50 | 0.116 | $0.230)$ | 0.104 | 0.012 |
| 101 | 8.42 | 0.50 | 0.116 | $0.229)$ | 0.104 | 0.012 |
| 102 | 8.50 | 0.50 | 0.116 | $0.228)$ | 0.104 | 0.012 |
| 103 | 8.58 | 0.53 | 0.124 | $0.227)$ | 0.111 | 0.012 |
| 104 | 8.67 | 0.53 | 0.124 | $0.226)$ | 0.111 | 0.012 |
| 105 | 8.75 | 0.53 | 0.124 | $0.225)$ | 0.111 | 0.012 |
| 106 | 8.83 | 0.57 | 0.131 | $0.224)$ | 0.118 | 0.013 |
| 107 | 8.92 | 0.57 | 0.131 | $0.223)$ | 0.118 | 0.013 |
| 108 | 9.00 | 0.57 | 0.131 | $0.222)$ | 0.118 | 0.013 |
| 109 | 9.08 | 0.63 | 0.147 | 0.221) | 0.132 | 0.015 |
| 110 | 9.17 | 0.63 | 0.147 | 0.220) | 0.132 | 0.015 |
| 111 | 9.25 | 0.63 | 0.147 | $0.219)$ | 0.132 | 0.015 |
| 112 | 9.33 | 0.67 | 0.154 | $0.218)$ | 0.139 | 0.015 |
| 113 | 9.42 | 0.67 | 0.154 | $0.217)$ | 0.139 | 0.015 |
| 114 | 9.50 | 0.67 | 0.154 | $0.216)$ | 0.139 | 0.015 |
| 115 | 9.58 | 0.70 | 0.162 | $0.215)$ | 0.146 | 0.016 |
| 116 | 9.67 | 0.70 | 0.162 | $0.214)$ | 0.146 | 0.016 |
| 117 | 9.75 | 0.70 | 0.162 | $0.213)$ | 0.146 | 0.016 |


| 118 | 9.83 | 0.73 | 0.170 | $0.212)$ | 0.153 | 0.017 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 119 | 9.92 | 0.73 | 0.170 | 0.211) | 0.153 | 0.017 |
| 120 | 10.00 | 0.73 | 0.170 | 0.210) | 0.153 | 0.017 |
| 121 | 10.08 | 0.50 | 0.116 | $0.208)$ | 0.104 | 0.012 |
| 122 | 10.17 | 0.50 | 0.116 | $0.207)$ | 0.104 | 0.012 |
| 123 | 10.25 | 0.50 | 0.116 | $0.206)$ | 0.104 | 0.012 |
| 124 | 10.33 | 0.50 | 0.116 | $0.205)$ | 0.104 | 0.012 |
| 125 | 10.42 | 0.50 | 0.116 | $0.204)$ | 0.104 | 0.012 |
| 126 | 10.50 | 0.50 | 0.116 | $0.203)$ | 0.104 | 0.012 |
| 127 | 10.58 | 0.67 | 0.154 | $0.202)$ | 0.139 | 0.015 |
| 128 | 10.67 | 0.67 | 0.154 | $0.201)$ | 0.139 | 0.015 |
| 129 | 10.75 | 0.67 | 0.154 | 0.201) | 0.139 | 0.015 |
| 130 | 10.83 | 0.67 | 0.154 | 0.200) | 0.139 | 0.015 |
| 131 | 10.92 | 0.67 | 0.154 | $0.199)$ | 0.139 | 0.015 |
| 132 | 11.00 | 0.67 | 0.154 | $0.198)$ | 0.139 | 0.015 |
| 133 | 11.08 | 0.63 | 0.147 | $0.197)$ | 0.132 | 0.015 |
| 134 | 11.17 | 0.63 | 0.147 | $0.196)$ | 0.132 | 0.015 |
| 135 | 11.25 | 0.63 | 0.147 | $0.195)$ | 0.132 | 0.015 |
| 136 | 11.33 | 0.63 | 0.147 | $0.194)$ | 0.132 | 0.015 |
| 137 | 11.42 | 0.63 | 0.147 | $0.193)$ | 0.132 | 0.015 |
| 138 | 11.50 | 0.63 | 0.147 | $0.192)$ | 0.132 | 0.015 |
| 139 | 11.58 | 0.57 | 0.131 | $0.191)$ | 0.118 | 0.013 |
| 140 | 11.67 | 0.57 | 0.131 | 0.190) | 0.118 | 0.013 |
| 141 | 11.75 | 0.57 | 0.131 | $0.189)$ | 0.118 | 0.013 |
| 142 | 11.83 | 0.60 | 0.139 | $0.188)$ | 0.125 | 0.014 |
| 143 | 11.92 | 0.60 | 0.139 | $0.187)$ | 0.125 | 0.014 |
| 144 | 12.00 | 0.60 | 0.139 | $0.186)$ | 0.125 | 0.014 |
| 145 | 12.08 | 0.83 | 0.193 | 0.185) | 0.174 | 0.019 |
| 146 | 12.17 | 0.83 | 0.193 | $0.184)$ | 0.174 | 0.019 |
| 147 | 12.25 | 0.83 | 0.193 | $0.183)$ | 0.174 | 0.019 |
| 148 | 12.33 | 0.87 | 0.201 | $0.182)$ | 0.181 | 0.020 |
| 149 | 12.42 | 0.87 | 0.201 | $0.182)$ | 0.181 | 0.020 |
| 150 | 12.50 | 0.87 | 0.201 | 0.181 | $0.181)$ | 0.020 |
| 151 | 12.58 | 0.93 | 0.216 | 0.180 | $0.195)$ | 0.036 |
| 152 | 12.67 | 0.93 | 0.216 | 0.179 | $0.195)$ | 0.037 |
| 153 | 12.75 | 0.93 | 0.216 | 0.178 | $0.195)$ | 0.038 |
| 154 | 12.83 | 0.97 | 0.224 | 0.177 | $0.201)$ | 0.047 |
| 155 | 12.92 | 0.97 | 0.224 | 0.176 | $0.201)$ | 0.048 |
| 156 | 13.00 | 0.97 | 0.224 | 0.175 | 0.201) | 0.049 |
| 157 | 13.08 | 1.13 | 0.262 | 0.174 | $0.236)$ | 0.088 |
| 158 | 13.17 | 1.13 | 0.262 | 0.173 | $0.236)$ | 0.089 |
| 159 | 13.25 | 1.13 | 0.262 | 0.173 | $0.236)$ | 0.090 |
| 160 | 13.33 | 1.13 | 0.262 | 0.172 | $0.236)$ | 0.091 |
| 161 | 13.42 | 1.13 | 0.262 | 0.171 | $0.236)$ | 0.092 |
| 162 | 13.50 | 1.13 | 0.262 | 0.170 | $0.236)$ | 0.093 |
| 163 | 13.58 | 0.77 | 0.178 | $0.169)$ | 0.160 | 0.018 |
| 164 | 13.67 | 0.77 | 0.178 | 0.168) | 0.160 | 0.018 |
| 165 | 13.75 | 0.77 | 0.178 | $0.167)$ | 0.160 | 0.018 |
| 166 | 13.83 | 0.77 | 0.178 | $0.166)$ | 0.160 | 0.018 |
| 167 | 13.92 | 0.77 | 0.178 | $0.166)$ | 0.160 | 0.018 |
| 168 | 14.00 | 0.77 | 0.178 | $0.165)$ | 0.160 | 0.018 |
| 169 | 14.08 | 0.90 | 0.208 | 0.164 | $0.188)$ | 0.044 |
| 170 | 14.17 | 0.90 | 0.208 | 0.163 | $0.188)$ | 0.045 |
| 171 | 14.25 | 0.90 | 0.208 | 0.162 | $0.188)$ | 0.046 |
| 172 | 14.33 | 0.87 | 0.201 | 0.161 | $0.181)$ | 0.039 |
| 173 | 14.42 | 0.87 | 0.201 | 0.161 | 0.181) | 0.040 |
| 174 | 14.50 | 0.87 | 0.201 | 0.160 | 0.181) | 0.041 |
| 175 | 14.58 | 0.87 | 0.201 | 0.159 | $0.181)$ | 0.042 |
| 176 | 14.67 | 0.87 | 0.201 | 0.158 | 0.181) | 0.043 |
| 177 | 14.75 | 0.87 | 0.201 | 0.157 | 0.181) | 0.043 |


| 178 | 14.83 | 0.83 | 0.193 | 0.157 | $0.174)$ | 0.036 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 179 | 14.92 | 0.83 | 0.193 | 0.156 | $0.174)$ | 0.037 |
| 180 | 15.00 | 0.83 | 0.193 | 0.155 | $0.174)$ | 0.038 |
| 181 | 15.08 | 0.80 | 0.185 | 0.154 | $0.167)$ | 0.031 |
| 182 | 15.17 | 0.80 | 0.185 | 0.153 | 0.167) | 0.032 |
| 183 | 15.25 | 0.80 | 0.185 | 0.153 | $0.167)$ | 0.033 |
| 184 | 15.33 | 0.77 | 0.178 | 0.152 | 0.160) | 0.026 |
| 185 | 15.42 | 0.77 | 0.178 | 0.151 | 0.160) | 0.027 |
| 186 | 15.50 | 0.77 | 0.178 | 0.150 | $0.160)$ | 0.027 |
| 187 | 15.58 | 0.63 | 0.147 | $0.149)$ | 0.132 | 0.015 |
| 188 | 15.67 | 0.63 | 0.147 | $0.149)$ | 0.132 | 0.015 |
| 189 | 15.75 | 0.63 | 0.147 | $0.148)$ | 0.132 | 0.015 |
| 190 | 15.83 | 0.63 | 0.147 | 0.147) | 0.132 | 0.015 |
| 191 | 15.92 | 0.63 | 0.147 | $0.146)$ | 0.132 | 0.015 |
| 192 | 16.00 | 0.63 | 0.147 | $0.146)$ | 0.132 | 0.015 |
| 193 | 16.08 | 0.13 | 0.031 | $0.145)$ | 0.028 | 0.003 |
| 194 | 16.17 | 0.13 | 0.031 | $0.144)$ | 0.028 | 0.003 |
| 195 | 16.25 | 0.13 | 0.031 | 0.143) | 0.028 | 0.003 |
| 196 | 16.33 | 0.13 | 0.031 | $0.143)$ | 0.028 | 0.003 |
| 197 | 16.42 | 0.13 | 0.031 | $0.142)$ | 0.028 | 0.003 |
| 198 | 16.50 | 0.13 | 0.031 | 0.141) | 0.028 | 0.003 |
| 199 | 16.58 | 0.10 | 0.023 | 0.141) | 0.021 | 0.002 |
| 200 | 16.67 | 0.10 | 0.023 | 0.140) | 0.021 | 0.002 |
| 201 | 16.75 | 0.10 | 0.023 | 0.139) | 0.021 | 0.002 |
| 202 | 16.83 | 0.10 | 0.023 | 0.138) | 0.021 | 0.002 |
| 203 | 16.92 | 0.10 | 0.023 | 0.138) | 0.021 | 0.002 |
| 204 | 17.00 | 0.10 | 0.023 | 0.137) | 0.021 | 0.002 |
| 205 | 17.08 | 0.17 | 0.039 | $0.136)$ | 0.035 | 0.004 |
| 206 | 17.17 | 0.17 | 0.039 | $0.136)$ | 0.035 | 0.004 |
| 207 | 17.25 | 0.17 | 0.039 | $0.135)$ | 0.035 | 0.004 |
| 208 | 17.33 | 0.17 | 0.039 | $0.134)$ | 0.035 | 0.004 |
| 209 | 17.42 | 0.17 | 0.039 | $0.134)$ | 0.035 | 0.004 |
| 210 | 17.50 | 0.17 | 0.039 | $0.133)$ | 0.035 | 0.004 |
| 211 | 17.58 | 0.17 | 0.039 | 0.132) | 0.035 | 0.004 |
| 212 | 17.67 | 0.17 | 0.039 | $0.132)$ | 0.035 | 0.004 |
| 213 | 17.75 | 0.17 | 0.039 | 0.131) | 0.035 | 0.004 |
| 214 | 17.83 | 0.13 | 0.031 | 0.130) | 0.028 | 0.003 |
| 215 | 17.92 | 0.13 | 0.031 | 0.130) | 0.028 | 0.003 |
| 216 | 18.00 | 0.13 | 0.031 | 0.129) | 0.028 | 0.003 |
| 217 | 18.08 | 0.13 | 0.031 | $0.128)$ | 0.028 | 0.003 |
| 218 | 18.17 | 0.13 | 0.031 | 0.128) | 0.028 | 0.003 |
| 219 | 18.25 | 0.13 | 0.031 | 0.127) | 0.028 | 0.003 |
| 220 | 18.33 | 0.13 | 0.031 | 0.127) | 0.028 | 0.003 |
| 221 | 18.42 | 0.13 | 0.031 | $0.126)$ | 0.028 | 0.003 |
| 222 | 18.50 | 0.13 | 0.031 | 0.125) | 0.028 | 0.003 |
| 223 | 18.58 | 0.10 | 0.023 | 0.125) | 0.021 | 0.002 |
| 224 | 18.67 | 0.10 | 0.023 | $0.124)$ | 0.021 | 0.002 |
| 225 | 18.75 | 0.10 | 0.023 | $0.124)$ | 0.021 | 0.002 |
| 226 | 18.83 | 0.07 | 0.015 | $0.123)$ | 0.014 | 0.002 |
| 227 | 18.92 | 0.07 | 0.015 | $0.122)$ | 0.014 | 0.002 |
| 228 | 19.00 | 0.07 | 0.015 | $0.122)$ | 0.014 | 0.002 |
| 229 | 19.08 | 0.10 | 0.023 | 0.121) | 0.021 | 0.002 |
| 230 | 19.17 | 0.10 | 0.023 | 0.121) | 0.021 | 0.002 |
| 231 | 19.25 | 0.10 | 0.023 | 0.120) | 0.021 | 0.002 |
| 232 | 19.33 | 0.13 | 0.031 | $0.119)$ | 0.028 | 0.003 |
| 233 | 19.42 | 0.13 | 0.031 | $0.119)$ | 0.028 | 0.003 |
| 234 | 19.50 | 0.13 | 0.031 | 0.118) | 0.028 | 0.003 |
| 235 | 19.58 | 0.10 | 0.023 | 0.118) | 0.021 | 0.002 |
| 236 | 19.67 | 0.10 | 0.023 | 0.117) | 0.021 | 0.002 |
| 237 | 19.75 | 0.10 | 0.023 | 0.117) | 0.021 | 0.002 |


| 238 | 19.83 | 0.07 | 0.015 | $0.116)$ | 0.014 | 0.002 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 239 | 19.92 | 0.07 | 0.015 | $0.116)$ | 0.014 | 0.002 |
| 240 | 20.00 | 0.07 | 0.015 | $0.115)$ | 0.014 | 0.002 |
| 241 | 20.08 | 0.10 | 0.023 | $0.115)$ | 0.021 | 0.002 |
| 242 | 20.17 | 0.10 | 0.023 | $0.114)$ | 0.021 | 0.002 |
| 243 | 20.25 | 0.10 | 0.023 | $0.114)$ | 0.021 | 0.002 |
| 244 | 20.33 | 0.10 | 0.023 | $0.113)$ | 0.021 | 0.002 |
| 245 | 20.42 | 0.10 | 0.023 | $0.113)$ | 0.021 | 0.002 |
| 246 | 20.50 | 0.10 | 0.023 | 0.112) | 0.021 | 0.002 |
| 247 | 20.58 | 0.10 | 0.023 | $0.112)$ | 0.021 | 0.002 |
| 248 | 20.67 | 0.10 | 0.023 | 0.111) | 0.021 | 0.002 |
| 249 | 20.75 | 0.10 | 0.023 | 0.111) | 0.021 | 0.002 |
| 250 | 20.83 | 0.07 | 0.015 | $0.110)$ | 0.014 | 0.002 |
| 251 | 20.92 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |
| 252 | 21.00 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |
| 253 | 21.08 | 0.10 | 0.023 | 0.109) | 0.021 | 0.002 |
| 254 | 21.17 | 0.10 | 0.023 | $0.109)$ | 0.021 | 0.002 |
| 255 | 21.25 | 0.10 | 0.023 | $0.108)$ | 0.021 | 0.002 |
| 256 | 21.33 | 0.07 | 0.015 | $0.108)$ | 0.014 | 0.002 |
| 257 | 21.42 | 0.07 | 0.015 | $0.107)$ | 0.014 | 0.002 |
| 258 | 21.50 | 0.07 | 0.015 | $0.107)$ | 0.014 | 0.002 |
| 259 | 21.58 | 0.10 | 0.023 | $0.107)$ | 0.021 | 0.002 |
| 260 | 21.67 | 0.10 | 0.023 | $0.106)$ | 0.021 | 0.002 |
| 261 | 21.75 | 0.10 | 0.023 | $0.106)$ | 0.021 | 0.002 |
| 262 | 21.83 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 |
| 263 | 21.92 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 |
| 264 | 22.00 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 |
| 265 | 22.08 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 266 | 22.17 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 267 | 22.25 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 268 | 22.33 | 0.07 | 0.015 | $0.103)$ | 0.014 | 0.002 |
| 269 | 22.42 | 0.07 | 0.015 | $0.103)$ | 0.014 | 0.002 |
| 270 | 22.50 | 0.07 | 0.015 | $0.103)$ | 0.014 | 0.002 |
| 271 | 22.58 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 |
| 272 | 22.67 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 |
| 273 | 22.75 | 0.07 | 0.015 | 0.102) | 0.014 | 0.002 |
| 274 | 22.83 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 |
| 275 | 22.92 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |
| 276 | 23.00 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |
| 277 | 23.08 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |
| 278 | 23.17 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |
| 279 | 23.25 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 280 | 23.33 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 281 | 23.42 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 282 | 23.50 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 283 | 23.58 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 284 | 23.67 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 285 | 23.75 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 286 | 23.83 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 287 | 23.92 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 288 | 24.00 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| Sum = (Loss Rate Not Used) Sum = 3.1 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Flood volume $=$ Effective rainfall 0.26(In) |  |  |  |  |  |  |
|  | times area 5.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft) |  |  |  |  |  |
| Total soil loss $=1.67(\mathrm{In})$ |  |  |  |  |  |  |
|  | Total soil loss $=0.769$ (Ac.Ft) |  |  |  |  |  |
|  | Total rainfall = 1.93(In) |  |  |  |  |  |
|  | Flood volume $=\quad 5261.5$ Cubic Feet |  |  |  |  |  |
|  | Total soil loss $=\quad 33480.7$ Cubic Feet |  |  |  |  |  |

$$
\text { Peak flow rate of this hydrograph }=
$$

0.512 (CFS)

$\begin{array}{llllll}\text { Time }(h+m) \\ \text { Volume Ac.Ft } & \text { Q(CFS) } 0 & 2.5 & 5.0 & 7.5\end{array}$ 10.0
---------------------------------------------------------------------------I
$0+50.0000 \quad 0.00 \mathrm{Q} \quad|\quad|$

| 1+50 | 0.0019 | 0.01 | Q | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+55 | 0.0020 | 0.02 | Q | 1 | \| |
| 2+ 0 | 0.0021 | 0.02 | Q | \| | \| |
| 2+ 5 | 0.0022 | 0.02 | Q | 1 | 1 |
| 2+10 | 0.0024 | 0.02 | Q | 1 | 1 |
| 2+15 | 0.0025 | 0.02 | Q | 1 | 1 |
| 2+20 | 0.0026 | 0.02 | Q | 1 | 1 |
| 2+25 | 0.0027 | 0.02 | Q | 1 | I |
| 2+30 | 0.0028 | 0.02 | Q | 1 | I |
| 2+35 | 0.0030 | 0.02 | Q | 1 | 1 |
| 2+40 | 0.0031 | 0.02 | QV | \| | \| |
| 2+45 | 0.0033 | 0.02 | QV | 1 | I |
| 2+50 | 0.0034 | 0.02 | QV | 1 | 1 |
| 2+55 | 0.0036 | 0.02 | QV | 1 | 1 |
| $3+0$ | 0.0037 | 0.02 | QV | 1 | 1 |
| $3+5$ | 0.0038 | 0.02 | QV | 1 | I |
| 3+10 | 0.0040 | 0.02 | QV | 1 | 1 |
| 3+15 | 0.0041 | 0.02 | QV | \| | I |
| $3+20$ | 0.0043 | 0.02 | QV | 1 | 1 |
| 3+25 | 0.0044 | 0.02 | QV | \| | 1 |
| 3+30 | 0.0046 | 0.02 | QV | 1 | 1 |
| 3+35 | 0.0047 | 0.02 | QV | 1 | 1 |
| $3+40$ | 0.0049 | 0.02 | QV | 1 | 1 |
| $3+45$ | 0.0050 | 0.02 | QV | \| | 1 |
| 3+50 | 0.0052 | 0.02 | QV | 1 | 1 |
| 3+55 | 0.0054 | 0.03 | QV | 1 | 1 |
| 4+ 0 | 0.0055 | 0.03 | QV | 1 | 1 |
| 4+ 5 | 0.0057 | 0.03 | QV | 1 | 1 |
| 4+10 | 0.0059 | 0.03 | QV | 1 | I |
| 4+15 | 0.0061 | 0.03 | Q V | 1 | 1 |


| $4+20$ | 0.0063 | 0.03 | Q V |
| :--- | :--- | :--- | :--- |
| $4+25$ | 0.0065 | 0.03 | Q V |
| $4+30$ | 0.0067 | 0.03 | Q V |
| $4+35$ | 0.0069 | 0.03 | Q V |
| $4+40$ | 0.0071 | 0.03 | Q V |
| $4+45$ | 0.0073 | 0.03 | Q V |
| $4+50$ | 0.0075 | 0.03 | Q V |
| $4+55$ | 0.0077 | 0.03 | $Q ~ V$ |

6+50
$6+55$
7+ 0
7+ 5
7+10
7+15
7+20
7+25
7+30
7+35
$7+40$
7+45
7+50
7+55
$8+0$
8+ 5
8+10
$8+15$
$8+20$
$8+25$
$8+30$
$8+35$
$8+40$
$8+45$
8+50
$8+55$
9+ 0
9+ 5
$9+10$
9+15
0.0245
0.0251
0.08 Q
0.08
$Q$

| $9+20$ | 0.0256 | 0.08 | Q | v \\| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 9+25 | 0.0262 | 0.09 | Q | v \\| | \| |
| 9+30 | 0.0268 | 0.09 | Q | v \\| | \| |
| 9+35 | 0.0274 | 0.09 | Q | v1 | 1 |
| 9+40 | 0.0280 | 0.09 | Q | v1 | \\| |
| $9+45$ | 0.0286 | 0.09 | Q | v | 1 |
| $9+50$ | 0.0293 | 0.09 | Q | v1 | 1 |
| 9+55 | 0.0299 | 0.09 | Q | v | 1 |
| 10+ 0 | 0.0306 | 0.09 | Q | v | 1 |
| 10+ 5 | 0.0312 | 0.08 | Q | V | 1 |
| 10+10 | 0.0316 | 0.07 | Q | v | 1 |
| 10+15 | 0.0321 | 0.07 | Q | v | 1 |
| 10+20 | 0.0325 | 0.06 | Q | v | 1 |
| 10+25 | 0.0330 | 0.06 | Q | V | 1 |
| 10+30 | 0.0334 | 0.06 | Q | IV | 1 |
| 10+35 | 0.0339 | 0.07 | Q | IV | 1 |
| 10+40 | 0.0345 | 0.08 | Q | IV | 1 |
| 10+45 | 0.0351 | 0.09 | Q | IV | 1 |
| 10+50 | 0.0357 | 0.09 | Q | IV | 1 |
| 10+55 | 0.0363 | 0.09 | Q | \\| V | 1 |
| 11+ 0 | 0.0369 | 0.09 | Q | \\| V | 1 |
| 11+ 5 | 0.0374 | 0.08 | Q | \\| V | 1 |
| 11+10 | 0.0380 | 0.08 | Q | \\| V | 1 |
| 11+15 | 0.0386 | 0.08 | Q | \\| V | 1 |
| 11+20 | 0.0391 | 0.08 | Q | \\| V | 1 |
| 11+25 | 0.0397 | 0.08 | Q |  | 1 |
| 11+30 | 0.0403 | 0.08 | Q |  | 1 |
| 11+35 | 0.0408 | 0.08 | Q |  | \| |
| 11+40 | 0.0413 | 0.07 | Q | 1 V | 1 |
| 11+45 | 0.0418 | 0.07 | Q | \\| V | \| |


| $11+50$ | 0.0423 | 0.07 | Q |
| :--- | :--- | :--- | :--- |
| $11+55$ | 0.0429 | 0.08 | Q |
| $12+0$ | 0.0434 | 0.08 | Q |
| $12+5$ | 0.0440 | 0.09 | Q |
| $12+10$ | 0.0447 | 0.10 | Q |
| $12+15$ | 0.0454 | 0.11 | Q |
| $12+20$ | 0.0462 | 0.11 | Q |

$12+25$
|
$12+30$
12+35
$12+40$
|
$12+45$
$12+50$
12+55
|
13+ 0
$13+5$
|
13+10
$13+15$
|
13+20
$13+25$
|
$13+30$
|
$13+35$
$13+40$
$13+45$
$13+50$
$13+55$
$14+0$
$14+5$
|
$14+10$
$14+15$
0.0868
0.25 Q

| $14+20$ | 0.0885 | 0.24 | Q |
| :--- | :--- | :--- | :--- |
| $14+25$ | 0.0901 | 0.23 | Q |
| $14+30$ | 0.0916 | 0.23 | Q |
| $14+35$ | 0.0932 | 0.23 | Q |
| $14+40$ | 0.0948 | 0.23 | Q |
| $14+45$ | 0.0964 | 0.24 | Q |
| $14+50$ | 0.0980 | 0.23 | Q |


| 16+50 | 0.1132 | 0.01 | Q |
| :---: | :---: | :---: | :---: |
| 16+55 | 0.1133 | 0.01 | Q |
| 17+ 0 | 0.1134 | 0.01 | Q |
| 17+ 5 | 0.1135 | 0.02 | Q |
| 17+10 | 0.1137 | 0.02 | Q |
| 17+15 | 0.1138 | 0.02 | Q |




|  |  | V |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{array}{llll}24+20 & 0.1208 & 0.00 & \text { Q \| }\end{array}$ |  |  |  |  |  |  |  |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea245.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate | n. / Hr ) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | (In/Hr) |
| 1 | 0.08 | 0.07 | 0.021 | ( 0.352) | 0.018 | 0.002 |
| 2 | 0.17 | 0.07 | 0.021 | ( 0.350) | 0.018 | 0.002 |
| 3 | 0.25 | 0.07 | 0.021 | ( 0.349) | 0.018 | 0.002 |
| 4 | 0.33 | 0.10 | 0.031 | ( 0.348) | 0.028 | 0.003 |
| 5 | 0.42 | 0.10 | 0.031 | ( 0.346) | 0.028 | 0.003 |
| 6 | 0.50 | 0.10 | 0.031 | ( 0.345) | 0.028 | 0.003 |
| 7 | 0.58 | 0.10 | 0.031 | ( 0.344) | 0.028 | 0.003 |
| 8 | 0.67 | 0.10 | 0.031 | ( 0.342) | 0.028 | 0.003 |
| 9 | 0.75 | 0.10 | 0.031 | ( 0.341) | 0.028 | 0.003 |
| 10 | 0.83 | 0.13 | 0.041 | ( 0.340) | 0.037 | 0.004 |
| 11 | 0.92 | 0.13 | 0.041 | ( 0.338) | 0.037 | 0.004 |
| 12 | 1.00 | 0.13 | 0.041 | ( 0.337) | 0.037 | 0.004 |
| 13 | 1.08 | 0.10 | 0.031 | ( 0.336) | 0.028 | 0.003 |
| 14 | 1.17 | 0.10 | 0.031 | ( 0.334) | 0.028 | 0.003 |
| 15 | 1.25 | 0.10 | 0.031 | (0.333) | 0.028 | 0.003 |
| 16 | 1.33 | 0.10 | 0.031 | ( 0.332) | 0.028 | 0.003 |
| 17 | 1.42 | 0.10 | 0.031 | ( 0.330) | 0.028 | 0.003 |
| 18 | 1.50 | 0.10 | 0.031 | ( 0.329) | 0.028 | 0.003 |
| 19 | 1.58 | 0.10 | 0.031 | ( 0.328) | 0.028 | 0.003 |
| 20 | 1.67 | 0.10 | 0.031 | ( 0.326) | 0.028 | 0.003 |
| 21 | 1.75 | 0.10 | 0.031 | $0.325)$ | 0.028 | 0.003 |
| 22 | 1.83 | 0.13 | 0.041 | ( 0.324) | 0.037 | 0.004 |
| 23 | 1.92 | 0.13 | 0.041 | ( 0.322) | 0.037 | 0.004 |
| 24 | 2.00 | 0.13 | 0.041 | ( 0.321) | 0.037 | 0.004 |
| 25 | 2.08 | 0.13 | 0.041 | ( 0.320) | 0.037 | 0.004 |
| 26 | 2.17 | 0.13 | 0.041 | ( 0.318) | 0.037 | 0.004 |
| 27 | 2.25 | 0.13 | 0.041 | ( 0.317) | 0.037 | 0.004 |
| 28 | 2.33 | 0.13 | 0.041 | $0.316)$ | 0.037 | 0.004 |
| 29 | 2.42 | 0.13 | 0.041 | ( 0.315) | 0.037 | 0.004 |
| 30 | 2.50 | 0.13 | 0.041 | ( 0.313) | 0.037 | 0.004 |
| 31 | 2.58 | 0.17 | 0.051 | ( 0.312) | 0.046 | 0.005 |
| 32 | 2.67 | 0.17 | 0.051 | ( 0.311) | 0.046 | 0.005 |
| 33 | 2.75 | 0.17 | 0.051 | ( 0.310) | 0.046 | 0.005 |
| 34 | 2.83 | 0.17 | 0.051 | ( 0.308) | 0.046 | 0.005 |
| 35 | 2.92 | 0.17 | 0.051 | ( 0.307) | 0.046 | 0.005 |
| 36 | 3.00 | 0.17 | 0.051 | ( 0.306) | 0.046 | 0.005 |
| 37 | 3.08 | 0.17 | 0.051 | ( 0.304) | 0.046 | 0.005 |
| 38 | 3.17 | 0.17 | 0.051 | ( 0.303) | 0.046 | 0.005 |
| 39 | 3.25 | 0.17 | 0.051 | ( 0.302) | 0.046 | 0.005 |
| 40 | 3.33 | 0.17 | 0.051 | ( 0.301) | 0.046 | 0.005 |
| 41 | 3.42 | 0.17 | 0.051 | ( 0.299) | 0.046 | 0.005 |
| 42 | 3.50 | 0.17 | 0.051 | ( 0.298) | 0.046 | 0.005 |
| 43 | 3.58 | 0.17 | 0.051 | ( 0.297) | 0.046 | 0.005 |
| 44 | 3.67 | 0.17 | 0.051 | ( 0.296) | 0.046 | 0.005 |
| 45 | 3.75 | 0.17 | 0.051 | ( 0.294) | 0.046 | 0.005 |
| 46 | 3.83 | 0.20 | 0.062 | ( 0.293) | 0.055 | 0.006 |
| 47 | 3.92 | 0.20 | 0.062 | ( 0.292) | 0.055 | 0.006 |
| 48 | 4.00 | 0.20 | 0.062 | ( 0.291) | 0.055 | 0.006 |
| 49 | 4.08 | 0.20 | 0.062 | ( 0.289) | 0.055 | 0.006 |
| 50 | 4.17 | 0.20 | 0.062 | ( 0.288) | 0.055 | 0.006 |
| 51 | 4.25 | 0.20 | 0.062 | ( 0.287) | 0.055 | 0.006 |
| 52 | 4.33 | 0.23 | 0.072 | (0.286) | 0.065 | 0.007 |
| 53 | 4.42 | 0.23 | 0.072 | ( 0.285) | 0.065 | 0.007 |
| 54 | 4.50 | 0.23 | 0.072 | ( 0.283) | 0.065 | 0.007 |
| 55 | 4.58 | 0.23 | 0.072 | ( 0.282) | 0.065 | 0.007 |
| 56 | 4.67 | 0.23 | 0.072 | ( 0.281) | 0.065 | 0.007 |
| 57 | 4.75 | 0.23 | 0.072 | ( 0.280) | 0.065 | 0.007 |


| 58 | 4.83 | 0.27 | 0.082 | $0.278)$ | 0.074 | 0.008 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 59 | 4.92 | 0.27 | 0.082 | $0.277)$ | 0.074 | 0.008 |
| 60 | 5.00 | 0.27 | 0.082 | $0.276)$ | 0.074 | 0.008 |
| 61 | 5.08 | 0.20 | 0.062 | $0.275)$ | 0.055 | 0.006 |
| 62 | 5.17 | 0.20 | 0.062 | $0.274)$ | 0.055 | 0.006 |
| 63 | 5.25 | 0.20 | 0.062 | $0.272)$ | 0.055 | 0.006 |
| 64 | 5.33 | 0.23 | 0.072 | $0.271)$ | 0.065 | 0.007 |
| 65 | 5.42 | 0.23 | 0.072 | $0.270)$ | 0.065 | 0.007 |
| 66 | 5.50 | 0.23 | 0.072 | $0.269)$ | 0.065 | 0.007 |
| 67 | 5.58 | 0.27 | 0.082 | $0.268)$ | 0.074 | 0.008 |
| 68 | 5.67 | 0.27 | 0.082 | $0.267)$ | 0.074 | 0.008 |
| 69 | 5.75 | 0.27 | 0.082 | $0.265)$ | 0.074 | 0.008 |
| 70 | 5.83 | 0.27 | 0.082 | $0.264)$ | 0.074 | 0.008 |
| 71 | 5.92 | 0.27 | 0.082 | $0.263)$ | 0.074 | 0.008 |
| 72 | 6.00 | 0.27 | 0.082 | $0.262)$ | 0.074 | 0.008 |
| 73 | 6.08 | 0.30 | 0.092 | $0.261)$ | 0.083 | 0.009 |
| 74 | 6.17 | 0.30 | 0.092 | 0.260) | 0.083 | 0.009 |
| 75 | 6.25 | 0.30 | 0.092 | 0.258) | 0.083 | 0.009 |
| 76 | 6.33 | 0.30 | 0.092 | 0.257) | 0.083 | 0.009 |
| 77 | 6.42 | 0.30 | 0.092 | $0.256)$ | 0.083 | 0.009 |
| 78 | 6.50 | 0.30 | 0.092 | $0.255)$ | 0.083 | 0.009 |
| 79 | 6.58 | 0.33 | 0.103 | $0.254)$ | 0.092 | 0.010 |
| 80 | 6.67 | 0.33 | 0.103 | $0.253)$ | 0.092 | 0.010 |
| 81 | 6.75 | 0.33 | 0.103 | $0.252)$ | 0.092 | 0.010 |
| 82 | 6.83 | 0.33 | 0.103 | 0.250) | 0.092 | 0.010 |
| 83 | 6.92 | 0.33 | 0.103 | $0.249)$ | 0.092 | 0.010 |
| 84 | 7.00 | 0.33 | 0.103 | $0.248)$ | 0.092 | 0.010 |
| 85 | 7.08 | 0.33 | 0.103 | 0.247) | 0.092 | 0.010 |
| 86 | 7.17 | 0.33 | 0.103 | $0.246)$ | 0.092 | 0.010 |
| 87 | 7.25 | 0.33 | 0.103 | $0.245)$ | 0.092 | 0.010 |
| 88 | 7.33 | 0.37 | 0.113 | $0.244)$ | 0.102 | 0.011 |
| 89 | 7.42 | 0.37 | 0.113 | $0.243)$ | 0.102 | 0.011 |
| 90 | 7.50 | 0.37 | 0.113 | $0.241)$ | 0.102 | 0.011 |
| 91 | 7.58 | 0.40 | 0.123 | $0.240)$ | 0.111 | 0.012 |
| 92 | 7.67 | 0.40 | 0.123 | $0.239)$ | 0.111 | 0.012 |
| 93 | 7.75 | 0.40 | 0.123 | $0.238)$ | 0.111 | 0.012 |
| 94 | 7.83 | 0.43 | 0.133 | 0.237) | 0.120 | 0.013 |
| 95 | 7.92 | 0.43 | 0.133 | $0.236)$ | 0.120 | 0.013 |
| 96 | 8.00 | 0.43 | 0.133 | $0.235)$ | 0.120 | 0.013 |
| 97 | 8.08 | 0.50 | 0.154 | $0.234)$ | 0.138 | 0.015 |
| 98 | 8.17 | 0.50 | 0.154 | $0.233)$ | 0.138 | 0.015 |
| 99 | 8.25 | 0.50 | 0.154 | $0.232)$ | 0.138 | 0.015 |
| 100 | 8.33 | 0.50 | 0.154 | $0.230)$ | 0.138 | 0.015 |
| 101 | 8.42 | 0.50 | 0.154 | $0.229)$ | 0.138 | 0.015 |
| 102 | 8.50 | 0.50 | 0.154 | $0.228)$ | 0.138 | 0.015 |
| 103 | 8.58 | 0.53 | 0.164 | $0.227)$ | 0.148 | 0.016 |
| 104 | 8.67 | 0.53 | 0.164 | $0.226)$ | 0.148 | 0.016 |
| 105 | 8.75 | 0.53 | 0.164 | $0.225)$ | 0.148 | 0.016 |
| 106 | 8.83 | 0.57 | 0.174 | $0.224)$ | 0.157 | 0.017 |
| 107 | 8.92 | 0.57 | 0.174 | $0.223)$ | 0.157 | 0.017 |
| 108 | 9.00 | 0.57 | 0.174 | $0.222)$ | 0.157 | 0.017 |
| 109 | 9.08 | 0.63 | 0.195 | 0.221) | 0.175 | 0.019 |
| 110 | 9.17 | 0.63 | 0.195 | 0.220) | 0.175 | 0.019 |
| 111 | 9.25 | 0.63 | 0.195 | $0.219)$ | 0.175 | 0.019 |
| 112 | 9.33 | 0.67 | 0.205 | $0.218)$ | 0.185 | 0.021 |
| 113 | 9.42 | 0.67 | 0.205 | $0.217)$ | 0.185 | 0.021 |
| 114 | 9.50 | 0.67 | 0.205 | $0.216)$ | 0.185 | 0.021 |
| 115 | 9.58 | 0.70 | 0.215 | $0.215)$ | 0.194 | 0.022 |
| 116 | 9.67 | 0.70 | 0.215 | $0.214)$ | 0.194 | 0.022 |
| 117 | 9.75 | 0.70 | 0.215 | $0.213)$ | 0.194 | 0.022 |


| 118 | 9.83 | 0.73 | 0.226 | $0.212)$ | 0.203 | 0.023 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 119 | 9.92 | 0.73 | 0.226 | 0.211) | 0.203 | 0.023 |
| 120 | 10.00 | 0.73 | 0.226 | 0.210) | 0.203 | 0.023 |
| 121 | 10.08 | 0.50 | 0.154 | 0.208) | 0.138 | 0.015 |
| 122 | 10.17 | 0.50 | 0.154 | 0.207) | 0.138 | 0.015 |
| 123 | 10.25 | 0.50 | 0.154 | $0.206)$ | 0.138 | 0.015 |
| 124 | 10.33 | 0.50 | 0.154 | $0.205)$ | 0.138 | 0.015 |
| 125 | 10.42 | 0.50 | 0.154 | $0.204)$ | 0.138 | 0.015 |
| 126 | 10.50 | 0.50 | 0.154 | 0.203) | 0.138 | 0.015 |
| 127 | 10.58 | 0.67 | 0.205 | $0.202)$ | 0.185 | 0.021 |
| 128 | 10.67 | 0.67 | 0.205 | 0.201) | 0.185 | 0.021 |
| 129 | 10.75 | 0.67 | 0.205 | 0.201) | 0.185 | 0.021 |
| 130 | 10.83 | 0.67 | 0.205 | 0.200) | 0.185 | 0.021 |
| 131 | 10.92 | 0.67 | 0.205 | $0.199)$ | 0.185 | 0.021 |
| 132 | 11.00 | 0.67 | 0.205 | $0.198)$ | 0.185 | 0.021 |
| 133 | 11.08 | 0.63 | 0.195 | 0.197) | 0.175 | 0.019 |
| 134 | 11.17 | 0.63 | 0.195 | $0.196)$ | 0.175 | 0.019 |
| 135 | 11.25 | 0.63 | 0.195 | 0.195) | 0.175 | 0.019 |
| 136 | 11.33 | 0.63 | 0.195 | $0.194)$ | 0.175 | 0.019 |
| 137 | 11.42 | 0.63 | 0.195 | $0.193)$ | 0.175 | 0.019 |
| 138 | 11.50 | 0.63 | 0.195 | $0.192)$ | 0.175 | 0.019 |
| 139 | 11.58 | 0.57 | 0.174 | 0.191) | 0.157 | 0.017 |
| 140 | 11.67 | 0.57 | 0.174 | 0.190) | 0.157 | 0.017 |
| 141 | 11.75 | 0.57 | 0.174 | $0.189)$ | 0.157 | 0.017 |
| 142 | 11.83 | 0.60 | 0.185 | $0.188)$ | 0.166 | 0.018 |
| 143 | 11.92 | 0.60 | 0.185 | $0.187)$ | 0.166 | 0.018 |
| 144 | 12.00 | 0.60 | 0.185 | $0.186)$ | 0.166 | 0.018 |
| 145 | 12.08 | 0.83 | 0.256 | 0.185 | 0.231) | 0.071 |
| 146 | 12.17 | 0.83 | 0.256 | 0.184 | 0.231) | 0.072 |
| 147 | 12.25 | 0.83 | 0.256 | 0.183 | 0.231) | 0.073 |
| 148 | 12.33 | 0.87 | 0.267 | 0.182 | 0.240) | 0.084 |
| 149 | 12.42 | 0.87 | 0.267 | 0.182 | $0.240)$ | 0.085 |
| 150 | 12.50 | 0.87 | 0.267 | 0.181 | 0.240) | 0.086 |
| 151 | 12.58 | 0.93 | 0.287 | 0.180 | $0.259)$ | 0.108 |
| 152 | 12.67 | 0.93 | 0.287 | 0.179 | $0.259)$ | 0.108 |
| 153 | 12.75 | 0.93 | 0.287 | 0.178 | $0.259)$ | 0.109 |
| 154 | 12.83 | 0.97 | 0.298 | 0.177 | 0.268) | 0.121 |
| 155 | 12.92 | 0.97 | 0.298 | 0.176 | 0.268) | 0.121 |
| 156 | 13.00 | 0.97 | 0.298 | 0.175 | $0.268)$ | 0.122 |
| 157 | 13.08 | 1.13 | 0.349 | 0.174 | $0.314)$ | 0.174 |
| 158 | 13.17 | 1.13 | 0.349 | 0.173 | $0.314)$ | 0.175 |
| 159 | 13.25 | 1.13 | 0.349 | 0.173 | $0.314)$ | 0.176 |
| 160 | 13.33 | 1.13 | 0.349 | 0.172 | $0.314)$ | 0.177 |
| 161 | 13.42 | 1.13 | 0.349 | 0.171 | $0.314)$ | 0.178 |
| 162 | 13.50 | 1.13 | 0.349 | 0.170 | $0.314)$ | 0.179 |
| 163 | 13.58 | 0.77 | 0.236 | 0.169 | $0.212)$ | 0.067 |
| 164 | 13.67 | 0.77 | 0.236 | 0.168 | $0.212)$ | 0.068 |
| 165 | 13.75 | 0.77 | 0.236 | 0.167 | $0.212)$ | 0.069 |
| 166 | 13.83 | 0.77 | 0.236 | 0.166 | $0.212)$ | 0.069 |
| 167 | 13.92 | 0.77 | 0.236 | 0.166 | $0.212)$ | 0.070 |
| 168 | 14.00 | 0.77 | 0.236 | 0.165 | $0.212)$ | 0.071 |
| 169 | 14.08 | 0.90 | 0.277 | 0.164 | $0.249)$ | 0.113 |
| 170 | 14.17 | 0.90 | 0.277 | 0.163 | $0.249)$ | 0.114 |
| 171 | 14.25 | 0.90 | 0.277 | 0.162 | $0.249)$ | 0.115 |
| 172 | 14.33 | 0.87 | 0.267 | 0.161 | 0.240) | 0.105 |
| 173 | 14.42 | 0.87 | 0.267 | 0.161 | 0.240) | 0.106 |
| 174 | 14.50 | 0.87 | 0.267 | 0.160 | 0.240) | 0.107 |
| 175 | 14.58 | 0.87 | 0.267 | 0.159 | $0.240)$ | 0.108 |
| 176 | 14.67 | 0.87 | 0.267 | 0.158 | 0.240) | 0.109 |
| 177 | 14.75 | 0.87 | 0.267 | 0.157 | 0.240) | 0.109 |


| 178 | 14.83 | 0.83 | 0.256 | 0.157 | 0.231) | 0.100 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 179 | 14.92 | 0.83 | 0.256 | 0.156 | 0.231) | 0.101 |
| 180 | 15.00 | 0.83 | 0.256 | 0.155 | 0.231) | 0.102 |
| 181 | 15.08 | 0.80 | 0.246 | 0.154 | $0.222)$ | 0.092 |
| 182 | 15.17 | 0.80 | 0.246 | 0.153 | $0.222)$ | 0.093 |
| 183 | 15.25 | 0.80 | 0.246 | 0.153 | $0.222)$ | 0.094 |
| 184 | 15.33 | 0.77 | 0.236 | 0.152 | $0.212)$ | 0.084 |
| 185 | 15.42 | 0.77 | 0.236 | 0.151 | $0.212)$ | 0.085 |
| 186 | 15.50 | 0.77 | 0.236 | 0.150 | $0.212)$ | 0.086 |
| 187 | 15.58 | 0.63 | 0.195 | 0.149 | $0.175)$ | 0.045 |
| 188 | 15.67 | 0.63 | 0.195 | 0.149 | $0.175)$ | 0.046 |
| 189 | 15.75 | 0.63 | 0.195 | 0.148 | $0.175)$ | 0.047 |
| 190 | 15.83 | 0.63 | 0.195 | 0.147 | $0.175)$ | 0.048 |
| 191 | 15.92 | 0.63 | 0.195 | 0.146 | $0.175)$ | 0.048 |
| 192 | 16.00 | 0.63 | 0.195 | 0.146 | $0.175)$ | 0.049 |
| 193 | 16.08 | 0.13 | 0.041 | 0.145) | 0.037 | 0.004 |
| 194 | 16.17 | 0.13 | 0.041 | $0.144)$ | 0.037 | 0.004 |
| 195 | 16.25 | 0.13 | 0.041 | $0.143)$ | 0.037 | 0.004 |
| 196 | 16.33 | 0.13 | 0.041 | $0.143)$ | 0.037 | 0.004 |
| 197 | 16.42 | 0.13 | 0.041 | $0.142)$ | 0.037 | 0.004 |
| 198 | 16.50 | 0.13 | 0.041 | $0.141)$ | 0.037 | 0.004 |
| 199 | 16.58 | 0.10 | 0.031 | $0.141)$ | 0.028 | 0.003 |
| 200 | 16.67 | 0.10 | 0.031 | 0.140) | 0.028 | 0.003 |
| 201 | 16.75 | 0.10 | 0.031 | $0.139)$ | 0.028 | 0.003 |
| 202 | 16.83 | 0.10 | 0.031 | $0.138)$ | 0.028 | 0.003 |
| 203 | 16.92 | 0.10 | 0.031 | 0.138) | 0.028 | 0.003 |
| 204 | 17.00 | 0.10 | 0.031 | $0.137)$ | 0.028 | 0.003 |
| 205 | 17.08 | 0.17 | 0.051 | $0.136)$ | 0.046 | 0.005 |
| 206 | 17.17 | 0.17 | 0.051 | $0.136)$ | 0.046 | 0.005 |
| 207 | 17.25 | 0.17 | 0.051 | 0.135) | 0.046 | 0.005 |
| 208 | 17.33 | 0.17 | 0.051 | $0.134)$ | 0.046 | 0.005 |
| 209 | 17.42 | 0.17 | 0.051 | $0.134)$ | 0.046 | 0.005 |
| 210 | 17.50 | 0.17 | 0.051 | $0.133)$ | 0.046 | 0.005 |
| 211 | 17.58 | 0.17 | 0.051 | 0.132) | 0.046 | 0.005 |
| 212 | 17.67 | 0.17 | 0.051 | $0.132)$ | 0.046 | 0.005 |
| 213 | 17.75 | 0.17 | 0.051 | $0.131)$ | 0.046 | 0.005 |
| 214 | 17.83 | 0.13 | 0.041 | 0.130) | 0.037 | 0.004 |
| 215 | 17.92 | 0.13 | 0.041 | 0.130) | 0.037 | 0.004 |
| 216 | 18.00 | 0.13 | 0.041 | $0.129)$ | 0.037 | 0.004 |
| 217 | 18.08 | 0.13 | 0.041 | $0.128)$ | 0.037 | 0.004 |
| 218 | 18.17 | 0.13 | 0.041 | 0.128) | 0.037 | 0.004 |
| 219 | 18.25 | 0.13 | 0.041 | $0.127)$ | 0.037 | 0.004 |
| 220 | 18.33 | 0.13 | 0.041 | $0.127)$ | 0.037 | 0.004 |
| 221 | 18.42 | 0.13 | 0.041 | $0.126)$ | 0.037 | 0.004 |
| 222 | 18.50 | 0.13 | 0.041 | 0.125) | 0.037 | 0.004 |
| 223 | 18.58 | 0.10 | 0.031 | $0.125)$ | 0.028 | 0.003 |
| 224 | 18.67 | 0.10 | 0.031 | $0.124)$ | 0.028 | 0.003 |
| 225 | 18.75 | 0.10 | 0.031 | $0.124)$ | 0.028 | 0.003 |
| 226 | 18.83 | 0.07 | 0.021 | $0.123)$ | 0.018 | 0.002 |
| 227 | 18.92 | 0.07 | 0.021 | $0.122)$ | 0.018 | 0.002 |
| 228 | 19.00 | 0.07 | 0.021 | $0.122)$ | 0.018 | 0.002 |
| 229 | 19.08 | 0.10 | 0.031 | 0.121) | 0.028 | 0.003 |
| 230 | 19.17 | 0.10 | 0.031 | 0.121) | 0.028 | 0.003 |
| 231 | 19.25 | 0.10 | 0.031 | 0.120) | 0.028 | 0.003 |
| 232 | 19.33 | 0.13 | 0.041 | 0.119) | 0.037 | 0.004 |
| 233 | 19.42 | 0.13 | 0.041 | $0.119)$ | 0.037 | 0.004 |
| 234 | 19.50 | 0.13 | 0.041 | 0.118) | 0.037 | 0.004 |
| 235 | 19.58 | 0.10 | 0.031 | 0.118) | 0.028 | 0.003 |
| 236 | 19.67 | 0.10 | 0.031 | 0.117) | 0.028 | 0.003 |
| 237 | 19.75 | 0.10 | 0.031 | $0.117)$ | 0.028 | 0.003 |


0.993 (CFS)

$\begin{array}{llllll}\text { Time (h+m) Volume Ac.Ft } & \text { Q(CFS) } 0 & 2.5 & 5.0 & 7.5\end{array}$ 10.0
---------------------------------------------------------------------------I

| $0+5$ | 0.0000 | 0.00 | Q \| | |
| :--- | :--- | :--- | :--- | :--- | :--- |


| $1+50$ | 0.0025 | 0.02 | $Q$ |
| :--- | :--- | :--- | :--- |
| $1+55$ | 0.0027 | 0.02 | $Q$ |
| $2+0$ | 0.0028 | 0.02 | $Q$ |
| $2+5$ | 0.0030 | 0.02 | $Q$ |
| $2+10$ | 0.0031 | 0.02 | $Q$ |
| $2+15$ | 0.0033 | 0.02 | $Q$ |
| $2+20$ | 0.0035 | 0.02 | $Q$ |


| $4+20$ | 0.0083 | 0.04 | QV |
| :--- | :--- | :--- | :--- |
| $4+25$ | 0.0086 | 0.04 | QV |
| $4+30$ | 0.0089 | 0.04 | QV |
| $4+35$ | 0.0091 | 0.04 | QV |
| $4+40$ | 0.0094 | 0.04 | QV |
| $4+45$ | 0.0097 | 0.04 | QV |
| $4+50$ | 0.0100 | 0.04 | QV |
| $4+55$ | 0.0103 | 0.04 | QV |


| 6+50 | 0.0177 | 0.06 | Q | $\checkmark$ | \| | I |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+55 | 0.0181 | 0.06 | Q | $\checkmark$ | \| | , |
| 7+ 0 | 0.0185 | 0.06 | Q | $\checkmark$ | 1 | 1 |
| 7+ 5 | 0.0189 | 0.06 | Q | $\checkmark$ | 1 | 1 |
| 7+10 | 0.0192 | 0.06 | Q | $v$ | 1 | 1 |
| 7+15 | 0.0196 | 0.06 | Q | $v$ | 1 | 1 |
| 7+20 | 0.0200 | 0.06 | Q | $v$ | \| | 1 |
| 7+25 | 0.0205 | 0.06 | Q | $v$ | \| | 1 |
| 7+30 | 0.0209 | 0.06 | Q | v | \| | \| |
| 7+35 | 0.0214 | 0.06 | Q | v | I | 1 |
| 7+40 | 0.0218 | 0.07 | Q | $v$ | 1 | 1 |
| 7+45 | 0.0223 | 0.07 | Q | $v$ | \| | 1 |
| 7+50 | 0.0228 | 0.07 | Q | v | I | 1 |
| 7+55 | 0.0233 | 0.07 | Q | v | I | 1 |
| $8+0$ | 0.0238 | 0.07 | Q | $v$ | 1 | 1 |
| $8+5$ | 0.0243 | 0.08 | Q | $v$ | 1 | 1 |
| 8+10 | 0.0249 | 0.08 | Q | V | 1 | 1 |
| $8+15$ | 0.0255 | 0.09 | Q | v | I | 1 |
| $8+20$ | 0.0261 | 0.09 | Q | v | 1 | 1 |
| $8+25$ | 0.0267 | 0.09 | Q | v | 1 | 1 |
| 8+30 | 0.0273 | 0.09 | Q | v | \| | 1 |
| 8+35 | 0.0279 | 0.09 | Q | V | 1 | I |
| $8+40$ | 0.0285 | 0.09 | Q | v | 1 | 1 |
| 8+45 | 0.0291 | 0.09 | Q | v | \| | 1 |
| $8+50$ | 0.0298 | 0.09 | Q | v | \| | 1 |
| $8+55$ | 0.0304 | 0.10 | Q | v | 1 | 1 |
| 9+ 0 | 0.0311 | 0.10 | Q | V | 1 | 1 |
| 9+ 5 | 0.0318 | 0.10 | Q | v | \| | 1 |
| 9+10 | 0.0325 | 0.11 | Q | v | 1 | 1 |
| 9+15 | 0.0333 | 0.11 | Q | v | \| | 1 |


| $9+20$ | 0.0341 | 0.11 | Q | v | I |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+25 | 0.0348 | 0.11 | Q | V | \| | \| |
| 9+30 | 0.0356 | 0.11 | Q | V | \| | \| |
| 9+35 | 0.0364 | 0.12 | Q | v | \| | \| |
| $9+40$ | 0.0372 | 0.12 | Q | v | \| | \| |
| $9+45$ | 0.0381 | 0.12 | Q | V | \| | \| |
| 9+50 | 0.0389 | 0.12 | Q | V | \| | \| |
| 9+55 | 0.0398 | 0.13 | Q | v | \| | \| |
| 10+ 0 | 0.0406 | 0.13 | Q | v | \| | \| |
| 10+ 5 | 0.0414 | 0.11 | Q | v | \| | \| |
| 10+10 | 0.0420 | 0.09 | Q | v | \| | \| |
| 10+15 | 0.0426 | 0.09 | Q | v | \| | \| |
| 10+20 | 0.0432 | 0.09 | Q | v | \| | \| |
| 10+25 | 0.0438 | 0.09 | Q | v | \| | \| |
| 10+30 | 0.0444 | 0.09 | Q | V | \| | \| |
| 10+35 | 0.0451 | 0.10 | Q | V | \| | \| |
| 10+40 | 0.0458 | 0.11 | Q | v | \| | \| |
| 10+45 | 0.0466 | 0.11 | Q | V | \| | \| |
| 10+50 | 0.0474 | 0.11 | Q | V | \| | \| |
| 10+55 | 0.0482 | 0.11 | Q | V | \| | \| |
| 11+ 0 | 0.0490 | 0.11 | Q | V | I | \| |
| 11+ 5 | 0.0498 | 0.11 | Q | V | 1 | \| |
| 11+10 | 0.0505 | 0.11 | Q |  | $\checkmark 1$ | \| |
| 11+15 | 0.0513 | 0.11 | Q |  | $\checkmark 1$ | \| |
| 11+20 | 0.0520 | 0.11 | Q |  | $\checkmark 1$ | \| |
| 11+25 | 0.0528 | 0.11 | Q |  | $\checkmark 1$ | \| |
| 11+30 | 0.0535 | 0.11 | Q |  | $\checkmark 1$ | \| |
| 11+35 | 0.0542 | 0.10 | Q |  | $\checkmark 1$ | \| |
| 11+40 | 0.0549 | 0.10 | Q |  | $\checkmark 1$ | \| |
| 11+45 | 0.0556 | 0.10 | Q |  | $\checkmark 1$ | \| |


| 11+50 | 0.0563 | 0.10 | Q | v \\| |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 11+55 | 0.0570 | 0.10 | Q | v\| | \| |
| 12+ 0 | 0.0577 | 0.10 | Q | V\| | \| |
| 12+ 5 | 0.0590 | 0.20 | Q | v\| | \| |
| 12+10 | 0.0615 | 0.36 | IQ | v 1 | \| |
| 12+15 | 0.0642 | 0.40 | IQ | v | \| |
| 12+20 | 0.0672 | 0.43 | IQ | V | \| |
| 12+25 | 0.0704 | 0.46 | IQ | IV | \| |
| 12+30 | 0.0736 | 0.47 | IQ | IV | \| |
| 12+35 | 0.0772 | 0.52 | \| Q | 1 V |  |
| $12+40$ | 0.0812 | 0.58 | 10 | 1 V |  |

$12+45$
$12+50$
$12+55$
|
$13+0$
$13+5$
|
$13+10$
|
$13+15$
|
13+20
$13+25$
|
13+30
13+35
|
13+40
$13+45$
|
13+50
$13+55$
14+ 0
|
14+ 5
$14+10$
|
$14+15$

| 14+20 | 0.1732 | 0.62 | Q | 1 | \| | $\vee 1$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 14+25 | 0.1773 | 0.60 | \\| Q | 1 | \| | v I |
| 14+30 | 0.1814 | 0.59 | \\| Q | \| | \| | v 1 |
| 14+35 | 0.1855 | 0.60 | \\| Q | 1 | \| | v |
| 14+40 | 0.1896 | 0.60 | \\| Q | । | \\| | v |
| 14+45 | 0.1938 | 0.61 | \| Q | \| | \| | v |

$$
0.59 \text { । Q }
$$

$$
2018
$$

$$
0.57 \quad \text { Q }
$$

$$
15+0
$$

|
0.56 । Q
1
1
1
1
1
1
|
$15+30$
0.2267
0.55 | Q
0.52 | Q

$15+20$
$15+25$
$15+30$
$15+35$
0.2294
$15+40$
0.2314
0.52 | Q
0.50 | Q
0.48 IQ
0.48 lQ
0.40 IQ
$15+45$
|
$15+50$
0.2332

0

| 16+50 | 0.2417 | 0.02 | Q | \| | \| | \| | v |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 16+55 | 0.2418 | 0.02 | Q | \| | \| | \| | v |  |
| 17+ 0 | 0.2419 | 0.02 | Q | \| | \| | \| | v |  |
| 17+ 5 | 0.2420 | 0.02 | Q | \| | \| | \| | v |  |
| 17+10 | 0.2422 | 0.03 | Q | \| | \| | \| | v |  |
| 17+15 | 0.2424 | 0.03 | Q | \| | \| | \| | v |  |
| 17+20 | 0.2426 | 0.03 | Q | \| | \| | \| | V |  |
| 17+25 | 0.2428 | 0.03 | Q | \| | \| | \| | v |  |
| 17+30 | 0.2430 | 0.03 | Q | \| | \| | \| | v | \% |
| 17+35 | 0.2432 | 0.03 | Q | \| | \| | \| | V | - |
| 17+40 | 0.2434 | 0.03 | Q | \| | \| | \| | V | $\stackrel{\square}{6}$ |
| 17+45 | 0.2436 | 0.03 | Q | \| | \| | \| | v | - |
| 17+50 | 0.2438 | 0.03 | Q | \| | \| | \| | v | 入 |
| 17+55 | 0.2439 | 0.02 | Q | \| | \| | \| | v | $\stackrel{0}{0}$ |
| 18+ 0 | 0.2441 | 0.02 | Q | \| | \| | \| | v |  |
| 18+ 5 | 0.2443 | 0.02 | Q | \| | \| | \| | v | ¢ |
| 18+10 | 0.2444 | 0.02 | Q | \| | \| | \| | V | + |
| 18+15 | 0.2446 | 0.02 | Q | \| | \| | \| | V | ¢ |
| 18+20 | 0.2447 | 0.02 | Q | \| | \| | \| | V | \% |
| 18+25 | 0.2449 | 0.02 | Q | - | \| | \| | v | $\stackrel{8}{8}$ |
| 18+30 | 0.2451 | 0.02 | Q | \| | \| | \| | V | $\stackrel{1}{0}$ |
| 18+35 | 0.2452 | 0.02 | Q | \| | \| | \| | V | $\stackrel{5}{0}$ |
| 18+40 | 0.2453 | 0.02 | Q | \| | \| | \| | V | ¢ |
| 18+45 | 0.2454 | 0.02 | Q | - | \| | I |  |  |
| 18+50 | 0.2455 | 0.02 | Q | । | । | । |  |  |
|  |  |  |  |  |  |  |  |  |
| 18+55 | 0.2456 | 0.01 | Q | \| | \| | \| |  |  |
| 19+ 0 | 0.2457 | 0.01 | Q | \| | \| | \| |  |  |
| 19+ 5 | 0.2458 | 0.01 | Q | , | , | । |  |  |
| 19+10 | 0. 2459 | 0.02 | Q | , | , | , |  |  |
|  |  |  |  |  |  |  |  |  |
| 19+15 | 0.2460 | 0.02 | Q | \| | \| | \| |  |  |





$$
\begin{aligned}
& \text { Copyright (c) CIVILCADD/CIVILDESIGN, 1989- 2012, Version 8.2 } \\
& \text { Study date 02/19/21 File: moval } 33 \text { prea2410. out }
\end{aligned}
$$



```
Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978
Program License Serial Number 6232
    English (in-lb) Input Units Used
    English Rainfal| Data (Inches) Input Values Used
    English Units used in output format
Gateway Heights
Existing Condition
Unit Hydrograph Runoff
Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
Length along longest watercourse= 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00(Ft.)
Length along ongest watercourse = 0.161 Mi
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in el evation= 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./ Mi.
Average Manning's 'N'=0.040
Lag time = 0.053 Hr.
Lag time= 3.17 Mi n
25% of lag time= 0.79 Min.
40% of |ag time= 1.27 Min.
Unit time= 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow= 0.00(CFS)
2 YEAR Area rainfal| data:
\begin{tabular}{|c|c|c|}
\hline Area(Ac.) [1] & Rainfall(1n)[2] & Weighting[ \(1 * 2]\) \\
\hline 5. 53 & 1.93 & 10.67 \\
\hline
\end{tabular}
100 YEAR Area rainfall data:
Area(AC.)[1] [.53 Rainfall(lln)[2] (a)
STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall= 4.640(In)
                                    Page 1
```

$0.009 \mathrm{Sq}$.Mi .
moval 33 prea 2410

```
Point rain (area averaged) = 3.045(ln)
Areal adjustment factor = 100.00 %
Adjusted average point rain= 3.045(In)
Sub-Area Data:
Area(AC.) Runoff Index Impervious %
    5.530 84.00 0.000
    Total Area Entered = 5.53(Ac.)
```


Area averaged mean soil loss (F) (In/Hr)=0.198
Minimum soil loss rate ((ln/Hr))=0.09g
(for 24 hour storm duration)
Soil low loss rate (decimal) $=0.900$
.-..........................................................................................
Unit Hydror graph
FOOTHILL S-Curve

Unit time period Time \% of lag Distribution Unit Hydrograph
(hrs) Graph\% (CFS)

| 1 | 0.083 | 157.948 | 32.675 |  | 1.821 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 0.167 | 315.896 | 53.715 |  | 2.994 |
| 3 | 0.250 | 473.844 | 10.920 |  | 0.609 |
| 4 | 0.333 | 631.792 | 2.028 |  | 0.113 |
| 5 | 0.417 | 789.740 | 0.662 |  | 0.037 |
|  |  |  | Sum = 100.000 | Sum= | 5. 573 |

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximumeffective Rain value


| 21 | 1.75 | 0.10 | 0.037 | moval $\begin{gathered}33 \mathrm{prea} 2410 \\ 0.325)\end{gathered}$ | 0.033 | 0.004 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 22 | 1.83 | 0.13 | 0.049 | ( 0.324) | 0.044 | 0.005 |
| 23 | 1. 92 | 0.13 | 0.049 | $0.322)$ | 0.044 | 0.005 |
| 24 | 2.00 | 0.13 | 0.049 | $0.321)$ | 0.044 | 0.005 |
| 25 | 2.08 | 0.13 | 0.049 | $0.320)$ | 0.044 | 0.005 |
| 26 | 2. 17 | 0.13 | 0.049 | $0.318)$ | 0.044 | 0.005 |
| 27 | 2. 25 | 0.13 | 0.049 | $0.317)$ | 0.044 | 0.005 |
| 28 | 2. 33 | 0.13 | 0.049 | $0.316)$ | 0.044 | 0.005 |
| 29 | 2.42 | 0.13 | 0.049 | $0.315)$ | 0.044 | 0.005 |
| 30 | 2.50 | 0.13 | 0.049 | $0.313)$ | 0.044 | 0.005 |
| 31 | 2. 58 | 0.17 | 0.061 | $0.312)$ | 0.055 | 0.006 |
| 32 | 2.67 | 0.17 | 0.061 | $0.311)$ | 0.055 | 0.006 |
| 33 | 2.75 | 0.17 | 0.061 | $0.310)$ | 0.055 | 0.006 |
| 34 | 2.83 | 0.17 | 0.061 | $0.308)$ | 0.055 | 0.006 |
| 35 | 2.92 | 0.17 | 0.061 | $0.307)$ | 0.055 | 0.006 |
| 36 | 3.00 | 0.17 | 0.061 | 0.3061 | 0.055 | 0.006 |
| 37 | 3.08 | 0.17 | 0.061 | $0.304)$ | 0.055 | 0.006 |
| 38 | 3.17 | 0.17 | 0.061 | $0.303)$ | 0.055 | 0.006 |
| 39 | 3. 25 | 0.17 | 0.061 | 0.3021 | 0.055 | 0.006 |
| 40 | 3. 33 | 0.17 | 0.061 | $0.301)$ | 0.055 | 0.006 |
| 41 | 3.42 | 0.17 | 0.061 | $0.299)$ | 0.055 | 0.006 |
| 42 | 3.50 | 0.17 | 0.061 | 0.2981 | 0.055 | 0.006 |
| 43 | 3.58 | 0.17 | 0.061 | $0.297)$ | 0.055 | 0.006 |
| 44 | 3.67 | 0.17 | 0.061 | 0.2961 | 0.055 | 0.006 |
| 45 | 3.75 | 0.17 | 0.061 | $0.294)$ | 0.055 | 0.006 |
| 46 | 3.83 | 0.20 | 0.073 | 0.2931 | 0.066 | 0.007 |
| 47 | 3.92 | 0.20 | 0.073 | $0.292)$ | 0.066 | 0.007 |
| 48 | 4.00 | 0.20 | 0.073 | $0.291)$ | 0.066 | 0.007 |
| 49 | 4.08 | 0.20 | 0.073 | $0.289)$ | 0.066 | 0.007 |
| 50 | 4.17 | 0.20 | 0.073 | $0.288)$ | 0.066 | 0.007 |
| 51 | 4. 25 | 0.20 | 0.073 | $0.287)$ | 0.066 | 0.007 |
| 52 | 4.33 | 0.23 | 0.085 | 0.2861 | 0.077 | 0.009 |
| 53 | 4.42 | 0.23 | 0.085 | $0.285)$ | 0.077 | 0.009 |
| 54 | 4. 50 | 0.23 | 0.085 | 0.2831 | 0.077 | 0.009 |
| 55 | 4. 58 | 0.23 | 0.085 | $0.282)$ | 0.077 | 0.009 |
| 56 | 4.67 | 0.23 | 0.085 | $0.281)$ | 0.077 | 0.009 |
| 57 | 4.75 | 0.23 | 0.085 | $0.280)$ | 0.077 | 0.009 |
| 58 | 4.83 | 0.27 | 0.097 | 0.2781 | 0.088 | 0.010 |
| 59 | 4.92 | 0.27 | 0.097 | $0.277)$ | 0.088 | 0.010 |
| 60 | 5.00 | 0.27 | 0.097 | 0.2761 | 0.088 | 0.010 |
| 61 | 5.08 | 0.20 | 0.073 | 0.2751 | 0.066 | 0.007 |
| 62 | 5.17 | 0.20 | 0.073 | 0.274 ) | 0.066 | 0.007 |
| 63 | 5.25 | 0.20 | 0.073 | 0.2721 | 0.066 | 0.007 |
| 64 | 5.33 | 0.23 | 0.085 | $0.271)$ | 0.077 | 0.009 |
| 65 | 5.42 | 0.23 | 0.085 | 0.2701 | 0.077 | 0.009 |
| 66 | 5.50 | 0.23 | 0.085 | $0.269)$ | 0.077 | 0.009 |
| 67 | 5. 58 | 0.27 | 0.097 | $0.268)$ | 0.088 | 0.010 |
| 68 | 5.67 | 0.27 | 0.097 | $0.267)$ | 0.088 | 0.010 |
| 69 | 5.75 | 0.27 | 0.097 | $0.265)$ | 0.088 | 0.010 |
| 70 | 5.83 | 0.27 | 0.097 | $0.264)$ | 0.088 | 0.010 |
| 71 | 5.92 | 0.27 | 0.097 | $0.263)$ | 0.088 | 0.010 |
| 72 | 6.00 | 0.27 | 0.097 | $0.262)$ | 0.088 | 0.010 |
| 73 | 6.08 | 0.30 | 0.110 | $0.261)$ | 0.099 | 0.011 |
| 74 | 6.17 | 0.30 | 0.110 | $0.260)$ | 0.099 | 0.011 |
| 75 | 6. 25 | 0.30 | 0.110 | 0.2581 | 0.099 | 0.011 |
| 76 | 6.33 | 0.30 | 0.1110 | $0.257)$ | 0.099 | 0.011 |
| 77 | 6.42 | 0.30 | 0.110 | 0.2561 | 0.099 | 0.011 |
| 78 | 6.50 | 0.30 | 0.110 | 0.2551 | 0.099 | 0.011 |
| 79 | 6. 58 | 0.33 | 0.122 | $0.254)$ | 0.110 | 0.012 |
| 80 | 6.67 | 0.33 | 0.122 | $0.253)$ | 0.110 | 0.012 |
| 81 | 6.75 | 0.33 | 0.122 | $0.252)$ | 0.110 | 0.012 |
| 82 | 6.83 | 0.33 | 0.122 | 0.2501 | 0.110 | 0.012 |
| 83 | 6.92 | 0.33 | 0.122 | 0.249) | 0.110 | 0.012 |
|  |  |  |  | Page 3 |  |  |


| 84 | 7.00 | 0.33 | 0.122 | $\begin{gathered} \text { moval } 33 \text { preat } 410 \\ (0.248) \end{gathered}$ | 0.110 | 0.012 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 85 | 7.08 | 0.33 | 0.122 | 0.247) | 0.110 | 0.012 |
| 86 | 7. 17 | 0.33 | 0.122 | $0.246)$ | 0.110 | 0.012 |
| 87 | 7.25 | 0.33 | 0.122 | $0.245)$ | 0.110 | 0.012 |
| 88 | 7.33 | 0.37 | 0.134 | 0.244 ) | 0.121 | 0.013 |
| 89 | 7.42 | 0.37 | 0.134 | 0.2431 | 0.121 | 0.013 |
| 90 | 7.50 | 0.37 | 0.134 | $0.241)$ | 0.121 | 0.013 |
| 91 | 7. 58 | 0.40 | 0.146 | $0.240)$ | 0.132 | 0.015 |
| 92 | 7.67 | 0.40 | 0.146 | 0.2391 | 0.132 | 0.015 |
| 93 | 7.75 | 0.40 | 0.146 | 0.2381 | 0.132 | 0.015 |
| 94 | 7.83 | 0.43 | 0.158 | $0.237)$ | 0.143 | 0.016 |
| 95 | 7.92 | 0.43 | 0.158 | 0.2361 | 0.143 | 0.016 |
| 96 | 8.00 | 0.43 | 0.158 | $0.235)$ | 0.143 | 0.016 |
| 97 | 8.08 | 0.50 | 0.183 | $0.234)$ | 0.164 | 0.018 |
| 98 | 8.17 | 0.50 | 0.183 | 0.2331 | 0.164 | 0.018 |
| 99 | 8.25 | 0.50 | 0.183 | $0.232)$ | 0.164 | 0.018 |
| 100 | 8.33 | 0.50 | 0.183 | 0.2301 | 0.164 | 0.018 |
| 101 | 8.42 | 0.50 | 0.183 | $0.229)$ | 0.164 | 0.018 |
| 102 | 8.50 | 0.50 | 0.183 | 0.2281 | 0.164 | 0.018 |
| 103 | 8. 58 | 0.53 | 0.195 | 0.227 ) | 0.175 | 0.019 |
| 104 | 8.67 | 0. 53 | 0.195 | 0.2261 | 0.175 | 0.019 |
| 105 | 8.75 | 0.53 | 0.195 | $0.225)$ | 0.175 | 0.019 |
| 106 | 8.83 | 0.57 | 0.207 | $0.224)$ | 0.186 | 0.021 |
| 107 | 8.92 | 0.57 | 0.207 | 0.2231 | 0.186 | 0.021 |
| 108 | 9.00 | 0.57 | 0.207 | 0.2221 | 0.186 | 0.021 |
| 109 | 9.08 | 0.63 | 0.231 | $0.221)$ | 0.208 | 0.023 |
| 110 | 9. 17 | 0.63 | 0.231 | $0.220)$ | 0.208 | 0.023 |
| 111 | 9.25 | 0.63 | 0.231 | $0.219)$ | 0.208 | 0.023 |
| 112 | 9.33 | 0.67 | 0.244 | 0.218 | 0.2191 | 0.026 |
| 113 | 9.42 | 0.67 | 0.244 | 0.217 | $0.219)$ | 0.027 |
| 114 | 9. 50 | 0.67 | 0.244 | 0.216 | $0.219)$ | 0.028 |
| 115 | 9. 58 | 0.70 | 0.256 | 0.215 | 0.2301 | 0.041 |
| 116 | 9.67 | 0.70 | 0.256 | 0.214 | 0.2301 | 0.042 |
| 117 | 9.75 | 0.70 | 0.256 | 0.213 | 0.2301 | 0.043 |
| 118 | 9.83 | 0.73 | 0.268 | 0.212 | $0.241)$ | 0.056 |
| 119 | 9.92 | 0.73 | 0.268 | 0.211 | $0.241)$ | 0.057 |
| 120 | 10.00 | 0.73 | 0.268 | 0.210 | $0.241)$ | 0.058 |
| 121 | 10.08 | 0.50 | 0.183 | 0.2081 | 0.164 | 0.018 |
| 122 | 10.17 | 0.50 | 0.183 | $0.207)$ | 0.164 | 0.018 |
| 123 | 10.25 | 0.50 | 0.183 | 0.2061 | 0.164 | 0.018 |
| 124 | 10.33 | 0.50 | 0.183 | 0.2051 | 0.164 | 0.018 |
| 125 | 10.42 | 0.50 | 0.183 | $0.204)$ | 0.164 | 0.018 |
| 126 | 10.50 | 0.50 | 0.183 | 0.2031 | 0.164 | 0.018 |
| 127 | 10.58 | 0.67 | 0.244 | 0.202 | $0.219)$ | 0.041 |
| 128 | 10.67 | 0.67 | 0.244 | 0.201 | $0.219)$ | 0.042 |
| 129 | 10.75 | 0.67 | 0.244 | 0.201 | $0.219)$ | 0.043 |
| 130 | 10.83 | 0.67 | 0.244 | 0.200 | $0.219)$ | 0.044 |
| 131 | 10.92 | 0.67 | 0.244 | 0.199 | $0.219)$ | 0.045 |
| 132 | 11.00 | 0.67 | 0.244 | 0.198 | $0.219)$ | 0.046 |
| 133 | 11.08 | 0.63 | 0.231 | 0.197 | $0.208)$ | 0.035 |
| 134 | 11.17 | 0.63 | 0.231 | 0.196 | 0.2081 | 0.036 |
| 135 | 11. 25 | 0.63 | 0.231 | 0.195 | $0.208)$ | 0.037 |
| 136 | 11. 33 | 0.63 | 0.231 | 0.194 | $0.208)$ | 0.038 |
| 137 | 11.42 | 0.63 | 0.231 | 0.193 | $0.208)$ | 0.039 |
| 138 | 11.50 | 0.63 | 0.231 | 0.192 | $0.208)$ | 0.040 |
| 139 | 11.58 | 0.57 | 0.207 | 0.191) | 0.186 | 0.021 |
| 140 | 11.67 | 0.57 | 0.207 | $0.190)$ | 0.186 | 0.021 |
| 141 | 11.75 | 0.57 | 0.207 | 0.189) | 0.186 | 0.021 |
| 142 | 11.83 | 0.60 | 0.219 | 0.188 | $0.197)$ | 0.031 |
| 143 | 11.92 | 0.60 | 0.219 | 0.187 | $0.197)$ | 0.032 |
| 144 | 12.00 | 0.60 | 0.219 | 0.186 | 0.197) | 0.033 |
| 145 | 12.08 | 0.83 | 0.304 | 0.185 | 0.274 ) | 0.119 |
| 146 | 12.17 | 0.83 | 0.304 | 0.184 | $0.274)$ | 0.120 |
|  |  |  |  | Page 4 |  |  |


| 147 | 12. 25 | 0.83 | 0.304 | $\begin{gathered} \text { moval } 33 \text { preatalo } \\ 0.183 \end{gathered}$ | 0.2741 | 0.121 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 148 | 12.33 | 0.87 | 0.317 | 0.182 | $0.285)$ | 0.134 |
| 149 | 12.42 | 0.87 | 0.317 | 0.182 | $0.285)$ | 0.135 |
| 150 | 12.50 | 0.87 | 0.317 | 0.181 | $0.285)$ | 0.136 |
| 151 | 12.58 | 0.93 | 0.341 | 0.180 | 0.3071 | 0.161 |
| 152 | 12.67 | 0.93 | 0.341 | 0.179 | $0.307)$ | 0.162 |
| 153 | 12.75 | 0.93 | 0.341 | 0.178 | 0.307 ) | 0.163 |
| 154 | 12.83 | 0.97 | 0.353 | 0.177 | $0.318)$ | 0.176 |
| 155 | 12.92 | 0.97 | 0.353 | 0.176 | $0.318)$ | 0.177 |
| 156 | 13.00 | 0.97 | 0.353 | 0.175 | $0.318)$ | 0.178 |
| 157 | 13.08 | 1.13 | 0.414 | 0.174 | 0.3731 | 0.240 |
| 158 | 13.17 | 1. 13 | 0.414 | 0.173 | 0.3731 | 0.241 |
| 159 | 13. 25 | 1. 13 | 0.414 | 0.173 | 0.3731 | 0.242 |
| 160 | 13.33 | 1.13 | 0.414 | 0.172 | 0.3731 | 0.242 |
| 161 | 13.42 | 1. 13 | 0.414 | 0.171 | 0.3731 | 0.243 |
| 162 | 13.50 | 1.13 | 0.414 | 0.170 | 0.3731 | 0.244 |
| 163 | 13.58 | 0.77 | 0.280 | 0.169 | $0.252)$ | 0.111 |
| 164 | 13.67 | 0.77 | 0.280 | 0.168 | $0.252)$ | 0.112 |
| 165 | 13.75 | 0.77 | 0.280 | 0.167 | 0.252) | 0.113 |
| 166 | 13.83 | 0.77 | 0.280 | 0.166 | $0.252)$ | 0.114 |
| 167 | 13.92 | 0.77 | 0.280 | 0.166 | 0.252) | 0.114 |
| 168 | 14.00 | 0.77 | 0.280 | 0.165 | $0.252)$ | 0.115 |
| 169 | 14.08 | 0.90 | 0.329 | 0.164 | 0.2961 | 0.165 |
| 170 | 14.17 | 0.90 | 0.329 | 0.163 | 0.2961 | 0.166 |
| 171 | 14. 25 | 0.90 | 0.329 | 0.162 | 0.2961 | 0.167 |
| 172 | 14.33 | 0.87 | 0.317 | 0.161 | 0.285) | 0.155 |
| 173 | 14.42 | 0.87 | 0.317 | 0.161 | $0.285)$ | 0.156 |
| 174 | 14. 50 | 0.87 | 0.317 | 0.160 | $0.285)$ | 0.157 |
| 175 | 14.58 | 0.87 | 0.317 | 0.159 | 0.285) | 0.158 |
| 176 | 14.67 | 0.87 | 0.317 | 0.158 | 0.285) | 0.158 |
| 177 | 14.75 | 0.87 | 0.317 | 0.157 | $0.285)$ | 0.159 |
| 178 | 14.83 | 0.83 | 0.304 | 0.157 | $0.274)$ | 0.148 |
| 179 | 14.92 | 0.83 | 0.304 | 0.156 | $0.274)$ | 0.149 |
| 180 | 15.00 | 0.83 | 0.304 | 0.155 | 0.274 ) | 0.150 |
| 181 | 15.08 | 0.80 | 0.292 | 0.154 | 0.2631 | 0.138 |
| 182 | 15.17 | 0.80 | 0.292 | 0.153 | 0.2631 | 0.139 |
| 183 | 15. 25 | 0.80 | 0.292 | 0.153 | 0.263) | 0.140 |
| 184 | 15.33 | 0.77 | 0.280 | 0.152 | 0.252) | 0.128 |
| 185 | 15.42 | 0.77 | 0.280 | 0.151 | $0.252)$ | 0.129 |
| 186 | 15.50 | 0.77 | 0.280 | 0.150 | 0.252) | 0.130 |
| 187 | 15.58 | 0.63 | 0.231 | 0.149 | $0.208)$ | 0.082 |
| 188 | 15.67 | 0.63 | 0.231 | 0.149 | $0.208)$ | 0.083 |
| 189 | 15.75 | 0.63 | 0.231 | 0.148 | 0.2081 | 0.083 |
| 190 | 15.83 | 0.63 | 0.231 | 0.147 | $0.208)$ | 0. 084 |
| 191 | 15.92 | 0.63 | 0.231 | 0.146 | $0.208)$ | 0.085 |
| 192 | 16.00 | 0.63 | 0.231 | 0.146 | 0.2081 | 0.086 |
| 193 | 16. 08 | 0.13 | 0.049 | $0.145)$ | 0.044 | 0.005 |
| 194 | 16.17 | 0.13 | 0.049 | 0.144 ) | 0.044 | 0.005 |
| 195 | 16. 25 | 0.13 | 0.049 | $0.143)$ | 0.044 | 0.005 |
| 196 | 16.33 | 0.13 | 0.049 | $0.143)$ | 0.044 | 0.005 |
| 197 | 16.42 | 0.13 | 0.049 | $0.142)$ | 0.044 | 0.005 |
| 198 | 16. 50 | 0.13 | 0.049 | $0.141)$ | 0.044 | 0.005 |
| 199 | 16.58 | 0.10 | 0.037 | $0.141)$ | 0.033 | 0.004 |
| 200 | 16.67 | 0.10 | 0.037 | $0.140)$ | 0.033 | 0.004 |
| 201 | 16.75 | 0.10 | 0.037 | 0.139) | 0.033 | 0.004 |
| 202 | 16.83 | 0.10 | 0.037 | 0.138) | 0.033 | 0.004 |
| 203 | 16.92 | 0.10 | 0.037 | 0.138) | 0.033 | 0.004 |
| 204 | 17.00 | 0.10 | 0.037 | $0.137)$ | 0.033 | 0.004 |
| 205 | 17.08 | 0.17 | 0.061 | $0.136)$ | 0.055 | 0.006 |
| 206 | 17.17 | 0.17 | 0.061 | $0.136)$ | 0.055 | 0.006 |
| 207 | 17. 25 | 0.17 | 0.061 | 0.135) | 0.055 | 0.006 |
| 208 | 17.33 | 0.17 | 0.061 | $0.134)$ | 0.055 | 0.006 |
| 209 | 17.42 | 0.17 | 0.061 | 0.134) | 0.055 | 0.006 |
|  |  |  |  | Page 5 |  |  |


|  |  |  |  | moval 33 prea 2410 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 210 | 17.50 | 0.17 | 0.061 | (0.133) | 0.055 | 0.006 |
| 211 | 17.58 | 0.17 | 0.061 | $0.132)$ | 0.055 | 0.006 |
| 212 | 17.67 | 0.17 | 0.061 | $0.132)$ | 0.055 | 0.006 |
| 213 | 17.75 | 0.17 | 0.061 | $0.131)$ | 0.055 | 0.006 |
| 214 | 17.83 | 0.13 | 0.049 | $0.130)$ | 0.044 | 0.005 |
| 215 | 17.92 | 0.13 | 0.049 | $0.130)$ | 0.044 | 0.005 |
| 216 | 18.00 | 0.13 | 0.049 | $0.129)$ | 0.044 | 0.005 |
| 217 | 18.08 | 0.13 | 0.049 | $0.128)$ | 0.044 | 0.005 |
| 218 | 18. 17 | 0.13 | 0.049 | $0.128)$ | 0.044 | 0.005 |
| 219 | 18. 25 | 0.13 | 0.049 | $0.127)$ | 0.044 | 0.005 |
| 220 | 18.33 | 0.13 | 0.049 | 0.127) | 0.044 | 0.005 |
| 221 | 18.42 | 0.13 | 0.049 | $0.126)$ | 0.044 | 0.005 |
| 222 | 18. 50 | 0.13 | 0.049 | $0.125)$ | 0.044 | 0.005 |
| 223 | 18. 58 | 0.10 | 0.037 | 0.125) | 0.033 | 0.004 |
| 224 | 18.67 | 0.10 | 0.037 | $0.124)$ | 0.033 | 0.004 |
| 225 | 18.75 | 0.10 | 0.037 | $0.124)$ | 0.033 | 0.004 |
| 226 | 18.83 | 0.07 | 0.024 | $0.123)$ | 0.022 | 0.002 |
| 227 | 18.92 | 0.07 | 0.024 | 0.122 ) | 0.022 | 0.002 |
| 228 | 19.00 | 0.07 | 0.024 | $0.122)$ | 0.022 | 0.002 |
| 229 | 19.08 | 0.10 | 0.037 | 0.121) | 0.033 | 0.004 |
| 230 | 19.17 | 0.10 | 0.037 | $0.121)$ | 0.033 | 0.004 |
| 231 | 19. 25 | 0.10 | 0.037 | $0.120)$ | 0.033 | 0.004 |
| 232 | 19.33 | 0.13 | 0.049 | $0.119)$ | 0.044 | 0.005 |
| 233 | 19.42 | 0.13 | 0.049 | $0.119)$ | 0.044 | 0.005 |
| 234 | 19.50 | 0.13 | 0.049 | 0.118) | 0.044 | 0.005 |
| 235 | 19.58 | 0.10 | 0.037 | 0.118) | 0.033 | 0.004 |
| 236 | 19.67 | 0.10 | 0.037 | $0.117)$ | 0.033 | 0.004 |
| 237 | 19.75 | 0.10 | 0.037 | $0.117)$ | 0.033 | 0.004 |
| 238 | 19.83 | 0.07 | 0.024 | $0.116)$ | 0.022 | 0.002 |
| 239 | 19.92 | 0.07 | 0.024 | $0.116)$ | 0.022 | 0.002 |
| 240 | 20.00 | 0.07 | 0.024 | $0.115)$ | 0.022 | 0.002 |
| 241 | 20.08 | 0.10 | 0.037 | $0.115)$ | 0.033 | 0.004 |
| 242 | 20.17 | 0.10 | 0.037 | $0.114)$ | 0.033 | 0.004 |
| 243 | 20. 25 | 0.10 | 0.037 | $0.114)$ | 0.033 | 0.004 |
| 244 | 20.33 | 0.10 | 0.037 | $0.113)$ | 0.033 | 0.004 |
| 245 | 20.42 | 0.10 | 0.037 | 0.113) | 0.033 | 0.004 |
| 246 | 20.50 | 0.10 | 0.037 | $0.112)$ | 0.033 | 0.004 |
| 247 | 20.58 | 0.10 | 0.037 | $0.112)$ | 0.033 | 0.004 |
| 248 | 20.67 | 0.10 | 0.037 | 0.111) | 0.033 | 0.004 |
| 249 | 20.75 | 0.10 | 0.037 | 0.111) | 0.033 | 0.004 |
| 250 | 20.83 | 0.07 | 0.024 | $0.110)$ | 0.022 | 0.002 |
| 251 | 20.92 | 0.07 | 0.024 | $0.110)$ | 0.022 | 0.002 |
| 252 | 21.00 | 0.07 | 0.024 | $0.110)$ | 0.022 | 0.002 |
| 253 | 21.08 | 0.10 | 0.037 | $0.109)$ | 0.033 | 0.004 |
| 254 | 21.17 | 0.10 | 0.037 | $0.109)$ | 0.033 | 0.004 |
| 255 | 21.25 | 0.10 | 0.037 | $0.108)$ | 0.033 | 0.004 |
| 256 | 21.33 | 0.07 | 0.024 | $0.108)$ | 0.022 | 0.002 |
| 257 | 21.42 | 0.07 | 0.024 | $0.107)$ | 0.022 | 0.002 |
| 258 | 21.50 | 0.07 | 0.024 | $0.107)$ | 0.022 | 0.002 |
| 259 | 21.58 | 0.10 | 0.037 | $0.107)$ | 0.033 | 0.004 |
| 260 | 21.67 | 0.10 | 0.037 | $0.106)$ | 0.033 | 0.004 |
| 261 | 21.75 | 0.10 | 0.037 | $0.106)$ | 0.033 | 0.004 |
| 262 | 21.83 | 0.07 | 0.024 | $0.105)$ | 0.022 | 0.002 |
| 263 | 21.92 | 0.07 | 0.024 | $0.105)$ | 0.022 | 0.002 |
| 264 | 22.00 | 0.07 | 0.024 | $0.105)$ | 0.022 | 0.002 |
| 265 | 22.08 | 0.10 | 0.037 | $0.104)$ | 0.033 | 0.004 |
| 266 | 22.17 | 0.10 | 0.037 | $0.104)$ | 0.033 | 0.004 |
| 267 | 22. 25 | 0.10 | 0.037 | $0.104)$ | 0.033 | 0.004 |
| 268 | 22.33 | 0.07 | 0.024 | $0.103)$ | 0.022 | 0.002 |
| 269 | 22.42 | 0.07 | 0.024 | $0.103)$ | 0.022 | 0.002 |
| 270 | 22.50 | 0.07 | 0.024 | $0.103)$ | 0.022 | 0.002 |
| 271 | 22.58 | 0.07 | 0.024 | $0.102)$ | 0.022 | 0.002 |
| 272 | 22.67 | 0.07 | 0.024 | 0.102) | 0.022 | 0.002 |
|  |  |  |  | Page 6 |  |  |



| $2+15$ | 0.0039 |
| :---: | :---: |
| $2+20$ | 0.0041 |
| $2+25$ | 0.0043 |
| $2+30$ | 0.0045 |
| $2+35$ | 0.0047 |
| $2+40$ | 0.0049 |
| $2+45$ | 0.0051 |
| $2+50$ | 0.0054 |
| $2+55$ | 0.0056 |
| $3+0$ | 0.0058 |
| $3+5$ | 0.0061 |
| $3+10$ | 0.0063 |
| $3+15$ | 0.0065 |
| $3+20$ | 0.0068 |
| $3+25$ | 0.0070 |
| $3+30$ | 0.0072 |
| $3+35$ | 0.0075 |
| $3+40$ | 0.0077 |
| $3+45$ | 0.0079 |
| $3+50$ | 0.0082 |
| $3+55$ | 0.0085 |
| $4+0$ | 0.0087 |
| $4+5$ | 0.0090 |
| $4+10$ | 0.0093 |
| $4+15$ | 0.0096 |
| $4+20$ | 0.0099 |
| $4+25$ | 0.0102 |
| $4+30$ | 0.0105 |
| $4+35$ | 0.0109 |
| $4+40$ | 0.0112 |
| $4+45$ | 0.0115 |
| $4+50$ | 0.0119 |
| $4+55$ | 0.0122 |
| $5+0$ | 0.0126 |
| $5+5$ | 0.0129 |
| $5+10$ | 0.0132 |
| $5+15$ | 0.0135 |
| $5+20$ | 0.0138 |
| $5+25$ | 0.0141 |
| $5+30$ | 0.0145 |
| $5+35$ | 0.0148 |
| $5+40$ | 0.0152 |
| $5+45$ | 0.0155 |
| $5+50$ | 0.0159 |
| $5+55$ | 0.0163 |
| $6+0$ | 0.0167 |
| $6+5$ | 0.0171 |
| $6+10$ | 0.0175 |
| $6+15$ | 0.0179 |
| $6+20$ | 0.0183 |
| $6+25$ | 0.0187 |
| $6+30$ | 0.0191 |
| $6+35$ | 0.0196 |
| $6+40$ | 0.0200 |
| $6+45$ | 0.0205 |
| $6+50$ | 0.0210 |
| $6+55$ | 0.0214 |
| $7+0$ | 0.0219 |
| $7+5$ | 0.0224 |
| $7+10$ | 0.0229 |
| $7+15$ | 0.0233 |
| $7+20$ | 0.0238 |
| $7+25$ | 0.0243 |


|  | moval 33 prea 2410 |  |
| :---: | :---: | :---: |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.03 | Q |  |
| 0.04 | Q |  |
| 0.04 | Q |  |
| 0.04 | Q |  |
| 0.04 | Q |  |
| 0.04 | QV |  |
| 0.04 | QV |  |
| 0.04 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.04 | QV |  |
| 0.04 | QV |  |
| 0.04 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.05 | QV |  |
| 0.06 | QV |  |
| 0.06 | QV |  |
| 0.06 | QV |  |
| 0.06 | QV |  |
| 0.06 | Q V |  |
| 0.06 | Q V |  |
| 0.06 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
| 0.07 | Q V |  |
|  |  | 8 |




|  |  |  | moval 33 pr | eat 210 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $12+45$ | 0.1266 | 0.90 | Q | V |  |  |
| $12+50$ | 0.1330 | 0.93 | Q | V |  |  |
| $12+55$ | 0.1397 | 0.97 | Q | V |  |  |
| $13+0$ | 0.1465 | 0.99 | Q | V |  |  |
| $13+5$ | 0.1541 | 1.10 | Q | V |  |  |
| $13+10$ | 0.1630 | 1. 29 | Q | V |  |  |
| $13+15$ | 0.1722 | 1.33 | Q | V |  |  |
| $13+20$ | 0.1815 | 1. 35 | Q | V |  |  |
| $13+25$ | 0.1908 | 1. 35 | Q |  | $V$ |  |
| $13+30$ | 0.2001 | 1. 36 | Q |  | V |  |
| $13+35$ | 0.2078 | 1. 12 | Q |  | V |  |
| $13+40$ | 0.2128 | 0.72 | Q |  | V |  |
| $13+45$ | 0.2172 | 0.64 | Q |  | V |  |
| $13+50$ | 0.2216 | 0.63 | Q |  | V |  |
| $13+55$ | 0.2260 | 0.63 | Q |  | V |  |
| $14+0$ | 0.2304 | 0.64 | Q |  | V |  |
| $14+5$ | 0.2354 | 0.73 | Q |  | V |  |
| $14+10$ | 0.2415 | 0.88 | Q |  | V |  |
| $14+15$ | 0.2478 | 0.92 | Q |  | V |  |
| $14+20$ | 0.2541 | 0.91 | Q |  | V |  |
| $14+25$ | 0.2601 | 0.88 | Q |  | V |  |
| $14+30$ | 0.2661 | 0.87 | 0 |  | V |  |
| $14+35$ | 0.2721 | 0.88 | Q |  | V |  |
| $14+40$ | 0.2782 | 0.88 | Q |  |  | , |
| $14+45$ | 0.2843 | 0.88 | Q |  |  | V |
| $14+50$ | 0.2903 | 0.87 | Q |  |  | V |
| $14+55$ | 0.2960 | 0.83 | Q |  |  | V |
| $15+0$ | 0.3017 | 0.83 | Q |  |  | V |
| $15+5$ | 0.3073 | 0.81 | Q |  |  | V |
| $15+10$ | 0.3127 | 0.78 | Q |  |  | V |
| $15+15$ | 0.3181 | 0.78 | Q |  |  | V |
| $15+20$ | 0.3233 | 0.76 | Q |  |  | V |
| $15+25$ | 0.3283 | 0.73 | Q |  |  | V |
| $15+30$ | 0.3333 | 0.72 | Q |  |  | V |
| $15+35$ | 0.3376 | 0.64 | Q |  |  | V |
| $15+40$ | 0.3410 | 0.49 | Q |  |  | V |
| $15+45$ | 0.3443 | 0.47 | Q |  |  | V |
| $15+50$ | 0.3475 | 0.47 | Q |  |  | V |
| $15+55$ | 0.3507 | 0.47 | Q |  |  | V |
| $16+0$ | 0.3540 | 0.47 | Q |  |  | V |
| $16+5$ | 0.3563 | 0.33 | Q |  |  | V |
| $16+10$ | 0.3569 | 0.09 | 0 |  |  | V |
| $16+15$ | 0.3572 | 0.04 | Q |  |  | V |
| $16+20$ | 0.3574 | 0.03 | Q |  |  | V |
| $16+25$ | 0.3576 | 0.03 | Q |  |  | V |
| $16+30$ | 0.3577 | 0.03 | Q |  |  | V |
| $16+35$ | 0.3579 | 0.02 | Q |  |  | V |
| $16+40$ | 0.3581 | 0.02 | Q |  |  | V |
| $16+45$ | 0. 3582 | 0.02 | Q |  |  | V |
| $16+50$ | 0.3583 | 0.02 | Q |  |  | V |
| $16+55$ | 0. 3585 | 0.02 | Q |  |  | V |
| $17+0$ | 0.3586 | 0.02 | Q |  |  | V |
| $17+5$ | 0.3588 | 0.02 | 0 |  |  | V |
| $17+10$ | 0.3590 | 0.03 | Q |  |  | V |
| $17+15$ | 0.3592 | 0.03 | Q |  |  | V |
| $17+20$ | 0.3595 | 0.03 | Q |  |  | V |
| $17+25$ | 0.3597 | 0.03 | Q |  |  | V |
| $17+30$ | 0.3599 | 0.03 | Q |  |  | V |
| $17+35$ | 0.3602 | 0.03 | Q |  |  | V |
| $17+40$ | 0.3604 | 0.03 | Q |  |  | V |
| $17+45$ | 0.3606 | 0.03 | Q |  |  | V |
| $17+50$ | 0.3609 | 0.03 | Q |  |  | V |
| $17+55$ | 0.3611 | 0.03 | Q |  |  | V |
|  |  |  | Page | 10 |  |  |




```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea24100.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Area A
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | (In/Hr) |
| 1 | 0.08 | 0.07 | 0.037 | $0.152)$ | 0.033 | 0.004 |
| 2 | 0.17 | 0.07 | 0.037 | ( 0.152) | 0.033 | 0.004 |
| 3 | 0.25 | 0.07 | 0.037 | $0.151)$ | 0.033 | 0.004 |
| 4 | 0.33 | 0.10 | 0.056 | $0.150)$ | 0.050 | 0.006 |
| 5 | 0.42 | 0.10 | 0.056 | ( 0.150) | 0.050 | 0.006 |
| 6 | 0.50 | 0.10 | 0.056 | ( 0.149) | 0.050 | 0.006 |
| 7 | 0.58 | 0.10 | 0.056 | ( 0.149) | 0.050 | 0.006 |
| 8 | 0.67 | 0.10 | 0.056 | ( 0.148) | 0.050 | 0.006 |
| 9 | 0.75 | 0.10 | 0.056 | ( 0.147) | 0.050 | 0.006 |
| 10 | 0.83 | 0.13 | 0.074 | ( 0.147) | 0.067 | 0.007 |
| 11 | 0.92 | 0.13 | 0.074 | ( 0.146) | 0.067 | 0.007 |
| 12 | 1.00 | 0.13 | 0.074 | ( 0.146) | 0.067 | 0.007 |
| 13 | 1.08 | 0.10 | 0.056 | ( 0.145) | 0.050 | 0.006 |
| 14 | 1.17 | 0.10 | 0.056 | ( 0.145) | 0.050 | 0.006 |
| 15 | 1.25 | 0.10 | 0.056 | ( 0.144) | 0.050 | 0.006 |
| 16 | 1.33 | 0.10 | 0.056 | ( 0.143) | 0.050 | 0.006 |
| 17 | 1.42 | 0.10 | 0.056 | ( 0.143) | 0.050 | 0.006 |
| 18 | 1.50 | 0.10 | 0.056 | ( 0.142) | 0.050 | 0.006 |
| 19 | 1.58 | 0.10 | 0.056 | ( 0.142) | 0.050 | 0.006 |
| 20 | 1.67 | 0.10 | 0.056 | ( 0.141) | 0.050 | 0.006 |
| 21 | 1.75 | 0.10 | 0.056 | ( 0.141) | 0.050 | 0.006 |
| 22 | 1.83 | 0.13 | 0.074 | ( 0.140) | 0.067 | 0.007 |
| 23 | 1.92 | 0.13 | 0.074 | $0.139)$ | 0.067 | 0.007 |
| 24 | 2.00 | 0.13 | 0.074 | ( 0.139) | 0.067 | 0.007 |
| 25 | 2.08 | 0.13 | 0.074 | ( 0.138) | 0.067 | 0.007 |
| 26 | 2.17 | 0.13 | 0.074 | ( 0.138) | 0.067 | 0.007 |
| 27 | 2.25 | 0.13 | 0.074 | ( 0.137) | 0.067 | 0.007 |
| 28 | 2.33 | 0.13 | 0.074 | ( 0.137) | 0.067 | 0.007 |
| 29 | 2.42 | 0.13 | 0.074 | ( 0.136) | 0.067 | 0.007 |
| 30 | 2.50 | 0.13 | 0.074 | ( 0.136) | 0.067 | 0.007 |
| 31 | 2.58 | 0.17 | 0.093 | ( 0.135) | 0.084 | 0.009 |
| 32 | 2.67 | 0.17 | 0.093 | ( 0.134) | 0.084 | 0.009 |
| 33 | 2.75 | 0.17 | 0.093 | ( 0.134) | 0.084 | 0.009 |
| 34 | 2.83 | 0.17 | 0.093 | ( 0.133) | 0.084 | 0.009 |
| 35 | 2.92 | 0.17 | 0.093 | ( 0.133) | 0.084 | 0.009 |
| 36 | 3.00 | 0.17 | 0.093 | ( 0.132) | 0.084 | 0.009 |
| 37 | 3.08 | 0.17 | 0.093 | ( 0.132) | 0.084 | 0.009 |
| 38 | 3.17 | 0.17 | 0.093 | ( 0.131) | 0.084 | 0.009 |
| 39 | 3.25 | 0.17 | 0.093 | ( 0.131) | 0.084 | 0.009 |
| 40 | 3.33 | 0.17 | 0.093 | ( 0.130) | 0.084 | 0.009 |
| 41 | 3.42 | 0.17 | 0.093 | ( 0.129) | 0.084 | 0.009 |
| 42 | 3.50 | 0.17 | 0.093 | ( 0.129) | 0.084 | 0.009 |
| 43 | 3.58 | 0.17 | 0.093 | ( 0.128) | 0.084 | 0.009 |
| 44 | 3.67 | 0.17 | 0.093 | ( 0.128) | 0.084 | 0.009 |
| 45 | 3.75 | 0.17 | 0.093 | ( 0.127) | 0.084 | 0.009 |
| 46 | 3.83 | 0.20 | 0.111 | ( 0.127) | 0.100 | 0.011 |
| 47 | 3.92 | 0.20 | 0.111 | ( 0.126) | 0.100 | 0.011 |
| 48 | 4.00 | 0.20 | 0.111 | ( 0.126) | 0.100 | 0.011 |
| 49 | 4.08 | 0.20 | 0.111 | ( 0.125) | 0.100 | 0.011 |
| 50 | 4.17 | 0.20 | 0.111 | ( 0.125) | 0.100 | 0.011 |
| 51 | 4.25 | 0.20 | 0.111 | ( 0.124) | 0.100 | 0.011 |
| 52 | 4.33 | 0.23 | 0.130 | ( 0.124) | 0.117 | 0.013 |
| 53 | 4.42 | 0.23 | 0.130 | ( 0.123) | 0.117 | 0.013 |
| 54 | 4.50 | 0.23 | 0.130 | ( 0.123) | 0.117 | 0.013 |
| 55 | 4.58 | 0.23 | 0.130 | ( 0.122) | 0.117 | 0.013 |
| 56 | 4.67 | 0.23 | 0.130 | ( 0.121) | 0.117 | 0.013 |
| 57 | 4.75 | 0.23 | 0.130 | ( 0.121) | 0.117 | 0.013 |


| 58 | 4.83 | 0.27 | 0.148 | 0.120 | $0.134)$ | 0.028 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 59 | 4.92 | 0.27 | 0.148 | 0.120 | $0.134)$ | 0.029 |
| 60 | 5.00 | 0.27 | 0.148 | 0.119 | $0.134)$ | 0.029 |
| 61 | 5.08 | 0.20 | 0.111 | $0.119)$ | 0.100 | 0.011 |
| 62 | 5.17 | 0.20 | 0.111 | $0.118)$ | 0.100 | 0.011 |
| 63 | 5.25 | 0.20 | 0.111 | 0.118) | 0.100 | 0.011 |
| 64 | 5.33 | 0.23 | 0.130 | $0.117)$ | 0.117 | 0.013 |
| 65 | 5.42 | 0.23 | 0.130 | 0.117 | $0.117)$ | 0.013 |
| 66 | 5.50 | 0.23 | 0.130 | 0.116 | $0.117)$ | 0.014 |
| 67 | 5.58 | 0.27 | 0.148 | 0.116 | $0.134)$ | 0.033 |
| 68 | 5.67 | 0.27 | 0.148 | 0.115 | $0.134)$ | 0.033 |
| 69 | 5.75 | 0.27 | 0.148 | 0.115 | $0.134)$ | 0.034 |
| 70 | 5.83 | 0.27 | 0.148 | 0.114 | $0.134)$ | 0.034 |
| 71 | 5.92 | 0.27 | 0.148 | 0.114 | $0.134)$ | 0.035 |
| 72 | 6.00 | 0.27 | 0.148 | 0.113 | $0.134)$ | 0.035 |
| 73 | 6.08 | 0.30 | 0.167 | 0.113 | $0.150)$ | 0.054 |
| 74 | 6.17 | 0.30 | 0.167 | 0.112 | $0.150)$ | 0.055 |
| 75 | 6.25 | 0.30 | 0.167 | 0.112 | $0.150)$ | 0.055 |
| 76 | 6.33 | 0.30 | 0.167 | 0.111 | $0.150)$ | 0.056 |
| 77 | 6.42 | 0.30 | 0.167 | 0.111 | $0.150)$ | 0.056 |
| 78 | 6.50 | 0.30 | 0.167 | 0.110 | $0.150)$ | 0.057 |
| 79 | 6.58 | 0.33 | 0.186 | 0.110 | 0.167) | 0.076 |
| 80 | 6.67 | 0.33 | 0.186 | 0.109 | $0.167)$ | 0.076 |
| 81 | 6.75 | 0.33 | 0.186 | 0.109 | $0.167)$ | 0.077 |
| 82 | 6.83 | 0.33 | 0.186 | 0.108 | $0.167)$ | 0.077 |
| 83 | 6.92 | 0.33 | 0.186 | 0.108 | $0.167)$ | 0.078 |
| 84 | 7.00 | 0.33 | 0.186 | 0.107 | $0.167)$ | 0.078 |
| 85 | 7.08 | 0.33 | 0.186 | 0.107 | $0.167)$ | 0.079 |
| 86 | 7.17 | 0.33 | 0.186 | 0.106 | $0.167)$ | 0.079 |
| 87 | 7.25 | 0.33 | 0.186 | 0.106 | $0.167)$ | 0.080 |
| 88 | 7.33 | 0.37 | 0.204 | 0.105 | $0.184)$ | 0.099 |
| 89 | 7.42 | 0.37 | 0.204 | 0.105 | $0.184)$ | 0.099 |
| 90 | 7.50 | 0.37 | 0.204 | 0.104 | $0.184)$ | 0.100 |
| 91 | 7.58 | 0.40 | 0.223 | 0.104 | $0.200)$ | 0.119 |
| 92 | 7.67 | 0.40 | 0.223 | 0.103 | $0.200)$ | 0.119 |
| 93 | 7.75 | 0.40 | 0.223 | 0.103 | $0.200)$ | 0.120 |
| 94 | 7.83 | 0.43 | 0.241 | 0.102 | $0.217)$ | 0.139 |
| 95 | 7.92 | 0.43 | 0.241 | 0.102 | 0.217) | 0.139 |
| 96 | 8.00 | 0.43 | 0.241 | 0.102 | $0.217)$ | 0.140 |
| 97 | 8.08 | 0.50 | 0.278 | 0.101 | 0.251) | 0.177 |
| 98 | 8.17 | 0.50 | 0.278 | 0.101 | $0.251)$ | 0.178 |
| 99 | 8.25 | 0.50 | 0.278 | 0.100 | $0.251)$ | 0.178 |
| 100 | 8.33 | 0.50 | 0.278 | 0.100 | $0.251)$ | 0.179 |
| 101 | 8.42 | 0.50 | 0.278 | 0.099 | 0.251) | 0.179 |
| 102 | 8.50 | 0.50 | 0.278 | 0.099 | 0.251) | 0.180 |
| 103 | 8.58 | 0.53 | 0.297 | 0.098 | 0.267) | 0.199 |
| 104 | 8.67 | 0.53 | 0.297 | 0.098 | 0.267) | 0.199 |
| 105 | 8.75 | 0.53 | 0.297 | 0.097 | 0.267) | 0.200 |
| 106 | 8.83 | 0.57 | 0.316 | 0.097 | $0.284)$ | 0.219 |
| 107 | 8.92 | 0.57 | 0.316 | 0.096 | $0.284)$ | 0.219 |
| 108 | 9.00 | 0.57 | 0.316 | 0.096 | $0.284)$ | 0.220 |
| 109 | 9.08 | 0.63 | 0.353 | 0.096 | $0.317)$ | 0.257 |
| 110 | 9.17 | 0.63 | 0.353 | 0.095 | $0.317)$ | 0.258 |
| 111 | 9.25 | 0.63 | 0.353 | 0.095 | 0.317) | 0.258 |
| 112 | 9.33 | 0.67 | 0.371 | 0.094 | $0.334)$ | 0.277 |
| 113 | 9.42 | 0.67 | 0.371 | 0.094 | 0.334) | 0.277 |
| 114 | 9.50 | 0.67 | 0.371 | 0.093 | 0.334) | 0.278 |
| 115 | 9.58 | 0.70 | 0.390 | 0.093 | 0.351) | 0.297 |
| 116 | 9.67 | 0.70 | 0.390 | 0.092 | 0.351) | 0.297 |
| 117 | 9.75 | 0.70 | 0.390 | 0.092 | 0.351) | 0.298 |


| 118 | 9.83 | 0.73 | 0.408 | 0.091 | 0.367) | 0.317 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 119 | 9.92 | 0.73 | 0.408 | 0.091 | 0.367) | 0.317 |
| 120 | 10.00 | 0.73 | 0.408 | 0.091 | 0.367) | 0.318 |
| 121 | 10.08 | 0.50 | 0.278 | 0.090 | 0.251) | 0.188 |
| 122 | 10.17 | 0.50 | 0.278 | 0.090 | 0.251) | 0.189 |
| 123 | 10.25 | 0.50 | 0.278 | 0.089 | 0.251) | 0.189 |
| 124 | 10.33 | 0.50 | 0.278 | 0.089 | 0.251) | 0.190 |
| 125 | 10.42 | 0.50 | 0.278 | 0.088 | 0.251) | 0.190 |
| 126 | 10.50 | 0.50 | 0.278 | 0.088 | 0.251) | 0.190 |
| 127 | 10.58 | 0.67 | 0.371 | 0.088 | $0.334)$ | 0.284 |
| 128 | 10.67 | 0.67 | 0.371 | 0.087 | $0.334)$ | 0.284 |
| 129 | 10.75 | 0.67 | 0.371 | 0.087 | $0.334)$ | 0.284 |
| 130 | 10.83 | 0.67 | 0.371 | 0.086 | $0.334)$ | 0.285 |
| 131 | 10.92 | 0.67 | 0.371 | 0.086 | $0.334)$ | 0.285 |
| 132 | 11.00 | 0.67 | 0.371 | 0.085 | $0.334)$ | 0.286 |
| 133 | 11.08 | 0.63 | 0.353 | 0.085 | 0.317) | 0.268 |
| 134 | 11.17 | 0.63 | 0.353 | 0.085 | 0.317) | 0.268 |
| 135 | 11.25 | 0.63 | 0.353 | 0.084 | 0.317) | 0.268 |
| 136 | 11.33 | 0.63 | 0.353 | 0.084 | 0.317) | 0.269 |
| 137 | 11.42 | 0.63 | 0.353 | 0.083 | 0.317) | 0.269 |
| 138 | 11.50 | 0.63 | 0.353 | 0.083 | 0.317) | 0.270 |
| 139 | 11.58 | 0.57 | 0.316 | 0.083 | $0.284)$ | 0.233 |
| 140 | 11.67 | 0.57 | 0.316 | 0.082 | $0.284)$ | 0.233 |
| 141 | 11.75 | 0.57 | 0.316 | 0.082 | $0.284)$ | 0.234 |
| 142 | 11.83 | 0.60 | 0.334 | 0.081 | 0.301) | 0.253 |
| 143 | 11.92 | 0.60 | 0.334 | 0.081 | 0.301) | 0.253 |
| 144 | 12.00 | 0.60 | 0.334 | 0.080 | 0.301) | 0.254 |
| 145 | 12.08 | 0.83 | 0.464 | 0.080 | 0.418) | 0.384 |
| 146 | 12.17 | 0.83 | 0.464 | 0.080 | 0.418) | 0.384 |
| 147 | 12.25 | 0.83 | 0.464 | 0.079 | 0.418) | 0.385 |
| 148 | 12.33 | 0.87 | 0.483 | 0.079 | $0.434)$ | 0.404 |
| 149 | 12.42 | 0.87 | 0.483 | 0.078 | $0.434)$ | 0.404 |
| 150 | 12.50 | 0.87 | 0.483 | 0.078 | $0.434)$ | 0.404 |
| 151 | 12.58 | 0.93 | 0.520 | 0.078 | 0.468) | 0.442 |
| 152 | 12.67 | 0.93 | 0.520 | 0.077 | $0.468)$ | 0.442 |
| 153 | 12.75 | 0.93 | 0.520 | 0.077 | $0.468)$ | 0.443 |
| 154 | 12.83 | 0.97 | 0.538 | 0.077 | $0.484)$ | 0.462 |
| 155 | 12.92 | 0.97 | 0.538 | 0.076 | $0.484)$ | 0.462 |
| 156 | 13.00 | 0.97 | 0.538 | 0.076 | $0.484)$ | 0.462 |
| 157 | 13.08 | 1.13 | 0.631 | 0.075 | $0.568)$ | 0.556 |
| 158 | 13.17 | 1.13 | 0.631 | 0.075 | 0.568) | 0.556 |
| 159 | 13.25 | 1.13 | 0.631 | 0.075 | $0.568)$ | 0.556 |
| 160 | 13.33 | 1.13 | 0.631 | 0.074 | 0.568) | 0.557 |
| 161 | 13.42 | 1.13 | 0.631 | 0.074 | 0.568) | 0.557 |
| 162 | 13.50 | 1.13 | 0.631 | 0.073 | $0.568)$ | 0.558 |
| 163 | 13.58 | 0.77 | 0.427 | 0.073 | $0.384)$ | 0.354 |
| 164 | 13.67 | 0.77 | 0.427 | 0.073 | $0.384)$ | 0.354 |
| 165 | 13.75 | 0.77 | 0.427 | 0.072 | $0.384)$ | 0.355 |
| 166 | 13.83 | 0.77 | 0.427 | 0.072 | $0.384)$ | 0.355 |
| 167 | 13.92 | 0.77 | 0.427 | 0.072 | $0.384)$ | 0.355 |
| 168 | 14.00 | 0.77 | 0.427 | 0.071 | $0.384)$ | 0.356 |
| 169 | 14.08 | 0.90 | 0.501 | 0.071 | 0.451) | 0.430 |
| 170 | 14.17 | 0.90 | 0.501 | 0.071 | 0.451) | 0.431 |
| 171 | 14.25 | 0.90 | 0.501 | 0.070 | 0.451) | 0.431 |
| 172 | 14.33 | 0.87 | 0.483 | 0.070 | $0.434)$ | 0.413 |
| 173 | 14.42 | 0.87 | 0.483 | 0.069 | $0.434)$ | 0.413 |
| 174 | 14.50 | 0.87 | 0.483 | 0.069 | $0.434)$ | 0.413 |
| 175 | 14.58 | 0.87 | 0.483 | 0.069 | $0.434)$ | 0.414 |
| 176 | 14.67 | 0.87 | 0.483 | 0.068 | $0.434)$ | 0.414 |
| 177 | 14.75 | 0.87 | 0.483 | 0.068 | $0.434)$ | 0.415 |


| 178 | 14.83 | 0.83 | 0.464 | 0.068 | $0.418)$ | 0.396 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 179 | 14.92 | 0.83 | 0.464 | 0.067 | 0.418) | 0.397 |
| 180 | 15.00 | 0.83 | 0.464 | 0.067 | $0.418)$ | 0.397 |
| 181 | 15.08 | 0.80 | 0.445 | 0.067 | 0.401) | 0.379 |
| 182 | 15.17 | 0.80 | 0.445 | 0.066 | $0.401)$ | 0.379 |
| 183 | 15.25 | 0.80 | 0.445 | 0.066 | $0.401)$ | 0.379 |
| 184 | 15.33 | 0.77 | 0.427 | 0.066 | $0.384)$ | 0.361 |
| 185 | 15.42 | 0.77 | 0.427 | 0.065 | $0.384)$ | 0.362 |
| 186 | 15.50 | 0.77 | 0.427 | 0.065 | $0.384)$ | 0.362 |
| 187 | 15.58 | 0.63 | 0.353 | 0.065 | $0.317)$ | 0.288 |
| 188 | 15.67 | 0.63 | 0.353 | 0.064 | 0.317) | 0.288 |
| 189 | 15.75 | 0.63 | 0.353 | 0.064 | 0.317) | 0.289 |
| 190 | 15.83 | 0.63 | 0.353 | 0.064 | $0.317)$ | 0.289 |
| 191 | 15.92 | 0.63 | 0.353 | 0.063 | 0.317) | 0.289 |
| 192 | 16.00 | 0.63 | 0.353 | 0.063 | $0.317)$ | 0.290 |
| 193 | 16.08 | 0.13 | 0.074 | 0.063 | 0.067) | 0.012 |
| 194 | 16.17 | 0.13 | 0.074 | 0.062 | 0.067) | 0.012 |
| 195 | 16.25 | 0.13 | 0.074 | 0.062 | 0.067) | 0.012 |
| 196 | 16.33 | 0.13 | 0.074 | 0.062 | $0.067)$ | 0.013 |
| 197 | 16.42 | 0.13 | 0.074 | 0.061 | 0.067) | 0.013 |
| 198 | 16.50 | 0.13 | 0.074 | 0.061 | $0.067)$ | 0.013 |
| 199 | 16.58 | 0.10 | 0.056 | 0.061) | 0.050 | 0.006 |
| 200 | 16.67 | 0.10 | 0.056 | 0.060) | 0.050 | 0.006 |
| 201 | 16.75 | 0.10 | 0.056 | 0.060) | 0.050 | 0.006 |
| 202 | 16.83 | 0.10 | 0.056 | 0.060) | 0.050 | 0.006 |
| 203 | 16.92 | 0.10 | 0.056 | 0.060) | 0.050 | 0.006 |
| 204 | 17.00 | 0.10 | 0.056 | $0.059)$ | 0.050 | 0.006 |
| 205 | 17.08 | 0.17 | 0.093 | 0.059 | $0.084)$ | 0.034 |
| 206 | 17.17 | 0.17 | 0.093 | 0.059 | $0.084)$ | 0.034 |
| 207 | 17.25 | 0.17 | 0.093 | 0.058 | $0.084)$ | 0.034 |
| 208 | 17.33 | 0.17 | 0.093 | 0.058 | $0.084)$ | 0.035 |
| 209 | 17.42 | 0.17 | 0.093 | 0.058 | $0.084)$ | 0.035 |
| 210 | 17.50 | 0.17 | 0.093 | 0.058 | $0.084)$ | 0.035 |
| 211 | 17.58 | 0.17 | 0.093 | 0.057 | $0.084)$ | 0.036 |
| 212 | 17.67 | 0.17 | 0.093 | 0.057 | $0.084)$ | 0.036 |
| 213 | 17.75 | 0.17 | 0.093 | 0.057 | $0.084)$ | 0.036 |
| 214 | 17.83 | 0.13 | 0.074 | 0.056 | 0.067) | 0.018 |
| 215 | 17.92 | 0.13 | 0.074 | 0.056 | 0.067) | 0.018 |
| 216 | 18.00 | 0.13 | 0.074 | 0.056 | $0.067)$ | 0.018 |
| 217 | 18.08 | 0.13 | 0.074 | 0.056 | 0.067) | 0.019 |
| 218 | 18.17 | 0.13 | 0.074 | 0.055 | $0.067)$ | 0.019 |
| 219 | 18.25 | 0.13 | 0.074 | 0.055 | 0.067) | 0.019 |
| 220 | 18.33 | 0.13 | 0.074 | 0.055 | 0.067) | 0.020 |
| 221 | 18.42 | 0.13 | 0.074 | 0.054 | 0.067) | 0.020 |
| 222 | 18.50 | 0.13 | 0.074 | 0.054 | $0.067)$ | 0.020 |
| 223 | 18.58 | 0.10 | 0.056 | $0.054)$ | 0.050 | 0.006 |
| 224 | 18.67 | 0.10 | 0.056 | $0.054)$ | 0.050 | 0.006 |
| 225 | 18.75 | 0.10 | 0.056 | $0.053)$ | 0.050 | 0.006 |
| 226 | 18.83 | 0.07 | 0.037 | $0.053)$ | 0.033 | 0.004 |
| 227 | 18.92 | 0.07 | 0.037 | $0.053)$ | 0.033 | 0.004 |
| 228 | 19.00 | 0.07 | 0.037 | $0.053)$ | 0.033 | 0.004 |
| 229 | 19.08 | 0.10 | 0.056 | 0.052) | 0.050 | 0.006 |
| 230 | 19.17 | 0.10 | 0.056 | 0.052) | 0.050 | 0.006 |
| 231 | 19.25 | 0.10 | 0.056 | $0.052)$ | 0.050 | 0.006 |
| 232 | 19.33 | 0.13 | 0.074 | 0.052 | $0.067)$ | 0.023 |
| 233 | 19.42 | 0.13 | 0.074 | 0.051 | 0.067) | 0.023 |
| 234 | 19.50 | 0.13 | 0.074 | 0.051 | $0.067)$ | 0.023 |
| 235 | 19.58 | 0.10 | 0.056 | 0.051) | 0.050 | 0.006 |
| 236 | 19.67 | 0.10 | 0.056 | 0.051) | 0.050 | 0.006 |
| 237 | 19.75 | 0.10 | 0.056 | $0.050)$ | 0.050 | 0.006 |


$\begin{array}{ccccc}\text { Time (h+m) Volume Ac.Ft } & \text { Q(CFS) } 0 & 2.5 & 5.0 & 7.5\end{array}$ 10.0
----------------------------------------------------------------------------

| $1+50$ | 0.0045 | 0.03 | Q |
| :--- | :--- | :--- | :--- |
| $1+55$ | 0.0048 | 0.04 | Q |
| $2+0$ | 0.0051 | 0.04 | Q |
| $2+5$ | 0.0054 | 0.04 | Q |
| $2+10$ | 0.0057 | 0.04 | Q |
| $2+15$ | 0.0060 | 0.04 | Q |
| $2+20$ | 0.0062 | 0.04 | $Q$ |


| $4+20$ | 0.0151 | 0.07 | Q |
| :--- | :--- | :--- | :--- |
| $4+25$ | 0.0155 | 0.07 | Q |
| $4+30$ | 0.0160 | 0.07 | Q |
| $4+35$ | 0.0165 | 0.07 | Q |
| $4+40$ | 0.0170 | 0.07 | Q |
| $4+45$ | 0.0175 | 0.07 | Q |
| $4+50$ | 0.0182 | 0.10 | Q |



| 9+20 | 0.2336 | 1.47 | \| | QV | \\| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+25 | 0.2441 | 1.53 | \| | QV | 1 | \| |
| 9+30 | 0.2548 | 1.54 | \| | QV | 1 | I |
| 9+35 | 0.2657 | 1.58 | \| | QV | 1 | I |
| 9+40 | 0.2770 | 1.64 | \| | Q V |  | I |
| $9+45$ | 0.2884 | 1.66 | \| | Q V |  | \| |
| $9+50$ | 0.3000 | 1.69 | \| | Q V |  | I |
| 9+55 | 0.3121 | 1.75 | I | Q | V1 | I |
| 10+ 0 | 0.3243 | 1.77 | \| | Q | VI | \| |
| 10+ 5 | 0.3349 | 1.53 | \| | Q | VI | I |
| 10+10 | 0.3428 | 1.15 | \| | Q | v | I |
| 10+15 | 0.3502 | 1.07 | \| | Q | v | I |
| 10+20 | 0.3574 | 1.06 | \| | Q | v | I |
| 10+25 | 0.3647 | 1.06 | \| | Q | v | । |
| 10+30 | 0.3720 | 1.06 | I | Q | IV | I |
| 10+35 | 0.3805 | 1.23 | \| | Q | IV | । |
| 10+40 | 0.3909 | 1.51 | \| | Q | IV | \| |

1.34 |

| Q | \| | v | \| |
| :---: | :---: | :---: | :---: |
| Q | \| | v | \| |
| Q | \| | v | 1 |
| Q | I | v | 1 |
|  | Q । | v | 1 |
|  | Q 1 | v | 1 |
|  | Q I | v |  |

$12+25$
$12+30$
0.6240
0.6395
2.24
2.25

| Q\| | V |
| :---: | :---: |
| Q\| | VI |

0.5438
1.40
0.5535
1.41 12+ 5
0.5649
1.65

12+10
12+15
$12+20$
$12+25$
$12+30$
$12+35$
$12+45$
$12+50$
$12+55$
$13+0$
$13+5$
|
$13+10$
|
$13+15$
|
$13+20$
$13+25$
|
13+30
| $13+35$ 13+40 | $13+45$
$13+50$ | $13+55$ 14+ 0
|

## 14+ 5

| 14+10
|

| 14+20 | 1.0187 | 2.37 | \| | Q\| | 1 | v |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 14+25 | 1.0347 | 2.32 | \| | Q\| | \| | V |
| 14+30 | 1.0506 | 2.31 | \| | Q\| | I | IV |
| $14+35$ | 1.0664 | 2.31 | \| | Q\| | I | IV |
| $14+40$ | 1.0823 | 2.31 | \| | Q\| | 1 | I |
| $14+45$ | 1.0982 | 2.31 |  | Q\| | \| | 1 V |

1.1139
2.28 |
2.22 |
2.21 |

15+ 0
|
15+ 5
15+10
|
15+15
$15+20$
|
15+25
$15+30$
|
$15+35$
$15+40$
$15+45$
|
15+50
15+55
16+ 0
$16+5$
|
$16+10$
$16+15$
$16+20$
|
$16+25$
16+30
|
$16+35$
$\begin{array}{ll}16+40 & 1.3123 \\ 16+45 & 1.3125\end{array}$

| 16+50 | 1.3127 | 0.03 | Q | I | I | \| | v |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 16+55 | 1.3130 | 0.03 | Q | \| | \| | \| | v |
| 17+ 0 | 1.3132 | 0.03 | Q | \| | I | \| | v |
| 17+ 5 | 1.3137 | 0.08 | Q | \| | \| | \| | v |
| 17+10 | 1.3149 | 0.17 | Q | \| | \| | \| |  |
| 17+15 | 1.3162 | 0.19 | Q | \| | \| | \| |  |
| 17+20 | 1.3175 | 0.19 | Q | \| | - | \| |  |
| 17+25 | 1.3188 | 0.19 | Q | \| | \| | \| |  |
| 17+30 | 1.3202 | 0.20 | Q | - | \| | \| |  |
| 17+35 | 1.3215 | 0.20 | Q | \| | \| | \| |  |
| 17+40 | 1.3229 | 0.20 | Q | \| | , | \| |  |
| 17+45 | 1.3243 | 0.20 | Q | \| | , | \| |  |
| 17+50 | 1.3254 | 0.17 | Q | \| | \| | \| |  |
| 17+55 | 1.3262 | 0.11 | Q | \| | \| | । |  |
| 18+ 0 | 1.3269 | 0.10 | Q | I | \| | । |  |
| 18+ 5 | 1.3277 | 0.10 | Q | \| | - | \| |  |
| 18+10 | 1.3284 | 0.10 | Q | \| | \| | \| |  |
| 18+15 | 1.3291 | 0.11 | Q | 1 | \| | । |  |
| 18+20 | 1.3299 | 0.11 | Q | I | \| | । |  |
| 18+25 | 1.3306 | 0.11 | Q | I | \| | । |  |
| 18+30 | 1.3314 | 0.11 | Q | \| | \| | \| |  |
| 18+35 | 1.3320 | 0.09 | Q | \| |  | \| |  |
| 18+40 | 1.3322 | 0.04 | Q | \| | I | । |  |
| 18+45 | 1.3325 | 0.03 | Q | I |  | \| |  |
| 18+50 | 1.3327 | 0.03 | Q | \| |  | । |  |
| 18+55 | 1.3328 | 0.02 | Q | 1 |  | \| |  |
| 19+ 0 | 1.3330 | 0.02 | Q | I |  | \| |  |
| 19+ 5 | 1.3331 | 0.02 | Q | , |  | \| |  |
| 19+10 | 1.3333 | 0.03 | Q | \| | I | 1 |  |
| 19+15 | 1.3335 | 0.03 | Q | \| | \| | । |  |




```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb12.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Predevlopment Conditions
    Unit Hydrograph Runoff
    Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
    Length along longest watercourse = 1083.00(Ft.)
    Length along longest watercourse measured to centroid = 476.00
(Ft.)
    Length along longest watercourse = 0.205 Mi.
    Length along longest watercourse measured to centroid = 0.090
Mi.
    Difference in elevation = 110.00(Ft.)
    Slope along watercourse = 536.2881 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.064 Hr.
    Lag time = 3.83 Min.
    25% of lag time = 0.96 Min.
    40% of lag time = 1.53 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

8.04
0.47
3.75

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



```
        U n i t H y d roggraph A n aly y i s
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                8.2
                Study date 11/09/21 File: moval33preb15.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            ----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 1 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

8.04
0.47
3.75

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value
 20.0

| 0+ 5 | 0.0007 | 0.11 | Q |  | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+10 | 0.0041 | 0.49 | Q |  | \| | \| |
| 0+15 | 0.0102 | 0.89 | IQ |  | \| | \| |
| 0+20 | 0.0179 | 1.11 | \\| Q |  | \| | I |
| 0+25 | 0.0272 | 1.36 | \\| QV |  | । | I |
| 0+30 | 0.0389 | 1.69 | \\| Q V |  | \| | 1 |
| 0+35 | 0.0539 | 2.18 | \\| Q |  | 1 | \| |



$$
\begin{aligned}
& \text { Unit } H \text { y drograph A n al y s i s } \\
& \text { Copyright (c) CIVILCADD/CIVILDESIGN, } 1989.2012 \text {, Version } 8.2 \\
& \text { Study date } 02 / 19 / 21 \text { File: moval } 33 \text { preb110, out }
\end{aligned}
$$

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978
Program License Serial Number 6232
    English (in-lb) Input Units Used
    English Rainfal| Data (Inches) Input Values Used
    English Units used in output format
Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Drainage Area = 8.04(AC.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(AC.) =
Length along longest watercourse= 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00(Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in el evation= 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./ Mi.
Average Manning's 'N'=0.040
Lag time = 0.064 Hr.
Lag time= 3.83 Mi n
25% of lag time= 0.96 Min.
40% of |ag time= 1.53 Min.
Unit time= 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow= 0.00(CFS)
2 YEAR Area rainfal| data:
Area(AC.)[1] Rainfall(In)[2] Weighting[1*2]
    8.04 0.47 3.75
100 YEAR Area rainfall data:
Area(AC.)[1] [.04 Rainfall (In [19 [2] Weighting[1*2]
STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.466(In)
Area Averaged 100-Year Rainfall= 1.190(In)
                                    Page 1
```

$0.013 \mathrm{Sq} . \mathrm{Mi}$.
moval 33 preb 110



Unit H y d r o g r a ph FOOTHILL S-Curve

Unit Hydrograph Data
Unit time period Time \% of Iag Distribution Unit Hydrograph (hrs) Graph\% (CFS)

| 1 | 0.083 | 130.523 | 24.817 |  | 2.011 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 0.167 | 261.045 | 55.614 |  | 4.506 |
| 3 | 0.250 | 391.568 | 14.211 |  | 1. 151 |
| 4 | 0.333 | 522.090 | 3.889 |  | 0.315 |
| 5 | 0.417 | 652.613 | 1. 032 |  | 0. 084 |
| 6 | 0.500 | 783.135 | 0.438 |  | 0.035 |
|  |  |  | Sum $=100.000$ | Sum= | 8.103 |

The following loss rate calculations reflect use of the minimumalculated oss rate subtracted from the Storm Rain to produce the maximum Effective Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
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                8.2
                Study date 11/09/21 File: moval33preb1100.out
                    _+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            -----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 1 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

8.04
0.47
3.75

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time ( Hr .) | Pattern Percent | Storm Rain (In/Hr) | Loss rate(In./Hr) |  | $\begin{aligned} & \text { Effective } \\ & \text { (In/Hr) } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Max \| | Low |  |
| 1 | 0.08 | 3.30 | 0.471 | 0.086 | $0.424)$ | 0.385 |
| 2 | 0.17 | 4.20 | 0.600 | 0.086 | 0.540) | 0.514 |
| 3 | 0.25 | 4.40 | 0.628 | 0.086 | $0.565)$ | 0.542 |
| 4 | 0.33 | 4.80 | 0.685 | 0.086 | 0.617) | 0.600 |
| 5 | 0.42 | 5.20 | 0.743 | 0.086 | $0.668)$ | 0.657 |
| 6 | 0.50 | 6.20 | 0.885 | 0.086 | $0.797)$ | 0.799 |
| 7 | 0.58 | 6.80 | 0.971 | 0.086 | 0.874) | 0.885 |
| 8 | 0.67 | 8.80 | 1.257 | 0.086 | 1.131) | 1.171 |
| 9 | 0.75 | 13.90 | 1.985 | 0.086 | 1.786) | 1.899 |
| 10 | 0.83 | 31.40 | 4.484 | 0.086 | 4.035) | 4.398 |
| 11 | 0.92 | 7.20 | 1.028 | 0.086 | $0.925)$ | 0.942 |
| 12 | 1.00 | 3.80 | 0.543 | 0.086 | 0.488) | 0.457 |
|  |  | Loss Rat | Not Used) |  |  |  |
|  | m $=$ | 100.0 |  |  | Sum $=$ | 13.2 |

Flood volume = Effective rainfall 1.10(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft) Total soil loss = 0.09(In) Total soil loss $=0.057(\mathrm{Ac} . \mathrm{Ft})$ Total rainfall $=\quad 1.19($ In $)$ Flood volume $=\quad 32223.8$ Cubic Feet Total soil loss $=\quad 2504.1$ Cubic Feet

$\begin{array}{llllll}\text { Time (h+m) Volume Ac.Ft } & \text { Q(CFS) } & 0 & 7.5 & 15.0 & 22.5\end{array}$ 30.0

| 0+ 5 | 0.0053 | 0.78 | VQ |  |  | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+10 | 0.0244 | 2.77 | IV |  |  | \| | \| |
| 0+15 | 0.0510 | 3.85 | \| V | Q |  | । | \| |
| 0+20 | 0.0810 | 4.37 |  | VQ |  | \| | \| |
| 0+25 | 0.1144 | 4.84 | \| | Q |  | 1 | \| |
| 0+30 | 0.1522 | 5.49 | 1 | QV |  | 1 | \| |
| 0+35 | 0.1962 | 6.39 | \| | Q | v | । | \| |



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            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            -----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
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            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 3 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

8.04
0.80
6.42

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value

| Unit | Time | Pattern | Storm Rain | Loss rat | In. / Hr ) | $\begin{aligned} & \text { Effective } \\ & \text { (In/Hr) } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low |  |
| 1 | 0.08 | 1.30 | 0.125 | ( 0.198) | 0.112 | 0.012 |
| 2 | 0.17 | 1.30 | 0.125 | ( 0.198) | 0.112 | 0.012 |
| 3 | 0.25 | 1.10 | 0.105 | ( 0.198) | 0.095 | 0.011 |
| 4 | 0.33 | 1.50 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 5 | 0.42 | 1.50 | 0.144 | $0.198)$ | 0.129 | 0.014 |
| 6 | 0.50 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 7 | 0.58 | 1.50 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 8 | 0.67 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 9 | 0.75 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 10 | 0.83 | 1.50 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 11 | 0.92 | 1.60 | 0.153 | ( 0.198) | 0.138 | 0.015 |
| 12 | 1.00 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 13 | 1.08 | 2.20 | 0.211 | ( 0.198) | 0.190 | 0.021 |
| 14 | 1.17 | 2.20 | 0.211 | ( 0.198) | 0.190 | 0.021 |
| 15 | 1.25 | 2.20 | 0.211 | ( 0.198) | 0.190 | 0.021 |
| 16 | 1.33 | 2.00 | 0.192 | ( 0.198) | 0.173 | 0.019 |
| 17 | 1.42 | 2.60 | 0.249 | 0.198 | ( 0.224) | 0.051 |
| 18 | 1.50 | 2.70 | 0.259 | 0.198 | ( 0.233) | 0.060 |
| 19 | 1.58 | 2.40 | 0.230 | 0.198 | ( 0.207) | 0.032 |
| 20 | 1.67 | 2.70 | 0.259 | 0.198 | ( 0.233) | 0.060 |
| 21 | 1.75 | 3.30 | 0.316 | 0.198 | ( 0.285) | 0.118 |
| 22 | 1.83 | 3.10 | 0.297 | 0.198 | ( 0.267) | 0.099 |
| 23 | 1.92 | 2.90 | 0.278 | 0.198 | ( 0.250) | 0.080 |
| 24 | 2.00 | 3.00 | 0.288 | 0.198 | (0.259) | 0.089 |
| 25 | 2.08 | 3.10 | 0.297 | 0.198 | (0.267) | 0.099 |
| 26 | 2.17 | 4.20 | 0.403 | 0.198 | ( 0.362) | 0.204 |
| 27 | 2.25 | 5.00 | 0.479 | 0.198 | ( 0.431) | 0.281 |
| 28 | 2.33 | 3.50 | 0.336 | 0.198 | ( 0.302) | 0.137 |
| 29 | 2.42 | 6.80 | 0.652 | 0.198 | ( 0.587) | 0.454 |
| 30 | 2.50 | 7.30 | 0.700 | 0.198 | ( 0.630) | 0.501 |
| 31 | 2.58 | 8.20 | 0.786 | 0.198 | ( 0.708) | 0.588 |
| 32 | 2.67 | 5.90 | 0.566 | 0.198 | ( 0.509) | 0.367 |
| 33 | 2.75 | 2.00 | 0.192 | ( 0.198) | 0.173 | 0.019 |
| 34 | 2.83 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 35 | 2.92 | 1.80 | 0.173 | ( 0.198) | 0.155 | 0.017 |
| 36 | 3.00 | 0.60 | 0.058 | 0.198) | 0.052 | 0.006 |
|  | (Loss Rate Not Used) |  |  |  |  |  |
|  | Sum $=100.0$ |  |  |  | Sum | 3.5 |
|  | Flood volume $=$ Effective rainfall 0.29(In) |  |  |  |  |  |
|  | times area 8.0(Ac.)/[ |  |  | /(Ft.)] = | 0.2(Ac | Ft) |
|  | Total soil loss $=00.50($ In $)$ |  |  |  |  |  |
|  | Total soil loss $=0.338($ |  |  |  |  |  |
|  | Total rainfall $=0.80($ In $)$ |  |  |  |  |  |
|  | Flood volume $=$ 8609.2 Cubic Feet |  |  |  |  |  |
|  | Total soil loss $=$ 14708.9 Cubic Feet |  |  |  |  |  |
| low rate of this hydrograph $=$ 4.131(CF |  |  |  |  |  |  |
|  | +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++ |  |  |  |  |  |
| + |  |  |  |  |  |  |
|  | $3-\mathrm{HOUR}$ R S T O R M |  |  |  |  |  |
|  |  |  |  |  |  |  |

Hydrograph in 5 Minute intervals ((CFS))



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            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb35.out
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            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            -----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
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            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 3 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

8.04
0.80
6.42

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value


Hydrograph in 5 Minute intervals ((CFS))



$$
\begin{aligned}
& \text { Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012, Version 8.2 } \\
& \text { Study date 02/19/21 File: moval33preb310. out }
\end{aligned}
$$

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978
Program License Serial Number 6232
    English (in-lb) Input Units Used
    English Rainfal| Data (Inches) Input Values Used
    English Units used in output format
Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Drainage Area = 8.04(AC.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
Length along longest watercourse= 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00(Ft.)
Length along ongest watercourse = 0.205 Mi
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in el evation= 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./ Mi.
Average Manning's 'N'=0.040
Lag time = 0.064 Hr.
Lag time= 3.83 Mi n
25% of lag time= 0.96 Min.
40% of |ag time= 1.53 Min.
Unit time= 5.00 Min.
Duration of storm=3 Hour(s)
User Entered Base Flow= 0.00(CFS)
2 YEAR Area rainfal| data:
Area(AC.)[1] Rainfall(In)[2] Weighting[1*2]
    8.04 0.80 6.42
100 YEAR Area rainfall data:
```



```
STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall= 1.890(In)
                                    Page 1
```

$0.013 \mathrm{Sq} . \mathrm{Mi}$.
moval 33 preb 310
Point rain (area averaged) $=1.248(1 \mathrm{n})$
Areal adjustment factor $=100.00 \%$
Adjusted average point rain $=1.248(1 \mathrm{n})$
Sub-Area Data:
$\begin{array}{ccc}\text { Area( Ac.) } & \text { Runoff Index } & \text { I mpervious } \% \\ 8.040 & 84.00 & 0.000\end{array}$
Total Area Entered $=8.04(A C$.




The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value




```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb3100.out
                    _+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            -----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 3 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

8.04
0.80
6.42

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate | In. / Hr ) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max \| | Low | (In/Hr) |
| 1 | 0.08 | 1.30 | 0.295 | 0.086 | ( 0.265) | 0.209 |
| 2 | 0.17 | 1.30 | 0.295 | 0.086 | ( 0.265) | 0.209 |
| 3 | 0.25 | 1.10 | 0.249 | 0.086 | ( 0.225) | 0.164 |
| 4 | 0.33 | 1.50 | 0.340 | 0.086 | ( 0.306) | 0.254 |
| 5 | 0.42 | 1.50 | 0.340 | 0.086 | ( 0.306) | 0.254 |
| 6 | 0.50 | 1.80 | 0.408 | 0.086 | ( 0.367) | 0.322 |
| 7 | 0.58 | 1.50 | 0.340 | 0.086 | ( 0.306) | 0.254 |
| 8 | 0.67 | 1.80 | 0.408 | 0.086 | ( 0.367) | 0.322 |
| 9 | 0.75 | 1.80 | 0.408 | 0.086 | ( 0.367) | 0.322 |
| 10 | 0.83 | 1.50 | 0.340 | 0.086 | ( 0.306) | 0.254 |
| 11 | 0.92 | 1.60 | 0.363 | 0.086 | ( 0.327) | 0.277 |
| 12 | 1.00 | 1.80 | 0.408 | 0.086 | ( 0.367) | 0.322 |
| 13 | 1.08 | 2.20 | 0.499 | 0.086 | ( 0.449) | 0.413 |
| 14 | 1.17 | 2.20 | 0.499 | 0.086 | ( 0.449) | 0.413 |
| 15 | 1.25 | 2.20 | 0.499 | 0.086 | ( 0.449) | 0.413 |
| 16 | 1.33 | 2.00 | 0.454 | 0.086 | ( 0.408) | 0.368 |
| 17 | 1.42 | 2.60 | 0.590 | 0.086 | ( 0.531) | 0.504 |
| 18 | 1.50 | 2.70 | 0.612 | 0.086 | ( 0.551) | 0.527 |
| 19 | 1.58 | 2.40 | 0.544 | 0.086 | ( 0.490) | 0.459 |
| 20 | 1.67 | 2.70 | 0.612 | 0.086 | ( 0.551) | 0.527 |
| 21 | 1.75 | 3.30 | 0.748 | 0.086 | ( 0.674) | 0.663 |
| 22 | 1.83 | 3.10 | 0.703 | 0.086 | ( 0.633) | 0.617 |
| 23 | 1.92 | 2.90 | 0.658 | 0.086 | ( 0.592) | 0.572 |
| 24 | 2.00 | 3.00 | 0.680 | 0.086 | ( 0.612) | 0.595 |
| 25 | 2.08 | 3.10 | 0.703 | 0.086 | ( 0.633) | 0.617 |
| 26 | 2.17 | 4.20 | 0.953 | 0.086 | ( 0.857) | 0.867 |
| 27 | 2.25 | 5.00 | 1.134 | 0.086 | ( 1.021) | 1.048 |
| 28 | 2.33 | 3.50 | 0.794 | 0.086 | ( 0.714) | 0.708 |
| 29 | 2.42 | 6.80 | 1.542 | 0.086 | ( 1.388) | 1.456 |
| 30 | 2.50 | 7.30 | 1.656 | 0.086 | ( 1.490) | 1.570 |
| 31 | 2.58 | 8.20 | 1.860 | 0.086 | ( 1.674) | 1.774 |
| 32 | 2.67 | 5.90 | 1.338 | 0.086 | ( 1.204) | 1.252 |
| 33 | 2.75 | 2.00 | 0.454 | 0.086 | ( 0.408) | 0.368 |
| 34 | 2.83 | 1.80 | 0.408 | 0.086 | ( 0.367) | 0.322 |
| 35 | 2.92 | 1.80 | 0.408 | 0.086 | ( 0.367) | 0.322 |
| 36 | 3.00 | 0.60 | 0.136 | 0.086 | ( 0.122) | 0.050 |
|  | Sum = | $\begin{gathered} \text { (Loss Rat } \\ 100.0 \end{gathered}$ | Not Used) |  | Sum $=$ | 19.6 |
|  | Flood v | lume = E | fective rain | 1 | (In) |  |
|  | times | area | 8.0(Ac.)/[( | (Ft.)] | 1.1(Ac | Ft) |
|  | Total s | il loss | 0.26(I) |  |  |  |
|  | Total s | il loss | 0.172 (A |  |  |  |
|  | Total r | rainfall = | 1.89(In) |  |  |  |
|  | Flood vol | lume = | 47645.8 | c Feet |  |  |
|  | Total | il loss | 7512 | Cubic Fee |  |  |
| k flow rate of this hydrograph $=12.881(\mathrm{C}$ |  |  |  |  |  |  |
| ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++ |  |  |  |  |  |  |
| 3-HOUR S T O R M |  |  |  |  |  |  |
| R $\quad$ nof $f \quad H y d r o g r a p h$ |  |  |  |  |  |  |

Hydrograph in 5 Minute intervals ((CFS))
$\begin{array}{cccccc}\text { Time (h+m) Volume Ac.Ft } & \text { Q(CFS) } 0 & 10.0 & 10.0\end{array}$ 20.0



```
        U n i t H y d roggraph A n aly y i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb62.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            ----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 6 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

| 2.55 | 1.09 | 2.78 |
| :--- | :--- | :--- |
| 5.49 | 1.09 | 5.98 |

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time(Hr.) | Pattern Percent | Storm Rain (In/Hr) | Loss rate(In./Hr) |  | Effective (In/Hr) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Max | Low |  |
| 1 | 0.08 | 0.50 | 0.065 | $0.198)$ | 0.059 | 0.007 |
| 2 | 0.17 | 0.60 | 0.078 | $0.198)$ | 0.071 | 0.008 |
| 3 | 0.25 | 0.60 | 0.078 | ( 0.198) | 0.071 | 0.008 |
| 4 | 0.33 | 0.60 | 0.078 | ( 0.198) | 0.071 | 0.008 |
| 5 | 0.42 | 0.60 | 0.078 | ( 0.198) | 0.071 | 0.008 |
| 6 | 0.50 | 0.70 | 0.092 | $0.198)$ | 0.082 | 0.009 |
| 7 | 0.58 | 0.70 | 0.092 | ( 0.198) | 0.082 | 0.009 |
| 8 | 0.67 | 0.70 | 0.092 | ( 0.198) | 0.082 | 0.009 |
| 9 | 0.75 | 0.70 | 0.092 | ( 0.198) | 0.082 | 0.009 |
| 10 | 0.83 | 0.70 | 0.092 | ( 0.198) | 0.082 | 0.009 |
| 11 | 0.92 | 0.70 | 0.092 | ( 0.198) | 0.082 | 0.009 |
| 12 | 1.00 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 13 | 1.08 | 0.80 | 0.105 | $0.198)$ | 0.094 | 0.010 |
| 14 | 1.17 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 15 | 1.25 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 16 | 1.33 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 17 | 1.42 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 18 | 1.50 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 19 | 1.58 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 20 | 1.67 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 21 | 1.75 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 22 | 1.83 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 23 | 1.92 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 24 | 2.00 | 0.90 | 0.118 | ( 0.198) | 0.106 | 0.012 |
| 25 | 2.08 | 0.80 | 0.105 | ( 0.198) | 0.094 | 0.010 |
| 26 | 2.17 | 0.90 | 0.118 | ( 0.198) | 0.106 | 0.012 |
| 27 | 2.25 | 0.90 | 0.118 | ( 0.198) | 0.106 | 0.012 |
| 28 | 2.33 | 0.90 | 0.118 | ( 0.198) | 0.106 | 0.012 |
| 29 | 2.42 | 0.90 | 0.118 | ( 0.198) | 0.106 | 0.012 |
| 30 | 2.50 | 0.90 | 0.118 | ( 0.198) | 0.106 | 0.012 |
| 31 | 2.58 | 0.90 | 0.118 | ( 0.198) | 0.106 | 0.012 |
| 32 | 2.67 | 0.90 | 0.118 | ( 0.198) | 0.106 | 0.012 |
| 33 | 2.75 | 1.00 | 0.131 | ( 0.198) | 0.118 | 0.013 |
| 34 | 2.83 | 1.00 | 0.131 | ( 0.198) | 0.118 | 0.013 |
| 35 | 2.92 | 1.00 | 0.131 | ( 0.198) | 0.118 | 0.013 |
| 36 | 3.00 | 1.00 | 0.131 | ( 0.198) | 0.118 | 0.013 |
| 37 | 3.08 | 1.00 | 0.131 | ( 0.198) | 0.118 | 0.013 |
| 38 | 3.17 | 1.10 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 39 | 3.25 | 1.10 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 40 | 3.33 | 1.10 | 0.144 | ( 0.198) | 0.129 | 0.014 |
| 41 | 3.42 | 1.20 | 0.157 | ( 0.198) | 0.141 | 0.016 |
| 42 | 3.50 | 1.30 | 0.170 | ( 0.198) | 0.153 | 0.017 |
| 43 | 3.58 | 1.40 | 0.183 | ( 0.198) | 0.165 | 0.018 |
| 44 | 3.67 | 1.40 | 0.183 | ( 0.198) | 0.165 | 0.018 |
| 45 | 3.75 | 1.50 | 0.196 | ( 0.198) | 0.177 | 0.020 |
| 46 | 3.83 | 1.50 | 0.196 | ( 0.198) | 0.177 | 0.020 |
| 47 | 3.92 | 1.60 | 0.209 | $0.198)$ | 0.188 | 0.021 |
| 48 | 4.00 | 1.60 | 0.209 | ( 0.198) | 0.188 | 0.021 |
| 49 | 4.08 | 1.70 | 0.222 | 0.198 | $0.200)$ | 0.024 |
| 50 | 4.17 | 1.80 | 0.235 | 0.198 | ( 0.212) | 0.037 |
| 51 | 4.25 | 1.90 | 0.249 | 0.198 | ( 0.224) | 0.050 |
| 52 | 4.33 | 2.00 | 0.262 | 0.198 | ( 0.235) | 0.063 |
| 53 | 4.42 | 2.10 | 0.275 | 0.198 | ( 0.247) | 0.076 |
| 54 | 4.50 | 2.10 | 0.275 | 0.198 | ( 0.247) | 0.076 |
| 55 | 4.58 | 2.20 | 0.288 | 0.198 | ( 0.259) | 0.089 |



| 0+45 | 0.0036 | 0.07 | Q | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 0+50 | 0.0042 | 0.07 | Q | \| | 1 |
| 0+55 | 0.0047 | 0.07 | Q | \| | \| |
| 1+ 0 | 0.0052 | 0.08 | Q | \| | \| |
| 1+ 5 | 0.0058 | 0.08 | QV | \| | \| |
| 1+10 | 0.0063 | 0.08 | QV | \| | \| |
| 1+15 | 0.0069 | 0.08 | QV | \| | \| |
| 1+20 | 0.0075 | 0.08 | QV | \| | \| |
| 1+25 | 0.0081 | 0.08 | QV | \| | \| |
| 1+30 | 0.0087 | 0.08 | QV | \| | \| |
| 1+35 | 0.0093 | 0.08 | QV | \| | \| |
| 1+40 | 0.0098 | 0.08 | QV | \| | \| |
| 1+45 | 0.0104 | 0.08 | QV | \| | \| |
| 1+50 | 0.0110 | 0.08 | Q V | \| | \| |
| 1+55 | 0.0116 | 0.08 | Q V | \| | \| |
| 2+ 0 | 0.0122 | 0.09 | Q V | \| | \| |
| 2+ 5 | 0.0128 | 0.09 | Q V | \| | \| |
| 2+10 | 0.0134 | 0.09 | Q V | \| | 1 |
| 2+15 | 0.0141 | 0.09 | Q V | 1 | 1 |
| 2+20 | 0.0147 | 0.09 | Q V | I | I |
| 2+25 | 0.0154 | 0.10 | Q V | \| | \| |
| 2+30 | 0.0161 | 0.10 | Q V | \| | \| |
| 2+35 | 0.0167 | 0.10 | Q V | I | 1 |
| 2+40 | 0.0174 | 0.10 | Q V | I | 1 |
| 2+45 | 0.0180 | 0.10 | Q V | I | 1 |
| 2+50 | 0.0188 | 0.10 | Q V | 1 | 1 |
| 2+55 | 0.0195 | 0.11 | Q V | 1 | 1 |
| 3+ 0 | 0.0202 | 0.11 | Q V | I | 1 |
| 3+ 5 | 0.0209 | 0.11 | Q V | 1 | 1 |
| 3+10 | 0.0217 | 0.11 | Q V | \| | \| |


| 3+15 | 0.0225 | 0.11 | Q | v |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $3+20$ | 0.0233 | 0.12 | Q | v | \| | \| |
| 3+25 | 0.0241 | 0.12 | Q | v | \| | \| |
| 3+30 | 0.0250 | 0.13 | Q | v |  | \| |
| 3+35 | 0.0259 | 0.14 | Q | v |  | \| |
| $3+40$ | 0.0269 | 0.15 | Q | v |  | \| |
| $3+45$ | 0.0280 | 0.15 | Q | v |  | \| |
| 3+50 | 0.0290 | 0.16 | Q | V |  | \| |
| $3+55$ | 0.0302 | 0.16 | Q | V |  | \| |
| 4+ 0 | 0.0313 | 0.17 | Q | V | \| | \| |


|  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5+45 | 0.2090 | 0.34 | IQ | \| | \| | 1 |
| 5+50 | 0.2100 | 0.14 | Q | \| | \| | 1 |
| 5+55 | 0.2105 | 0.07 | Q | \| | \| | । |
| $6+0$ | 0.2107 | 0.04 | Q | \| | \| | \| |
| $6+5$ | 0.2109 | 0.02 | Q | \| | \| | 1 |
| 6+10 | 0.2109 | 0.01 | Q | \| | \| | \| |
| 6+15 | 0.2109 | 0.00 | Q | \| | \| | \| |
| 6+20 | 0.2109 | 0.00 | Q | \| | \| | I |
| 6+25 | 0.2109 | 0.00 | Q | \| | \| | 1 |

```
        U n i t H y d roggraph A n aly y i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb65.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
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            -----------------------------------------------------------------
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(Ft.)
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            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
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            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 6 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

| 2.55 | 1.09 | 2.78 |
| :--- | :--- | :--- |
| 5.49 | 1.09 | 5.98 |

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time(Hr.) | Pattern Percent | Storm Rain(In/Hr) | Loss rate(In./Hr) |  | Effective (In/Hr) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Max | Low |  |
| 1 | 0.08 | 0.50 | 0.086 | $0.198)$ | 0.077 | 0.009 |
| 2 | 0.17 | 0.60 | 0.103 | $0.198)$ | 0.093 | 0.010 |
| 3 | 0.25 | 0.60 | 0.103 | ( 0.198) | 0.093 | 0.010 |
| 4 | 0.33 | 0.60 | 0.103 | ( 0.198) | 0.093 | 0.010 |
| 5 | 0.42 | 0.60 | 0.103 | ( 0.198) | 0.093 | 0.010 |
| 6 | 0.50 | 0.70 | 0.120 | $0.198)$ | 0.108 | 0.012 |
| 7 | 0.58 | 0.70 | 0.120 | ( 0.198) | 0.108 | 0.012 |
| 8 | 0.67 | 0.70 | 0.120 | ( 0.198) | 0.108 | 0.012 |
| 9 | 0.75 | 0.70 | 0.120 | ( 0.198) | 0.108 | 0.012 |
| 10 | 0.83 | 0.70 | 0.120 | ( 0.198) | 0.108 | 0.012 |
| 11 | 0.92 | 0.70 | 0.120 | ( 0.198) | 0.108 | 0.012 |
| 12 | 1.00 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 13 | 1.08 | 0.80 | 0.137 | $0.198)$ | 0.124 | 0.014 |
| 14 | 1.17 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 15 | 1.25 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 16 | 1.33 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 17 | 1.42 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 18 | 1.50 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 19 | 1.58 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 20 | 1.67 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 21 | 1.75 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 22 | 1.83 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 23 | 1.92 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 24 | 2.00 | 0.90 | 0.155 | ( 0.198) | 0.139 | 0.015 |
| 25 | 2.08 | 0.80 | 0.137 | ( 0.198) | 0.124 | 0.014 |
| 26 | 2.17 | 0.90 | 0.155 | ( 0.198) | 0.139 | 0.015 |
| 27 | 2.25 | 0.90 | 0.155 | ( 0.198) | 0.139 | 0.015 |
| 28 | 2.33 | 0.90 | 0.155 | ( 0.198) | 0.139 | 0.015 |
| 29 | 2.42 | 0.90 | 0.155 | ( 0.198) | 0.139 | 0.015 |
| 30 | 2.50 | 0.90 | 0.155 | ( 0.198) | 0.139 | 0.015 |
| 31 | 2.58 | 0.90 | 0.155 | ( 0.198) | 0.139 | 0.015 |
| 32 | 2.67 | 0.90 | 0.155 | ( 0.198) | 0.139 | 0.015 |
| 33 | 2.75 | 1.00 | 0.172 | ( 0.198) | 0.155 | 0.017 |
| 34 | 2.83 | 1.00 | 0.172 | ( 0.198) | 0.155 | 0.017 |
| 35 | 2.92 | 1.00 | 0.172 | ( 0.198) | 0.155 | 0.017 |
| 36 | 3.00 | 1.00 | 0.172 | ( 0.198) | 0.155 | 0.017 |
| 37 | 3.08 | 1.00 | 0.172 | ( 0.198) | 0.155 | 0.017 |
| 38 | 3.17 | 1.10 | 0.189 | ( 0.198) | 0.170 | 0.019 |
| 39 | 3.25 | 1.10 | 0.189 | ( 0.198) | 0.170 | 0.019 |
| 40 | 3.33 | 1.10 | 0.189 | $0.198)$ | 0.170 | 0.019 |
| 41 | 3.42 | 1.20 | 0.206 | ( 0.198) | 0.186 | 0.021 |
| 42 | 3.50 | 1.30 | 0.223 | 0.198 | $0.201)$ | 0.025 |
| 43 | 3.58 | 1.40 | 0.241 | 0.198 | ( 0.217) | 0.042 |
| 44 | 3.67 | 1.40 | 0.241 | 0.198 | ( 0.217) | 0.042 |
| 45 | 3.75 | 1.50 | 0.258 | 0.198 | ( 0.232) | 0.059 |
| 46 | 3.83 | 1.50 | 0.258 | 0.198 | ( 0.232) | 0.059 |
| 47 | 3.92 | 1.60 | 0.275 | 0.198 | ( 0.247) | 0.077 |
| 48 | 4.00 | 1.60 | 0.275 | 0.198 | ( 0.247) | 0.077 |
| 49 | 4.08 | 1.70 | 0.292 | 0.198 | ( 0.263) | 0.094 |
| 50 | 4.17 | 1.80 | 0.309 | 0.198 | ( 0.278) | 0.111 |
| 51 | 4.25 | 1.90 | 0.326 | 0.198 | ( 0.294) | 0.128 |
| 52 | 4.33 | 2.00 | 0.344 | 0.198 | ( 0.309) | 0.145 |
| 53 | 4.42 | 2.10 | 0.361 | 0.198 | ( 0.325) | 0.162 |
| 54 | 4.50 | 2.10 | 0.361 | 0.198 | ( 0.325) | 0.162 |
| 55 | 4.58 | 2.20 | 0.378 | 0.198 | ( 0.340) | 0.180 |



| 0+45 | 0.0048 | 0.10 | Q | I | I |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 0+50 | 0.0055 | 0.10 | Q | \| | \| |
| 0+55 | 0.0061 | 0.10 | Q | \| | \| |
| 1+ 0 | 0.0068 | 0.10 | Q | \| | \| |
| 1+ 5 | 0.0076 | 0.11 | Q | \| | , |
| 1+10 | 0.0083 | 0.11 | Q | \| | \| |
| 1+15 | 0.0091 | 0.11 | QV | \| | \| |
| 1+20 | 0.0099 | 0.11 | QV | \| | \| |
| 1+25 | 0.0106 | 0.11 | QV | \| | 1 |
| 1+30 | 0.0114 | 0.11 | QV | \| | 1 |
| 1+35 | 0.0122 | 0.11 | QV | \| | \| |
| 1+40 | 0.0129 | 0.11 | QV | \| | \| |
| $1+45$ | 0.0137 | 0.11 | QV | \| | \| |
| 1+50 | 0.0145 | 0.11 | QV | I | \| |
| 1+55 | 0.0152 | 0.11 | QV | \| | \| |
| 2+ 0 | 0.0160 | 0.11 | QV | \| | \| |
| 2+ 5 | 0.0169 | 0.12 | QV | \| | \| |
| 2+10 | 0.0177 | 0.12 | QV | I | \| |
| 2+15 | 0.0185 | 0.12 | Q V | I | \| |
| 2+20 | 0.0194 | 0.12 | Q V | \| | \| |
| 2+25 | 0.0202 | 0.13 | Q V | \| | \| |
| 2+30 | 0.0211 | 0.13 | Q V | I | \| |
| 2+35 | 0.0220 | 0.13 | Q V | \| | 1 |
| 2+40 | 0.0228 | 0.13 | Q V | \| | \| |
| 2+45 | 0.0237 | 0.13 | Q V | I | 1 |
| 2+50 | 0.0246 | 0.14 | Q V | \| | \| |
| 2+55 | 0.0256 | 0.14 | Q V | 1 | \| |
| 3+ 0 | 0.0266 | 0.14 | Q V | 1 | 1 |
| $3+5$ | 0.0275 | 0.14 | Q V | 1 | 1 |
| 3+10 | 0.0285 | 0.14 | Q V | 1 | \| |


| 3+15 | 0.0295 | 0.15 | Q | $v$ |  | 1 |  |  | I |  | \| |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $3+20$ | 0.0306 | 0.15 | Q | $v$ |  | 1 |  |  | \| |  | \| |  |
| 3+25 | 0.0317 | 0.16 | Q | $v$ |  | 1 |  |  | I |  | \| |  |
| 3+30 | 0.0329 | 0.17 | Q | $v$ |  | 1 |  |  | \| |  | \| |  |
| 3+35 | 0.0344 | 0.23 | Q | $v$ |  | 1 |  |  | \| |  | \| |  |
| $3+40$ | 0.0366 | 0.31 | IQ | v |  | 1 |  |  | \| |  | \| |  |
| $3+45$ | 0.0391 | 0.37 | IQ | v |  | 1 |  |  | \| |  | I |  |
| $3+50$ | 0.0422 | 0.45 | IQ | $v$ |  | 1 |  |  | \| |  | \| |  |
| $3+55$ | 0.0457 | 0.51 | \| Q | Q V | $v$ | 1 |  |  | \| |  | I |  |
| 4+ 0 | 0.0498 | 0.59 | \| Q | Q V |  | 1 |  |  | \| |  | I |  |
| $4+5$ | 0.0543 | 0.65 | \| Q | Q | $v$ | 1 |  |  | \| |  | I |  |
| 4+10 | 0.0595 | 0.76 | I | Q | $v$ | 1 |  |  | \| |  | I |  |
| 4+15 | 0.0657 | 0.90 | 1 | Q | v | 1 |  |  | \| |  | I |  |
| 4+20 | 0.0728 | 1.04 | 1 | Q | v | , |  |  | \| |  | I |  |
| $4+25$ | 0.0809 | 1.17 | । | Q |  | v 1 |  |  |  |  | I |  |
| 4+30 | 0.0898 | 1.28 | 1 | Q | Q | v |  |  | \| |  | I |  |
| 4+35 | 0.0990 | 1.34 | \| | Q | Q | IV |  |  | \| |  | I |  |
| $4+40$ | 0.1091 | 1.46 | I |  | Q | 1 V |  |  | \| |  | I |  |
| 4+45 | 0.1200 | 1.59 | I |  | Q | I | v |  | I |  | I |  |
| 4+50 | 0.1317 | 1.70 | 1 |  | Q | 1 | v |  | \| |  | I |  |
| 4+55 | 0.1438 | 1.76 | 1 |  | Q | 1 | V |  | \| |  | I |  |
| $5+0$ | 0.1568 | 1.88 | 1 |  | Q | 1 |  |  | \| |  | I |  |
| $5+5$ | 0.1716 | 2.15 | 1 |  |  | \| |  |  |  |  | I |  |
| 5+10 | 0.1904 | 2.74 | 1 |  |  | Q |  |  | IV |  | I |  |
| 5+15 | 0.2134 | 3.33 | 1 |  |  | 1 | Q |  | 1 | v | I |  |
| $5+20$ | 0.2396 | 3.80 | I |  |  | 1 | Q |  | \| | v | \| |  |
| $5+25$ | 0.2692 | 4.30 | 1 |  |  | 1 |  |  | 1 |  | V |  |
| 5+30 | 0.3042 | 5.08 | 1 |  |  | 1 |  |  | Q |  | 1 | v |
| 5+35 | 0.3360 | 4.62 | \| |  |  | \| |  | Q |  |  | \| | v |
| 5+40 | 0.3480 | 1.74 | \| |  | Q | \| |  |  | \| |  | \| |  |



$$
\begin{aligned}
& \text { Unit Hydrograph A n alysics } \\
& \text { Copyright (c) CIVILCADD/CIVILDESIGN, } 1989 \text { - 2012, Version 8. } 2 \\
& \text { Study date 02/19/21 File: moval33preb610. out }
\end{aligned}
$$

```
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978
Program License Serial Number 6232
English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used
English Units used i n output format
```

Gateway Hei ghts
Predevlopment Conditions
Unit Hydrograph Runoff
Drainage Area $=$ 8.04(AC.) $=0.013$ Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
$0.013 \mathrm{Sq} . \mathrm{Mi}$.
Length along longest watercourse = $1083.00(\mathrm{Ft}$.
Length along longest watercourse measured to centroid = 476.00(Ft.)
Length along ongest watercourse = 0.205 Mi .
Length along longest watercourse measured to centroid = 0.090 Mi .
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./ Mi.
Average Manning's 'N' $=0.040$
Lag time $=0.064 \mathrm{Hr}$.
Lag time $=3.83 \mathrm{Min}$.
$25 \%$ of lag time $=0.96 \mathrm{Min}$.
$40 \%$ of 1 ag time $=1.53 \mathrm{Min}$.
Unit time $=5.00 \mathrm{Min}$.
Duration of storm = 6 Hour (s)
User Entered Base Flow = $0.00(C F S)$
2 YEAR Area rainfall data:

| Area(Ac.) $[1]$ | Rainfall $(1 n)[2]$ | Weighting[1*2] |
| ---: | :---: | :---: |
| 2.55 | 1.09 | 2.78 |
| 5.49 | 1.09 | 5.98 |

100 YEAR Area rainfall data:

| Area(Ac.) [1] | Rainfall(1n)[2] | Weighting[1*2] |
| :---: | :---: | :---: |
| 8.04 | 2.55 | 20.50 |

STORM EVENT (YEAR) $=10.00$
Area Averaged 2-Year Rainfall= $=1.090(1 n)$


The following loss rate calculations reflect use of the mi nimumalculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value




Hydrograph in 5 Minute intervals ((CFS))

| Ti me ( $h+m$ ) | Volume Ac.Ft | $Q(C F S)$ | 0 | 2.5 | 5.0 | 7. 5 | 10.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $0+5$ | 0.0001 | 0.02 | Q |  |  |  |  |
| $0+10$ | 0.0006 | 0.07 | Q |  |  |  |  |
| $0+15$ | 0.0013 | 0.09 | Q |  |  |  |  |
| $0+20$ | 0.0019 | 0.10 | Q |  |  |  |  |
| $0+25$ | 0.0026 | 0.10 | Q |  |  |  |  |
| $0+30$ | 0.0033 | 0.10 | Q |  |  |  |  |
| $0+35$ | 0.0041 | 0.11 | Q |  |  |  |  |
| $0+40$ | 0.0049 | 0.11 | Q |  |  |  |  |
| $0+45$ | 0.0056 | 0.11 | Q |  |  |  |  |
| $0+50$ | 0.0064 | 0.12 | Q |  |  |  |  |
| $0+55$ | 0.0072 | 0.12 | Q |  |  |  |  |
| $1+0$ | 0.0081 | 0.12 | Q |  |  |  |  |
| $1+5$ | 0.0089 | 0.13 | Q |  |  |  |  |
| $1+10$ | 0.0098 | 0.13 | Q |  |  |  |  |
| $1+15$ | 0.0107 | 0.13 | 0 |  |  |  |  |
| $1+20$ | 0.0116 | 0.13 | Q |  |  |  |  |
| $1+25$ | 0.0126 | 0.13 | QV |  |  |  |  |
| $1+30$ | 0.0135 | 0.13 | QV |  |  |  |  |
| $1+35$ | 0.0144 | 0.13 | QV |  |  |  |  |
| $1+40$ | 0.0153 | 0.13 | QV |  |  |  |  |
| $1+45$ | 0.0162 | 0.13 | QV |  |  |  |  |
| $1+50$ | 0.0171 | 0.13 | QV |  |  |  |  |
| $1+55$ | 0.0180 | 0.13 | QV |  |  |  |  |
| $2+0$ | 0.0189 | 0.14 | QV |  |  |  |  |
| $2+5$ | 0.0199 | 0.14 | QV |  |  |  |  |
| $2+10$ | 0.0208 | 0.14 | QV |  |  |  |  |
| $2+15$ | 0.0218 | 0.15 | QV |  |  |  |  |
| $2+20$ | 0.0229 | 0.15 | QV |  |  |  |  |
| $2+25$ | 0.0239 | 0.15 | Q V |  |  |  |  |
| $2+30$ | 0.0249 | 0.15 | Q V |  |  |  |  |
| $2+35$ | 0.0259 | 0.15 | Q V |  |  |  |  |
| $2+40$ | 0.0269 | 0.15 | Q V |  |  |  |  |
| $2+45$ | 0.0280 | 0.15 | Q V |  |  |  |  |
| $2+50$ | 0.0291 | 0.16 | Q V |  |  |  |  |
| $2+55$ | 0.0302 | 0.16 | Q V |  |  |  |  |
| $3+0$ | 0.0314 | 0.16 | Q V |  |  |  |  |
| $3+5$ | 0.0325 | 0.16 | Q V |  |  |  |  |
| $3+10$ | 0.0337 | 0.17 | Q V |  |  |  |  |
| $3+15$ | 0.0350 | 0.19 |  |  |  |  |  |
| $3+20$ | 0.0364 | 0.20 | Q V |  |  |  |  |
| $3+25$ | 0.0380 | 0.24 | Q V |  |  |  |  |
| $3+30$ | 0.0406 | 0.37 | Q V |  |  |  |  |
| $3+35$ | 0.0443 | 0.53 | QV |  |  |  |  |
| $3+40$ | 0.0487 | 0.65 | Q V |  |  |  |  |
| $3+45$ | 0.0537 | 0.72 | Q V |  |  |  |  |
| $3+50$ | 0.0594 | 0.82 | Q V |  |  |  |  |
| $3+55$ | 0.0655 | 0.89 | Q V |  |  |  |  |
| $4+0$ | 0.0723 | 0.99 | Q V |  |  |  |  |
| $4+5$ | 0.0796 | 1. 05 | Q V |  |  |  |  |
| $4+10$ | 0.0878 | 1.19 | Q V |  |  |  |  |
| $4+15$ | 0.0971 | 1.35 | Q V |  |  |  |  |
|  |  |  | Page |  |  |  |  |



```
        U n i t H y d roggraph A n aly y i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb6100.out
                    _+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            -----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 6 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

| 2.55 | 1.09 | 2.78 |
| :--- | :--- | :--- |
| 5.49 | 1.09 | 5.98 |

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time(Hr.) | Pattern Percent | Storm Rain ( $\mathrm{In} / \mathrm{Hr}$ ) | Loss rate(In./Hr) |  | Effective(In/Hr) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Max | Low |  |
| 1 | 0.08 | 0.50 | 0.153 | 0.086 | $0.138)$ | 0.067 |
| 2 | 0.17 | 0.60 | 0.184 | 0.086 | ( 0.165) | 0.098 |
| 3 | 0.25 | 0.60 | 0.184 | 0.086 | ( 0.165) | 0.098 |
| 4 | 0.33 | 0.60 | 0.184 | 0.086 | ( 0.165) | 0.098 |
| 5 | 0.42 | 0.60 | 0.184 | 0.086 | ( 0.165) | 0.098 |
| 6 | 0.50 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 7 | 0.58 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 8 | 0.67 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 9 | 0.75 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 10 | 0.83 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 11 | 0.92 | 0.70 | 0.214 | 0.086 | ( 0.193) | 0.128 |
| 12 | 1.00 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 13 | 1.08 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 14 | 1.17 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 15 | 1.25 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 16 | 1.33 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 17 | 1.42 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 18 | 1.50 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 19 | 1.58 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 20 | 1.67 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 21 | 1.75 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 22 | 1.83 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 23 | 1.92 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 24 | 2.00 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 25 | 2.08 | 0.80 | 0.245 | 0.086 | ( 0.220) | 0.159 |
| 26 | 2.17 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 27 | 2.25 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 28 | 2.33 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 29 | 2.42 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 30 | 2.50 | 0.90 | 0.275 | 0.086 | $0.248)$ | 0.190 |
| 31 | 2.58 | 0.90 | 0.275 | 0.086 | ( 0.248) | 0.190 |
| 32 | 2.67 | 0.90 | 0.275 | 0.086 | $0.248)$ | 0.190 |
| 33 | 2.75 | 1.00 | 0.306 | 0.086 | ( 0.275) | 0.220 |
| 34 | 2.83 | 1.00 | 0.306 | 0.086 | ( 0.275) | 0.220 |
| 35 | 2.92 | 1.00 | 0.306 | 0.086 | (0.275) | 0.220 |
| 36 | 3.00 | 1.00 | 0.306 | 0.086 | (0.275) | 0.220 |
| 37 | 3.08 | 1.00 | 0.306 | 0.086 | ( 0.275) | 0.220 |
| 38 | 3.17 | 1.10 | 0.337 | 0.086 | ( 0.303) | 0.251 |
| 39 | 3.25 | 1.10 | 0.337 | 0.086 | ( 0.303) | 0.251 |
| 40 | 3.33 | 1.10 | 0.337 | 0.086 | ( 0.303) | 0.251 |
| 41 | 3.42 | 1.20 | 0.367 | 0.086 | ( 0.330) | 0.281 |
| 42 | 3.50 | 1.30 | 0.398 | 0.086 | ( 0.358) | 0.312 |
| 43 | 3.58 | 1.40 | 0.428 | 0.086 | ( 0.386) | 0.343 |
| 44 | 3.67 | 1.40 | 0.428 | 0.086 | ( 0.386) | 0.343 |
| 45 | 3.75 | 1.50 | 0.459 | 0.086 | ( 0.413) | 0.373 |
| 46 | 3.83 | 1.50 | 0.459 | 0.086 | ( 0.413) | 0.373 |
| 47 | 3.92 | 1.60 | 0.490 | 0.086 | ( 0.441) | 0.404 |
| 48 | 4.00 | 1.60 | 0.490 | 0.086 | ( 0.441) | 0.404 |
| 49 | 4.08 | 1.70 | 0.520 | 0.086 | ( 0.468) | 0.434 |
| 50 | 4.17 | 1.80 | 0.551 | 0.086 | ( 0.496) | 0.465 |
| 51 | 4.25 | 1.90 | 0.581 | 0.086 | ( 0.523) | 0.496 |
| 52 | 4.33 | 2.00 | 0.612 | 0.086 | ( 0.551) | 0.526 |
| 53 | 4.42 | 2.10 | 0.643 | 0.086 | ( 0.578) | 0.557 |
| 54 | 4.50 | 2.10 | 0.643 | 0.086 | ( 0.578) | 0.557 |
| 55 | 4.58 | 2.20 | 0.673 | 0.086 | ( 0.606) | 0.587 |



| 0+45 | 0.0470 | 1.04 | \|VQ |  | \| | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+50 | 0.0541 | 1.04 | IVQ |  | \| | I | \| |
| 0+55 | 0.0613 | 1.04 | IVQ |  | \| | \| | \| |
| 1+ 0 | 0.0689 | 1.10 | \| Q |  | I | \| | \| |
| 1+ 5 | 0.0774 | 1.24 | \| Q |  | \| | \| | \| |
| 1+10 | 0.0862 | 1.28 | \\| Q |  | \| | \| | \| |
| 1+15 | 0.0951 | 1.29 | \| Q |  | \| | \| | \| |
| 1+20 | 0.1039 | 1.29 | \\| QV |  | \| | \| | \| |
| 1+25 | 0.1128 | 1.29 | \\| QV |  | \| | \| | \| |
| 1+30 | 0.1217 | 1.29 | \\| QV |  | \| | \| | \| |
| 1+35 | 0.1306 | 1.29 | \\| QV |  | \| | \| | \| |
| 1+40 | 0.1394 | 1.29 | \\| Q V |  | \| | \| | \| |
| 1+45 | 0.1483 | 1.29 | \\| Q V |  | \| | \| | \| |
| 1+50 | 0.1572 | 1.29 | Q V |  | \| | \| | \| |
| 1+55 | 0.1661 | 1.29 | \\| Q V |  | \| | \| | \| |
| 2+ 0 | 0.1754 | 1.35 | \| Q | $v$ | \| | \| | \| |
| 2+ 5 | 0.1852 | 1.43 | \| Q | $v$ | \| | \| | \| |
| 2+10 | 0.1947 | 1.39 | \| Q | $v$ | \| | \| | \| |
| 2+15 | 0.2051 | 1.50 | \| Q | v | \| | \| | \| |
| 2+20 | 0.2156 | 1.53 | \\| Q | $v$ | \| | \| | \| |
| 2+25 | 0.2261 | 1.53 | \| Q | $v$ | \| | \| | \| |
| 2+30 | 0.2367 | 1.54 | \\| Q | $v$ | \| | \| | \| |
| 2+35 | 0.2473 | 1.54 | \\| Q | v | \| | \| | \| |
| 2+40 | 0.2579 | 1.54 | \\| Q | v | \| | \| | \| |
| 2+45 | 0.2689 | 1.60 | \\| Q | v | \| | \| | \| |
| 2+50 | 0.2809 | 1.74 | \\| Q | V |  | \| | \| |
| 2+55 | 0.2931 | 1.77 | \\| Q | V |  | \| | \| |
| 3+ 0 | 0.3053 | 1.78 | \\| Q | V |  | \| | \| |
| 3+ 5 | 0.3176 | 1.78 | \| Q |  | I | 1 | \| |
| 3+10 | 0.3303 | 1.85 | \\| Q |  | V\| | \| | I |




```
        U n i t H y d roggraph A n aly y i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb242.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            -----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 24 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 YEAR Area rainfall data:
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value

| Unit | Time | Pattern | Storm Rain | Loss rat | n. / Hr) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | (In/Hr) |
| 1 | 0.08 | 0.07 | 0.015 | $0.352)$ | 0.014 | 0.002 |
| 2 | 0.17 | 0.07 | 0.015 | $0.350)$ | 0.014 | 0.002 |
| 3 | 0.25 | 0.07 | 0.015 | $0.349)$ | 0.014 | 0.002 |
| 4 | 0.33 | 0.10 | 0.023 | $0.348)$ | 0.021 | 0.002 |
| 5 | 0.42 | 0.10 | 0.023 | ( 0.346) | 0.021 | 0.002 |
| 6 | 0.50 | 0.10 | 0.023 | ( 0.345) | 0.021 | 0.002 |
| 7 | 0.58 | 0.10 | 0.023 | ( 0.344) | 0.021 | 0.002 |
| 8 | 0.67 | 0.10 | 0.023 | ( 0.342) | 0.021 | 0.002 |
| 9 | 0.75 | 0.10 | 0.023 | $0.341)$ | 0.021 | 0.002 |
| 10 | 0.83 | 0.13 | 0.031 | ( 0.340) | 0.028 | 0.003 |
| 11 | 0.92 | 0.13 | 0.031 | ( 0.338) | 0.028 | 0.003 |
| 12 | 1.00 | 0.13 | 0.031 | ( 0.337) | 0.028 | 0.003 |
| 13 | 1.08 | 0.10 | 0.023 | ( 0.336) | 0.021 | 0.002 |
| 14 | 1.17 | 0.10 | 0.023 | ( 0.334) | 0.021 | 0.002 |
| 15 | 1.25 | 0.10 | 0.023 | ( 0.333) | 0.021 | 0.002 |
| 16 | 1.33 | 0.10 | 0.023 | $0.332)$ | 0.021 | 0.002 |
| 17 | 1.42 | 0.10 | 0.023 | ( 0.330) | 0.021 | 0.002 |
| 18 | 1.50 | 0.10 | 0.023 | ( 0.329) | 0.021 | 0.002 |
| 19 | 1.58 | 0.10 | 0.023 | ( 0.328) | 0.021 | 0.002 |
| 20 | 1.67 | 0.10 | 0.023 | ( 0.326) | 0.021 | 0.002 |
| 21 | 1.75 | 0.10 | 0.023 | ( 0.325) | 0.021 | 0.002 |
| 22 | 1.83 | 0.13 | 0.031 | ( 0.324) | 0.028 | 0.003 |
| 23 | 1.92 | 0.13 | 0.031 | $0.322)$ | 0.028 | 0.003 |
| 24 | 2.00 | 0.13 | 0.031 | ( 0.321) | 0.028 | 0.003 |
| 25 | 2.08 | 0.13 | 0.031 | ( 0.320) | 0.028 | 0.003 |
| 26 | 2.17 | 0.13 | 0.031 | ( 0.318) | 0.028 | 0.003 |
| 27 | 2.25 | 0.13 | 0.031 | ( 0.317) | 0.028 | 0.003 |
| 28 | 2.33 | 0.13 | 0.031 | ( 0.316) | 0.028 | 0.003 |
| 29 | 2.42 | 0.13 | 0.031 | ( 0.315) | 0.028 | 0.003 |
| 30 | 2.50 | 0.13 | 0.031 | $0.313)$ | 0.028 | 0.003 |
| 31 | 2.58 | 0.17 | 0.039 | ( 0.312) | 0.035 | 0.004 |
| 32 | 2.67 | 0.17 | 0.039 | ( 0.311) | 0.035 | 0.004 |
| 33 | 2.75 | 0.17 | 0.039 | ( 0.310) | 0.035 | 0.004 |
| 34 | 2.83 | 0.17 | 0.039 | ( 0.308) | 0.035 | 0.004 |
| 35 | 2.92 | 0.17 | 0.039 | ( 0.307) | 0.035 | 0.004 |
| 36 | 3.00 | 0.17 | 0.039 | ( 0.306) | 0.035 | 0.004 |
| 37 | 3.08 | 0.17 | 0.039 | $0.304)$ | 0.035 | 0.004 |
| 38 | 3.17 | 0.17 | 0.039 | ( 0.303) | 0.035 | 0.004 |
| 39 | 3.25 | 0.17 | 0.039 | ( 0.302) | 0.035 | 0.004 |
| 40 | 3.33 | 0.17 | 0.039 | ( 0.301) | 0.035 | 0.004 |
| 41 | 3.42 | 0.17 | 0.039 | ( 0.299) | 0.035 | 0.004 |
| 42 | 3.50 | 0.17 | 0.039 | ( 0.298) | 0.035 | 0.004 |
| 43 | 3.58 | 0.17 | 0.039 | ( 0.297) | 0.035 | 0.004 |
| 44 | 3.67 | 0.17 | 0.039 | (0.296) | 0.035 | 0.004 |
| 45 | 3.75 | 0.17 | 0.039 | ( 0.294) | 0.035 | 0.004 |
| 46 | 3.83 | 0.20 | 0.046 | ( 0.293) | 0.042 | 0.005 |
| 47 | 3.92 | 0.20 | 0.046 | ( 0.292) | 0.042 | 0.005 |
| 48 | 4.00 | 0.20 | 0.046 | ( 0.291) | 0.042 | 0.005 |
| 49 | 4.08 | 0.20 | 0.046 | ( 0.289) | 0.042 | 0.005 |
| 50 | 4.17 | 0.20 | 0.046 | ( 0.288) | 0.042 | 0.005 |
| 51 | 4.25 | 0.20 | 0.046 | ( 0.287) | 0.042 | 0.005 |
| 52 | 4.33 | 0.23 | 0.054 | ( 0.286) | 0.049 | 0.005 |
| 53 | 4.42 | 0.23 | 0.054 | ( 0.285) | 0.049 | 0.005 |
| 54 | 4.50 | 0.23 | 0.054 | ( 0.283) | 0.049 | 0.005 |
| 55 | 4.58 | 0.23 | 0.054 | ( 0.282) | 0.049 | 0.005 |
| 56 | 4.67 | 0.23 | 0.054 | ( 0.281) | 0.049 | 0.005 |


| 57 | 4.75 | 0.23 | 0.054 | 0.280) | 0.049 | 0.005 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 58 | 4.83 | 0.27 | 0.062 | $0.278)$ | 0.056 | 0.006 |
| 59 | 4.92 | 0.27 | 0.062 | $0.277)$ | 0.056 | 0.006 |
| 60 | 5.00 | 0.27 | 0.062 | $0.276)$ | 0.056 | 0.006 |
| 61 | 5.08 | 0.20 | 0.046 | $0.275)$ | 0.042 | 0.005 |
| 62 | 5.17 | 0.20 | 0.046 | $0.274)$ | 0.042 | 0.005 |
| 63 | 5.25 | 0.20 | 0.046 | $0.272)$ | 0.042 | 0.005 |
| 64 | 5.33 | 0.23 | 0.054 | 0.271) | 0.049 | 0.005 |
| 65 | 5.42 | 0.23 | 0.054 | 0.270) | 0.049 | 0.005 |
| 66 | 5.50 | 0.23 | 0.054 | $0.269)$ | 0.049 | 0.005 |
| 67 | 5.58 | 0.27 | 0.062 | 0.268) | 0.056 | 0.006 |
| 68 | 5.67 | 0.27 | 0.062 | $0.267)$ | 0.056 | 0.006 |
| 69 | 5.75 | 0.27 | 0.062 | $0.265)$ | 0.056 | 0.006 |
| 70 | 5.83 | 0.27 | 0.062 | $0.264)$ | 0.056 | 0.006 |
| 71 | 5.92 | 0.27 | 0.062 | $0.263)$ | 0.056 | 0.006 |
| 72 | 6.00 | 0.27 | 0.062 | $0.262)$ | 0.056 | 0.006 |
| 73 | 6.08 | 0.30 | 0.069 | $0.261)$ | 0.063 | 0.007 |
| 74 | 6.17 | 0.30 | 0.069 | 0.260) | 0.063 | 0.007 |
| 75 | 6.25 | 0.30 | 0.069 | $0.258)$ | 0.063 | 0.007 |
| 76 | 6.33 | 0.30 | 0.069 | 0.257) | 0.063 | 0.007 |
| 77 | 6.42 | 0.30 | 0.069 | $0.256)$ | 0.063 | 0.007 |
| 78 | 6.50 | 0.30 | 0.069 | $0.255)$ | 0.063 | 0.007 |
| 79 | 6.58 | 0.33 | 0.077 | $0.254)$ | 0.069 | 0.008 |
| 80 | 6.67 | 0.33 | 0.077 | $0.253)$ | 0.069 | 0.008 |
| 81 | 6.75 | 0.33 | 0.077 | $0.252)$ | 0.069 | 0.008 |
| 82 | 6.83 | 0.33 | 0.077 | 0.250) | 0.069 | 0.008 |
| 83 | 6.92 | 0.33 | 0.077 | $0.249)$ | 0.069 | 0.008 |
| 84 | 7.00 | 0.33 | 0.077 | $0.248)$ | 0.069 | 0.008 |
| 85 | 7.08 | 0.33 | 0.077 | $0.247)$ | 0.069 | 0.008 |
| 86 | 7.17 | 0.33 | 0.077 | $0.246)$ | 0.069 | 0.008 |
| 87 | 7.25 | 0.33 | 0.077 | $0.245)$ | 0.069 | 0.008 |
| 88 | 7.33 | 0.37 | 0.085 | $0.244)$ | 0.076 | 0.008 |
| 89 | 7.42 | 0.37 | 0.085 | $0.243)$ | 0.076 | 0.008 |
| 90 | 7.50 | 0.37 | 0.085 | 0.241) | 0.076 | 0.008 |
| 91 | 7.58 | 0.40 | 0.093 | 0.240) | 0.083 | 0.009 |
| 92 | 7.67 | 0.40 | 0.093 | $0.239)$ | 0.083 | 0.009 |
| 93 | 7.75 | 0.40 | 0.093 | $0.238)$ | 0.083 | 0.009 |
| 94 | 7.83 | 0.43 | 0.100 | $0.237)$ | 0.090 | 0.010 |
| 95 | 7.92 | 0.43 | 0.100 | $0.236)$ | 0.090 | 0.010 |
| 96 | 8.00 | 0.43 | 0.100 | $0.235)$ | 0.090 | 0.010 |
| 97 | 8.08 | 0.50 | 0.116 | $0.234)$ | 0.104 | 0.012 |
| 98 | 8.17 | 0.50 | 0.116 | $0.233)$ | 0.104 | 0.012 |
| 99 | 8.25 | 0.50 | 0.116 | $0.232)$ | 0.104 | 0.012 |
| 100 | 8.33 | 0.50 | 0.116 | $0.230)$ | 0.104 | 0.012 |
| 101 | 8.42 | 0.50 | 0.116 | $0.229)$ | 0.104 | 0.012 |
| 102 | 8.50 | 0.50 | 0.116 | $0.228)$ | 0.104 | 0.012 |
| 103 | 8.58 | 0.53 | 0.124 | $0.227)$ | 0.111 | 0.012 |
| 104 | 8.67 | 0.53 | 0.124 | $0.226)$ | 0.111 | 0.012 |
| 105 | 8.75 | 0.53 | 0.124 | $0.225)$ | 0.111 | 0.012 |
| 106 | 8.83 | 0.57 | 0.131 | $0.224)$ | 0.118 | 0.013 |
| 107 | 8.92 | 0.57 | 0.131 | $0.223)$ | 0.118 | 0.013 |
| 108 | 9.00 | 0.57 | 0.131 | $0.222)$ | 0.118 | 0.013 |
| 109 | 9.08 | 0.63 | 0.147 | $0.221)$ | 0.132 | 0.015 |
| 110 | 9.17 | 0.63 | 0.147 | 0.220) | 0.132 | 0.015 |
| 111 | 9.25 | 0.63 | 0.147 | $0.219)$ | 0.132 | 0.015 |
| 112 | 9.33 | 0.67 | 0.154 | $0.218)$ | 0.139 | 0.015 |
| 113 | 9.42 | 0.67 | 0.154 | $0.217)$ | 0.139 | 0.015 |
| 114 | 9.50 | 0.67 | 0.154 | $0.216)$ | 0.139 | 0.015 |
| 115 | 9.58 | 0.70 | 0.162 | $0.215)$ | 0.146 | 0.016 |
| 116 | 9.67 | 0.70 | 0.162 | $0.214)$ | 0.146 | 0.016 |


| 117 | 9.75 | 0.70 | 0.162 | $0.213)$ | 0.146 | 0.016 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 118 | 9.83 | 0.73 | 0.170 | $0.212)$ | 0.153 | 0.017 |
| 119 | 9.92 | 0.73 | 0.170 | 0.211) | 0.153 | 0.017 |
| 120 | 10.00 | 0.73 | 0.170 | 0.210) | 0.153 | 0.017 |
| 121 | 10.08 | 0.50 | 0.116 | $0.208)$ | 0.104 | 0.012 |
| 122 | 10.17 | 0.50 | 0.116 | $0.207)$ | 0.104 | 0.012 |
| 123 | 10.25 | 0.50 | 0.116 | $0.206)$ | 0.104 | 0.012 |
| 124 | 10.33 | 0.50 | 0.116 | $0.205)$ | 0.104 | 0.012 |
| 125 | 10.42 | 0.50 | 0.116 | $0.204)$ | 0.104 | 0.012 |
| 126 | 10.50 | 0.50 | 0.116 | $0.203)$ | 0.104 | 0.012 |
| 127 | 10.58 | 0.67 | 0.154 | $0.202)$ | 0.139 | 0.015 |
| 128 | 10.67 | 0.67 | 0.154 | 0.201) | 0.139 | 0.015 |
| 129 | 10.75 | 0.67 | 0.154 | 0.201) | 0.139 | 0.015 |
| 130 | 10.83 | 0.67 | 0.154 | 0.200) | 0.139 | 0.015 |
| 131 | 10.92 | 0.67 | 0.154 | $0.199)$ | 0.139 | 0.015 |
| 132 | 11.00 | 0.67 | 0.154 | $0.198)$ | 0.139 | 0.015 |
| 133 | 11.08 | 0.63 | 0.147 | $0.197)$ | 0.132 | 0.015 |
| 134 | 11.17 | 0.63 | 0.147 | $0.196)$ | 0.132 | 0.015 |
| 135 | 11.25 | 0.63 | 0.147 | $0.195)$ | 0.132 | 0.015 |
| 136 | 11.33 | 0.63 | 0.147 | $0.194)$ | 0.132 | 0.015 |
| 137 | 11.42 | 0.63 | 0.147 | $0.193)$ | 0.132 | 0.015 |
| 138 | 11.50 | 0.63 | 0.147 | $0.192)$ | 0.132 | 0.015 |
| 139 | 11.58 | 0.57 | 0.131 | $0.191)$ | 0.118 | 0.013 |
| 140 | 11.67 | 0.57 | 0.131 | 0.190) | 0.118 | 0.013 |
| 141 | 11.75 | 0.57 | 0.131 | $0.189)$ | 0.118 | 0.013 |
| 142 | 11.83 | 0.60 | 0.139 | $0.188)$ | 0.125 | 0.014 |
| 143 | 11.92 | 0.60 | 0.139 | $0.187)$ | 0.125 | 0.014 |
| 144 | 12.00 | 0.60 | 0.139 | $0.186)$ | 0.125 | 0.014 |
| 145 | 12.08 | 0.83 | 0.193 | $0.185)$ | 0.174 | 0.019 |
| 146 | 12.17 | 0.83 | 0.193 | $0.184)$ | 0.174 | 0.019 |
| 147 | 12.25 | 0.83 | 0.193 | $0.183)$ | 0.174 | 0.019 |
| 148 | 12.33 | 0.87 | 0.201 | $0.182)$ | 0.181 | 0.020 |
| 149 | 12.42 | 0.87 | 0.201 | $0.182)$ | 0.181 | 0.020 |
| 150 | 12.50 | 0.87 | 0.201 | 0.181 | 0.181) | 0.020 |
| 151 | 12.58 | 0.93 | 0.216 | 0.180 | $0.195)$ | 0.036 |
| 152 | 12.67 | 0.93 | 0.216 | 0.179 | $0.195)$ | 0.037 |
| 153 | 12.75 | 0.93 | 0.216 | 0.178 | $0.195)$ | 0.038 |
| 154 | 12.83 | 0.97 | 0.224 | 0.177 | 0.201) | 0.047 |
| 155 | 12.92 | 0.97 | 0.224 | 0.176 | 0.201) | 0.048 |
| 156 | 13.00 | 0.97 | 0.224 | 0.175 | $0.201)$ | 0.049 |
| 157 | 13.08 | 1.13 | 0.262 | 0.174 | $0.236)$ | 0.088 |
| 158 | 13.17 | 1.13 | 0.262 | 0.173 | $0.236)$ | 0.089 |
| 159 | 13.25 | 1.13 | 0.262 | 0.173 | $0.236)$ | 0.090 |
| 160 | 13.33 | 1.13 | 0.262 | 0.172 | $0.236)$ | 0.091 |
| 161 | 13.42 | 1.13 | 0.262 | 0.171 | $0.236)$ | 0.092 |
| 162 | 13.50 | 1.13 | 0.262 | 0.170 | $0.236)$ | 0.093 |
| 163 | 13.58 | 0.77 | 0.178 | $0.169)$ | 0.160 | 0.018 |
| 164 | 13.67 | 0.77 | 0.178 | $0.168)$ | 0.160 | 0.018 |
| 165 | 13.75 | 0.77 | 0.178 | 0.167) | 0.160 | 0.018 |
| 166 | 13.83 | 0.77 | 0.178 | $0.166)$ | 0.160 | 0.018 |
| 167 | 13.92 | 0.77 | 0.178 | $0.166)$ | 0.160 | 0.018 |
| 168 | 14.00 | 0.77 | 0.178 | $0.165)$ | 0.160 | 0.018 |
| 169 | 14.08 | 0.90 | 0.208 | 0.164 | 0.188) | 0.044 |
| 170 | 14.17 | 0.90 | 0.208 | 0.163 | $0.188)$ | 0.045 |
| 171 | 14.25 | 0.90 | 0.208 | 0.162 | $0.188)$ | 0.046 |
| 172 | 14.33 | 0.87 | 0.201 | 0.161 | 0.181) | 0.039 |
| 173 | 14.42 | 0.87 | 0.201 | 0.161 | 0.181) | 0.040 |
| 174 | 14.50 | 0.87 | 0.201 | 0.160 | $0.181)$ | 0.041 |
| 175 | 14.58 | 0.87 | 0.201 | 0.159 | 0.181) | 0.042 |
| 176 | 14.67 | 0.87 | 0.201 | 0.158 | 0.181) | 0.043 |


| 177 | 14.75 | 0.87 | 0.201 | 0.157 | $0.181)$ | 0.043 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 178 | 14.83 | 0.83 | 0.193 | 0.157 | $0.174)$ | 0.036 |
| 179 | 14.92 | 0.83 | 0.193 | 0.156 | $0.174)$ | 0.037 |
| 180 | 15.00 | 0.83 | 0.193 | 0.155 | $0.174)$ | 0.038 |
| 181 | 15.08 | 0.80 | 0.185 | 0.154 | 0.167) | 0.031 |
| 182 | 15.17 | 0.80 | 0.185 | 0.153 | $0.167)$ | 0.032 |
| 183 | 15.25 | 0.80 | 0.185 | 0.153 | $0.167)$ | 0.033 |
| 184 | 15.33 | 0.77 | 0.178 | 0.152 | 0.160) | 0.026 |
| 185 | 15.42 | 0.77 | 0.178 | 0.151 | 0.160) | 0.027 |
| 186 | 15.50 | 0.77 | 0.178 | 0.150 | $0.160)$ | 0.027 |
| 187 | 15.58 | 0.63 | 0.147 | $0.149)$ | 0.132 | 0.015 |
| 188 | 15.67 | 0.63 | 0.147 | $0.149)$ | 0.132 | 0.015 |
| 189 | 15.75 | 0.63 | 0.147 | $0.148)$ | 0.132 | 0.015 |
| 190 | 15.83 | 0.63 | 0.147 | $0.147)$ | 0.132 | 0.015 |
| 191 | 15.92 | 0.63 | 0.147 | $0.146)$ | 0.132 | 0.015 |
| 192 | 16.00 | 0.63 | 0.147 | $0.146)$ | 0.132 | 0.015 |
| 193 | 16.08 | 0.13 | 0.031 | $0.145)$ | 0.028 | 0.003 |
| 194 | 16.17 | 0.13 | 0.031 | $0.144)$ | 0.028 | 0.003 |
| 195 | 16.25 | 0.13 | 0.031 | $0.143)$ | 0.028 | 0.003 |
| 196 | 16.33 | 0.13 | 0.031 | $0.143)$ | 0.028 | 0.003 |
| 197 | 16.42 | 0.13 | 0.031 | $0.142)$ | 0.028 | 0.003 |
| 198 | 16.50 | 0.13 | 0.031 | $0.141)$ | 0.028 | 0.003 |
| 199 | 16.58 | 0.10 | 0.023 | 0.141) | 0.021 | 0.002 |
| 200 | 16.67 | 0.10 | 0.023 | 0.140) | 0.021 | 0.002 |
| 201 | 16.75 | 0.10 | 0.023 | $0.139)$ | 0.021 | 0.002 |
| 202 | 16.83 | 0.10 | 0.023 | 0.138) | 0.021 | 0.002 |
| 203 | 16.92 | 0.10 | 0.023 | 0.138) | 0.021 | 0.002 |
| 204 | 17.00 | 0.10 | 0.023 | $0.137)$ | 0.021 | 0.002 |
| 205 | 17.08 | 0.17 | 0.039 | $0.136)$ | 0.035 | 0.004 |
| 206 | 17.17 | 0.17 | 0.039 | 0.136) | 0.035 | 0.004 |
| 207 | 17.25 | 0.17 | 0.039 | 0.135) | 0.035 | 0.004 |
| 208 | 17.33 | 0.17 | 0.039 | $0.134)$ | 0.035 | 0.004 |
| 209 | 17.42 | 0.17 | 0.039 | $0.134)$ | 0.035 | 0.004 |
| 210 | 17.50 | 0.17 | 0.039 | 0.133) | 0.035 | 0.004 |
| 211 | 17.58 | 0.17 | 0.039 | $0.132)$ | 0.035 | 0.004 |
| 212 | 17.67 | 0.17 | 0.039 | $0.132)$ | 0.035 | 0.004 |
| 213 | 17.75 | 0.17 | 0.039 | 0.131) | 0.035 | 0.004 |
| 214 | 17.83 | 0.13 | 0.031 | 0.130) | 0.028 | 0.003 |
| 215 | 17.92 | 0.13 | 0.031 | 0.130) | 0.028 | 0.003 |
| 216 | 18.00 | 0.13 | 0.031 | $0.129)$ | 0.028 | 0.003 |
| 217 | 18.08 | 0.13 | 0.031 | 0.128) | 0.028 | 0.003 |
| 218 | 18.17 | 0.13 | 0.031 | $0.128)$ | 0.028 | 0.003 |
| 219 | 18.25 | 0.13 | 0.031 | $0.127)$ | 0.028 | 0.003 |
| 220 | 18.33 | 0.13 | 0.031 | 0.127) | 0.028 | 0.003 |
| 221 | 18.42 | 0.13 | 0.031 | $0.126)$ | 0.028 | 0.003 |
| 222 | 18.50 | 0.13 | 0.031 | $0.125)$ | 0.028 | 0.003 |
| 223 | 18.58 | 0.10 | 0.023 | $0.125)$ | 0.021 | 0.002 |
| 224 | 18.67 | 0.10 | 0.023 | $0.124)$ | 0.021 | 0.002 |
| 225 | 18.75 | 0.10 | 0.023 | $0.124)$ | 0.021 | 0.002 |
| 226 | 18.83 | 0.07 | 0.015 | $0.123)$ | 0.014 | 0.002 |
| 227 | 18.92 | 0.07 | 0.015 | 0.122) | 0.014 | 0.002 |
| 228 | 19.00 | 0.07 | 0.015 | $0.122)$ | 0.014 | 0.002 |
| 229 | 19.08 | 0.10 | 0.023 | 0.121) | 0.021 | 0.002 |
| 230 | 19.17 | 0.10 | 0.023 | 0.121) | 0.021 | 0.002 |
| 231 | 19.25 | 0.10 | 0.023 | 0.120) | 0.021 | 0.002 |
| 232 | 19.33 | 0.13 | 0.031 | $0.119)$ | 0.028 | 0.003 |
| 233 | 19.42 | 0.13 | 0.031 | $0.119)$ | 0.028 | 0.003 |
| 234 | 19.50 | 0.13 | 0.031 | 0.118) | 0.028 | 0.003 |
| 235 | 19.58 | 0.10 | 0.023 | $0.118)$ | 0.021 | 0.002 |
| 236 | 19.67 | 0.10 | 0.023 | $0.117)$ | 0.021 | 0.002 |


| 237 | 19.75 | 0.10 | 0.023 | 0.117) | 0.021 | 0.002 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 238 | 19.83 | 0.07 | 0.015 | 0.116) | 0.014 | 0.002 |
| 239 | 19.92 | 0.07 | 0.015 | 0.116) | 0.014 | 0.002 |
| 240 | 20.00 | 0.07 | 0.015 | 0.115) | 0.014 | 0.002 |
| 241 | 20.08 | 0.10 | 0.023 | $0.115)$ | 0.021 | 0.002 |
| 242 | 20.17 | 0.10 | 0.023 | $0.114)$ | 0.021 | 0.002 |
| 243 | 20.25 | 0.10 | 0.023 | $0.114)$ | 0.021 | 0.002 |
| 244 | 20.33 | 0.10 | 0.023 | 0.113) | 0.021 | 0.002 |
| 245 | 20.42 | 0.10 | 0.023 | 0.113) | 0.021 | 0.002 |
| 246 | 20.50 | 0.10 | 0.023 | 0.112) | 0.021 | 0.002 |
| 247 | 20.58 | 0.10 | 0.023 | 0.112) | 0.021 | 0.002 |
| 248 | 20.67 | 0.10 | 0.023 | 0.111) | 0.021 | 0.002 |
| 249 | 20.75 | 0.10 | 0.023 | 0.111) | 0.021 | 0.002 |
| 250 | 20.83 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |
| 251 | 20.92 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |
| 252 | 21.00 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |
| 253 | 21.08 | 0.10 | 0.023 | 0.109) | 0.021 | 0.002 |
| 254 | 21.17 | 0.10 | 0.023 | $0.109)$ | 0.021 | 0.002 |
| 255 | 21.25 | 0.10 | 0.023 | 0.108) | 0.021 | 0.002 |
| 256 | 21.33 | 0.07 | 0.015 | 0.108) | 0.014 | 0.002 |
| 257 | 21.42 | 0.07 | 0.015 | 0.107) | 0.014 | 0.002 |
| 258 | 21.50 | 0.07 | 0.015 | 0.107) | 0.014 | 0.002 |
| 259 | 21.58 | 0.10 | 0.023 | 0.107) | 0.021 | 0.002 |
| 260 | 21.67 | 0.10 | 0.023 | 0.106) | 0.021 | 0.002 |
| 261 | 21.75 | 0.10 | 0.023 | 0.106) | 0.021 | 0.002 |
| 262 | 21.83 | 0.07 | 0.015 | 0.105) | 0.014 | 0.002 |
| 263 | 21.92 | 0.07 | 0.015 | 0.105) | 0.014 | 0.002 |
| 264 | 22.00 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 |
| 265 | 22.08 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 266 | 22.17 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 267 | 22.25 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 268 | 22.33 | 0.07 | 0.015 | 0.103) | 0.014 | 0.002 |
| 269 | 22.42 | 0.07 | 0.015 | 0.103) | 0.014 | 0.002 |
| 270 | 22.50 | 0.07 | 0.015 | 0.103) | 0.014 | 0.002 |
| 271 | 22.58 | 0.07 | 0.015 | 0.102) | 0.014 | 0.002 |
| 272 | 22.67 | 0.07 | 0.015 | 0.102) | 0.014 | 0.002 |
| 273 | 22.75 | 0.07 | 0.015 | 0.102) | 0.014 | 0.002 |
| 274 | 22.83 | 0.07 | 0.015 | 0.102) | 0.014 | 0.002 |
| 275 | 22.92 | 0.07 | 0.015 | 0.101) | 0.014 | 0.002 |
| 276 | 23.00 | 0.07 | 0.015 | 0.101) | 0.014 | 0.002 |
| 277 | 23.08 | 0.07 | 0.015 | 0.101) | 0.014 | 0.002 |
| 278 | 23.17 | 0.07 | 0.015 | 0.101) | 0.014 | 0.002 |
| 279 | 23.25 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |
| 280 | 23.33 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |
| 281 | 23.42 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |
| 282 | 23.50 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |
| 283 | 23.58 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |
| 284 | 23.67 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |
| 285 | 23.75 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 286 | 23.83 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 287 | 23.92 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 288 | 24.00 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
|  |  | ss Ra | t Used |  |  |  |
|  | Sum = | 100.0 |  |  | Sum | 3.1 |
| Flood volume = Effective rainfall 0.26(In) |  |  |  |  |  |  |
|  | times area |  | 8.0(Ac.)/[(In)/(Ft.)] = |  | 0.2 (Ac.Ft) |  |
|  | Total | loss | 1.6 |  |  |  |
|  | Total | loss | 1.11 |  |  |  |
|  | Total | fall | 1.93 |  |  |  |
|  | Flood | ume $=$ | 7649.5 Cubic Feet |  |  |  |

Total soil loss $=\quad 48677.0$ Cubic Feet


| 1+45 | 0.0026 | 0.02 | Q | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+50 | 0.0027 | 0.02 | Q | \| | \| |
| 1+55 | 0.0029 | 0.02 | Q | \| | \| |
| 2+ 0 | 0.0031 | 0.02 | Q | \| | \| |
| 2+ 5 | 0.0032 | 0.02 | Q | \| | \| |
| 2+10 | 0.0034 | 0.03 | Q | \| | \| |
| 2+15 | 0.0036 | 0.03 | Q | \| | \| |
| 2+20 | 0.0037 | 0.03 | Q | \| | \| |
| 2+25 | 0.0039 | 0.03 | Q | \| | \| |
| 2+30 | 0.0041 | 0.03 | Q | \| | \| |
| 2+35 | 0.0043 | 0.03 | Q | \| | \| |
| 2+40 | 0.0045 | 0.03 | QV | \| | \| |
| 2+45 | 0.0047 | 0.03 | QV | \| | \| |
| 2+50 | 0.0049 | 0.03 | QV | । | \| |
| 2+55 | 0.0051 | 0.03 | QV | \| | \| |
| 3+ 0 | 0.0053 | 0.03 | QV | \| | \| |
| 3+ 5 | 0.0056 | 0.03 | QV | \| | \| |
| 3+10 | 0.0058 | 0.03 | QV | । | \| |
| 3+15 | 0.0060 | 0.03 | QV | । | \| |
| 3+20 | 0.0062 | 0.03 | QV | \| | \| |
| 3+25 | 0.0064 | 0.03 | QV | \| | \| |
| 3+30 | 0.0066 | 0.03 | QV | \| | \| |
| 3+35 | 0.0068 | 0.03 | QV | । | \| |
| 3+40 | 0.0071 | 0.03 | QV | \| | \| |
| 3+45 | 0.0073 | 0.03 | QV | \| | \| |
| 3+50 | 0.0075 | 0.03 | QV | \| | \| |
| 3+55 | 0.0078 | 0.04 | QV | । | 1 |
| 4+ 0 | 0.0080 | 0.04 | QV | I | \| |
| 4+ 5 | 0.0083 | 0.04 | QV | 1 | \| |
| 4+10 | 0.0085 | 0.04 | QV | \| | \| |


| 4+15 | 0.0088 | 0.04 | Q |  | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4+20 | 0.0091 | 0.04 | Q |  | \| | \| |
| 4+25 | 0.0094 | 0.04 | Q |  | \| | \| |
| 4+30 | 0.0096 | 0.04 | Q | V | \| | \| |
| 4+35 | 0.0100 | 0.04 | Q | $\checkmark$ | \| | \| |
| 4+40 | 0.0103 | 0.04 | Q | $\checkmark$ | \| | \| |
| 4+45 | 0.0106 | 0.04 | Q | $\checkmark$ | \| | \| |
| 4+50 | 0.0109 | 0.05 | Q | $\checkmark$ | \| | \| |
| 4+55 | 0.0112 | 0.05 | Q | $\checkmark$ | \| | \| |
| 5+ 0 | 0.0115 | 0.05 | Q | $\checkmark$ | \| | \| |
| 5+ 5 | 0.0119 | 0.05 | Q | $\checkmark$ | \| | \| |
| 5+10 | 0.0121 | 0.04 | Q | $\checkmark$ | \| | \| |
| 5+15 | 0.0124 | 0.04 | Q | $\checkmark$ | \| | \| |
| 5+20 | 0.0127 | 0.04 | Q | $\checkmark$ | \| | \| |
| 5+25 | 0.0130 | 0.04 | Q | $\checkmark$ | \| | \| |
| 5+30 | 0.0133 | 0.04 | Q | $v$ | \| | \| |
| 5+35 | 0.0136 | 0.05 | Q | V | \| | \| |
| 5+40 | 0.0139 | 0.05 | Q | V | \| | \| |
| 5+45 | 0.0143 | 0.05 | Q | V | \| | \| |
| 5+50 | 0.0146 | 0.05 | Q | V | \| | \| |
| 5+55 | 0.0149 | 0.05 | Q | V | \| | \| |
| 6+ 0 | 0.0153 | 0.05 | Q | V | \| | \| |
| 6+ 5 | 0.0156 | 0.05 | Q | V | \| | \| |
| 6+10 | 0.0160 | 0.06 | Q | $v$ | I | \| |
| 6+15 | 0.0164 | 0.06 | Q | V | \| | \| |
| 6+20 | 0.0168 | 0.06 | Q | V | \| | \| |
| 6+25 | 0.0172 | 0.06 | Q | V | \| | I |
| 6+30 | 0.0176 | 0.06 | Q | V | \| | \| |
| 6+35 | 0.0180 | 0.06 | Q | V | \| | \| |
| 6+40 | 0.0184 | 0.06 | Q | V | । | \| |


| 6+45 | 0.0188 | 0.06 | Q | v | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+50 | 0.0193 | 0.06 | Q | V |  | \| |
| 6+55 | 0.0197 | 0.06 | Q | v |  | \| |
| 7+ 0 | 0.0201 | 0.06 | Q | V |  | \| |
| 7+ 5 | 0.0206 | 0.06 | Q | V |  | \| |
| 7+10 | 0.0210 | 0.06 | Q | V |  | I |
| 7+15 | 0.0214 | 0.06 | Q | V | \| | 1 |
| 7+20 | 0.0219 | 0.06 | Q | V |  | 1 |
| 7+25 | 0.0223 | 0.07 | Q | V |  | I |
| 7+30 | 0.0228 | 0.07 | Q | V | 1 | I |
| 7+35 | 0.0233 | 0.07 | Q | V | 1 | I |
| 7+40 | 0.0238 | 0.07 | Q | v |  | \| |
| 7+45 | 0.0243 | 0.07 | Q | V |  | I |
| 7+50 | 0.0248 | 0.08 | Q | V | \| | I |
| 7+55 | 0.0254 | 0.08 | Q | V | \| | 1 |
| 8+ 0 | 0.0259 | 0.08 | Q | V |  | 1 |
| 8+ 5 | 0.0265 | 0.08 | Q | v |  | I |
| 8+10 | 0.0271 | 0.09 | Q | V | \| | 1 |
| 8+15 | 0.0278 | 0.09 | Q | V |  | \| |
| 8+20 | 0.0284 | 0.09 | Q | v |  | \| |
| 8+25 | 0.0291 | 0.09 | Q | v |  | \| |
| 8+30 | 0.0297 | 0.09 | Q | v |  | 1 |
| 8+35 | 0.0304 | 0.10 | Q | V |  | I |
| 8+40 | 0.0311 | 0.10 | Q | V |  | \| |
| $8+45$ | 0.0318 | 0.10 | Q | V |  | 1 |
| 8+50 | 0.0325 | 0.10 | Q | V | \| | I |
| $8+55$ | 0.0332 | 0.11 | Q | V |  | 1 |
| 9+ 0 | 0.0339 | 0.11 | Q | V |  | \| |
| 9+ 5 | 0.0347 | 0.11 | Q | V |  | I |
| 9+10 | 0.0355 | 0.12 | Q | V |  | \| |


| 9+15 | 0.0363 | 0.12 | Q | V I | । |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 9+20 | 0.0371 | 0.12 | Q | V I | 1 |
| 9+25 | 0.0380 | 0.12 | Q | V \| | \| |
| 9+30 | 0.0388 | 0.12 | Q | V I | \| |
| 9+35 | 0.0397 | 0.13 | Q | V1 | 1 |
| 9+40 | 0.0406 | 0.13 | Q | V\| | \| |
| 9+45 | 0.0415 | 0.13 | Q | v 1 | \| |
| 9+50 | 0.0424 | 0.13 | Q | VI | \| |
| 9+55 | 0.0433 | 0.14 | Q | VI | \| |
| 10+ 0 | 0.0443 | 0.14 | Q | v | 1 |
| 10+ 5 | 0.0452 | 0.13 | Q | V | \| |
| 10+10 | 0.0459 | 0.10 | Q | v | \| |
| 10+15 | 0.0465 | 0.10 | Q | V | \| |
| 10+20 | 0.0472 | 0.09 | Q | V | \| |
| 10+25 | 0.0478 | 0.09 | Q | V | \| |
| 10+30 | 0.0485 | 0.09 | Q | IV | \| |
| 10+35 | 0.0492 | 0.10 | Q | IV | \| |
| 10+40 | 0.0500 | 0.12 | Q | \|V | \| |
| 10+45 | 0.0508 | 0.12 | Q | \|V | \| |
| 10+50 | 0.0517 | 0.12 | Q | IV |  |
| 10+55 | 0.0526 | 0.13 | Q | IV | I |
| 11+ 0 | 0.0534 | 0.13 | Q | \| V | \| |
| 11+ 5 | 0.0543 | 0.12 | Q | \| V | \| |
| 11+10 | 0.0551 | 0.12 | Q | \\| V |  |
| 11+15 | 0.0559 | 0.12 | Q | \| V | \| |
| 11+20 | 0.0567 | 0.12 | Q | \| V | \| |
| 11+25 | 0.0576 | 0.12 | Q | \\| V | \| |
| 11+30 | 0.0584 | 0.12 | Q | \\| V |  |
| 11+35 | 0.0592 | 0.12 | Q | 1 V | \| |
| 11+40 | 0.0599 | 0.11 | Q | \\| V |  |



| 14+15 | 0.1258 | 0.36 | IQ | I | \| | V I |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 14+20 | 0.1283 | 0.36 | IQ | \| | \| | V1 |  |  |
| 14+25 | 0.1305 | 0.33 | IQ | \| | \| | V\| |  |  |
| 14+30 | 0.1328 | 0.33 | IQ | \| | \| | V |  |  |
| 14+35 | 0.1351 | 0.33 | IQ | \| | \| | V |  |  |
| 14+40 | 0.1374 | 0.34 | IQ | \| | \| | IV |  |  |
| 14+45 | 0.1398 | 0.34 | IQ | \| | \| | IV |  |  |
| $14+50$ | 0.1421 | 0.34 | IQ | \| | 1 |  |  |  |
| 14+55 | 0.1442 | 0.31 | IQ | \| | 1 |  | v | $\stackrel{8}{8}$ |
| 15+ 0 | 0.1463 | 0.31 | IQ | \| | 1 | \| | V | $\stackrel{\text { ¢ }}{\sim}$ |
| 15+ 5 | 0.1484 | 0.29 | IQ | \| | \| | \| | V | - |
| 15+10 | 0.1502 | 0.26 | IQ | । | \| | \| | V | $\xrightarrow{5}$ |
| 15+15 | 0.1520 | 0.26 | IQ | \| | 1 | I | V | - |
| 15+20 | 0.1537 | 0.25 | IQ | \| | 1 | I | V | 쳉 |
| 15+25 | 0.1552 | 0.22 | Q | \| | \| | \| | v | $\stackrel{\sim}{0}$ |
| 15+30 | 0.1567 | 0.22 | Q | \| | 1 | I | v | \% |
| 15+35 | 0.1581 | 0.20 | Q | \| | 1 | I | v | $\bigcirc$ |
| 15+40 | 0.1590 | 0.14 | Q | \| | \| | \| | V |  |
| 15+45 | 0.1599 | 0.12 | Q | \| | \| | \| | V | - |
| 15+50 | 0.1607 | 0.12 | Q | \| | \| | \| | V | ¢ |
| 15+55 | 0.1615 | 0.12 | Q | I | 1 | I | v | $\stackrel{\square}{\square}$ |
| 16+ 0 | 0.1624 | 0.12 | Q | । | I | I | v | $\stackrel{\text { E }}{ }$ |
| 16+ 5 | 0.1630 | 0.10 | Q | \| | \| | \| | V | - |
| 16+10 | 0.1633 | 0.04 | Q | \| | \| | \| | V |  |
| 16+15 | 0.1635 | 0.03 | Q | \| | \| | I | V |  |
| 16+20 | 0.1637 | 0.03 | Q | I | 1 | I | V |  |
| 16+25 | 0.1639 | 0.03 | Q | । | I | I | V |  |
| 16+30 | 0.1641 | 0.03 | Q | , | \| | \| | V |  |
| 16+35 | 0.1642 | 0.02 | Q | \| | 1 | 1 | V |  |
| 16+40 | 0.1644 | 0.02 | Q | \| | \| | 1 | V |  |






```
        U n i t H y d roggraph A n aly y i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb245.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            ----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 24 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 YEAR Area rainfall data:
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value

| Unit | Time | Pattern | Storm Rain | Loss rat | . /Hr ) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | (In/Hr) |
| 1 | 0.08 | 0.07 | 0.021 | $0.352)$ | 0.018 | 0.002 |
| 2 | 0.17 | 0.07 | 0.021 | $0.350)$ | 0.018 | 0.002 |
| 3 | 0.25 | 0.07 | 0.021 | 0.349 ) | 0.018 | 0.002 |
| 4 | 0.33 | 0.10 | 0.031 | ( 0.348) | 0.028 | 0.003 |
| 5 | 0.42 | 0.10 | 0.031 | ( 0.346) | 0.028 | 0.003 |
| 6 | 0.50 | 0.10 | 0.031 | ( 0.345) | 0.028 | 0.003 |
| 7 | 0.58 | 0.10 | 0.031 | ( 0.344) | 0.028 | 0.003 |
| 8 | 0.67 | 0.10 | 0.031 | ( 0.342) | 0.028 | 0.003 |
| 9 | 0.75 | 0.10 | 0.031 | ( 0.341) | 0.028 | 0.003 |
| 10 | 0.83 | 0.13 | 0.041 | ( 0.340) | 0.037 | 0.004 |
| 11 | 0.92 | 0.13 | 0.041 | ( 0.338) | 0.037 | 0.004 |
| 12 | 1.00 | 0.13 | 0.041 | ( 0.337) | 0.037 | 0.004 |
| 13 | 1.08 | 0.10 | 0.031 | ( 0.336) | 0.028 | 0.003 |
| 14 | 1.17 | 0.10 | 0.031 | ( 0.334) | 0.028 | 0.003 |
| 15 | 1.25 | 0.10 | 0.031 | ( 0.333) | 0.028 | 0.003 |
| 16 | 1.33 | 0.10 | 0.031 | ( 0.332) | 0.028 | 0.003 |
| 17 | 1.42 | 0.10 | 0.031 | ( 0.330) | 0.028 | 0.003 |
| 18 | 1.50 | 0.10 | 0.031 | ( 0.329) | 0.028 | 0.003 |
| 19 | 1.58 | 0.10 | 0.031 | ( 0.328) | 0.028 | 0.003 |
| 20 | 1.67 | 0.10 | 0.031 | $0.326)$ | 0.028 | 0.003 |
| 21 | 1.75 | 0.10 | 0.031 | ( 0.325) | 0.028 | 0.003 |
| 22 | 1.83 | 0.13 | 0.041 | ( 0.324) | 0.037 | 0.004 |
| 23 | 1.92 | 0.13 | 0.041 | ( 0.322) | 0.037 | 0.004 |
| 24 | 2.00 | 0.13 | 0.041 | ( 0.321) | 0.037 | 0.004 |
| 25 | 2.08 | 0.13 | 0.041 | ( 0.320) | 0.037 | 0.004 |
| 26 | 2.17 | 0.13 | 0.041 | ( 0.318) | 0.037 | 0.004 |
| 27 | 2.25 | 0.13 | 0.041 | ( 0.317) | 0.037 | 0.004 |
| 28 | 2.33 | 0.13 | 0.041 | ( 0.316) | 0.037 | 0.004 |
| 29 | 2.42 | 0.13 | 0.041 | ( 0.315) | 0.037 | 0.004 |
| 30 | 2.50 | 0.13 | 0.041 | ( 0.313) | 0.037 | 0.004 |
| 31 | 2.58 | 0.17 | 0.051 | ( 0.312) | 0.046 | 0.005 |
| 32 | 2.67 | 0.17 | 0.051 | ( 0.311) | 0.046 | 0.005 |
| 33 | 2.75 | 0.17 | 0.051 | ( 0.310) | 0.046 | 0.005 |
| 34 | 2.83 | 0.17 | 0.051 | ( 0.308) | 0.046 | 0.005 |
| 35 | 2.92 | 0.17 | 0.051 | ( 0.307) | 0.046 | 0.005 |
| 36 | 3.00 | 0.17 | 0.051 | ( 0.306) | 0.046 | 0.005 |
| 37 | 3.08 | 0.17 | 0.051 | ( 0.304) | 0.046 | 0.005 |
| 38 | 3.17 | 0.17 | 0.051 | ( 0.303) | 0.046 | 0.005 |
| 39 | 3.25 | 0.17 | 0.051 | ( 0.302) | 0.046 | 0.005 |
| 40 | 3.33 | 0.17 | 0.051 | ( 0.301) | 0.046 | 0.005 |
| 41 | 3.42 | 0.17 | 0.051 | ( 0.299) | 0.046 | 0.005 |
| 42 | 3.50 | 0.17 | 0.051 | ( 0.298) | 0.046 | 0.005 |
| 43 | 3.58 | 0.17 | 0.051 | ( 0.297) | 0.046 | 0.005 |
| 44 | 3.67 | 0.17 | 0.051 | ( 0.296) | 0.046 | 0.005 |
| 45 | 3.75 | 0.17 | 0.051 | ( 0.294) | 0.046 | 0.005 |
| 46 | 3.83 | 0.20 | 0.062 | ( 0.293) | 0.055 | 0.006 |
| 47 | 3.92 | 0.20 | 0.062 | ( 0.292) | 0.055 | 0.006 |
| 48 | 4.00 | 0.20 | 0.062 | ( 0.291) | 0.055 | 0.006 |
| 49 | 4.08 | 0.20 | 0.062 | ( 0.289) | 0.055 | 0.006 |
| 50 | 4.17 | 0.20 | 0.062 | ( 0.288) | 0.055 | 0.006 |
| 51 | 4.25 | 0.20 | 0.062 | ( 0.287) | 0.055 | 0.006 |
| 52 | 4.33 | 0.23 | 0.072 | ( 0.286) | 0.065 | 0.007 |
| 53 | 4.42 | 0.23 | 0.072 | ( 0.285) | 0.065 | 0.007 |
| 54 | 4.50 | 0.23 | 0.072 | ( 0.283) | 0.065 | 0.007 |
| 55 | 4.58 | 0.23 | 0.072 | ( 0.282) | 0.065 | 0.007 |
| 56 | 4.67 | 0.23 | 0.072 | ( 0.281) | 0.065 | 0.007 |


| 57 | 4.75 | 0.23 | 0.072 | 0.280) | 0.065 | 0.007 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 58 | 4.83 | 0.27 | 0.082 | $0.278)$ | 0.074 | 0.008 |
| 59 | 4.92 | 0.27 | 0.082 | $0.277)$ | 0.074 | 0.008 |
| 60 | 5.00 | 0.27 | 0.082 | $0.276)$ | 0.074 | 0.008 |
| 61 | 5.08 | 0.20 | 0.062 | $0.275)$ | 0.055 | 0.006 |
| 62 | 5.17 | 0.20 | 0.062 | $0.274)$ | 0.055 | 0.006 |
| 63 | 5.25 | 0.20 | 0.062 | $0.272)$ | 0.055 | 0.006 |
| 64 | 5.33 | 0.23 | 0.072 | $0.271)$ | 0.065 | 0.007 |
| 65 | 5.42 | 0.23 | 0.072 | 0.270) | 0.065 | 0.007 |
| 66 | 5.50 | 0.23 | 0.072 | $0.269)$ | 0.065 | 0.007 |
| 67 | 5.58 | 0.27 | 0.082 | 0.268) | 0.074 | 0.008 |
| 68 | 5.67 | 0.27 | 0.082 | 0.267) | 0.074 | 0.008 |
| 69 | 5.75 | 0.27 | 0.082 | $0.265)$ | 0.074 | 0.008 |
| 70 | 5.83 | 0.27 | 0.082 | $0.264)$ | 0.074 | 0.008 |
| 71 | 5.92 | 0.27 | 0.082 | $0.263)$ | 0.074 | 0.008 |
| 72 | 6.00 | 0.27 | 0.082 | $0.262)$ | 0.074 | 0.008 |
| 73 | 6.08 | 0.30 | 0.092 | 0.261) | 0.083 | 0.009 |
| 74 | 6.17 | 0.30 | 0.092 | 0.260) | 0.083 | 0.009 |
| 75 | 6.25 | 0.30 | 0.092 | $0.258)$ | 0.083 | 0.009 |
| 76 | 6.33 | 0.30 | 0.092 | $0.257)$ | 0.083 | 0.009 |
| 77 | 6.42 | 0.30 | 0.092 | $0.256)$ | 0.083 | 0.009 |
| 78 | 6.50 | 0.30 | 0.092 | $0.255)$ | 0.083 | 0.009 |
| 79 | 6.58 | 0.33 | 0.103 | $0.254)$ | 0.092 | 0.010 |
| 80 | 6.67 | 0.33 | 0.103 | $0.253)$ | 0.092 | 0.010 |
| 81 | 6.75 | 0.33 | 0.103 | $0.252)$ | 0.092 | 0.010 |
| 82 | 6.83 | 0.33 | 0.103 | 0.250) | 0.092 | 0.010 |
| 83 | 6.92 | 0.33 | 0.103 | $0.249)$ | 0.092 | 0.010 |
| 84 | 7.00 | 0.33 | 0.103 | $0.248)$ | 0.092 | 0.010 |
| 85 | 7.08 | 0.33 | 0.103 | $0.247)$ | 0.092 | 0.010 |
| 86 | 7.17 | 0.33 | 0.103 | $0.246)$ | 0.092 | 0.010 |
| 87 | 7.25 | 0.33 | 0.103 | $0.245)$ | 0.092 | 0.010 |
| 88 | 7.33 | 0.37 | 0.113 | $0.244)$ | 0.102 | 0.011 |
| 89 | 7.42 | 0.37 | 0.113 | $0.243)$ | 0.102 | 0.011 |
| 90 | 7.50 | 0.37 | 0.113 | $0.241)$ | 0.102 | 0.011 |
| 91 | 7.58 | 0.40 | 0.123 | 0.240) | 0.111 | 0.012 |
| 92 | 7.67 | 0.40 | 0.123 | $0.239)$ | 0.111 | 0.012 |
| 93 | 7.75 | 0.40 | 0.123 | $0.238)$ | 0.111 | 0.012 |
| 94 | 7.83 | 0.43 | 0.133 | $0.237)$ | 0.120 | 0.013 |
| 95 | 7.92 | 0.43 | 0.133 | $0.236)$ | 0.120 | 0.013 |
| 96 | 8.00 | 0.43 | 0.133 | $0.235)$ | 0.120 | 0.013 |
| 97 | 8.08 | 0.50 | 0.154 | $0.234)$ | 0.138 | 0.015 |
| 98 | 8.17 | 0.50 | 0.154 | $0.233)$ | 0.138 | 0.015 |
| 99 | 8.25 | 0.50 | 0.154 | $0.232)$ | 0.138 | 0.015 |
| 100 | 8.33 | 0.50 | 0.154 | 0.230) | 0.138 | 0.015 |
| 101 | 8.42 | 0.50 | 0.154 | $0.229)$ | 0.138 | 0.015 |
| 102 | 8.50 | 0.50 | 0.154 | $0.228)$ | 0.138 | 0.015 |
| 103 | 8.58 | 0.53 | 0.164 | $0.227)$ | 0.148 | 0.016 |
| 104 | 8.67 | 0.53 | 0.164 | $0.226)$ | 0.148 | 0.016 |
| 105 | 8.75 | 0.53 | 0.164 | $0.225)$ | 0.148 | 0.016 |
| 106 | 8.83 | 0.57 | 0.174 | $0.224)$ | 0.157 | 0.017 |
| 107 | 8.92 | 0.57 | 0.174 | $0.223)$ | 0.157 | 0.017 |
| 108 | 9.00 | 0.57 | 0.174 | $0.222)$ | 0.157 | 0.017 |
| 109 | 9.08 | 0.63 | 0.195 | 0.221) | 0.175 | 0.019 |
| 110 | 9.17 | 0.63 | 0.195 | 0.220) | 0.175 | 0.019 |
| 111 | 9.25 | 0.63 | 0.195 | $0.219)$ | 0.175 | 0.019 |
| 112 | 9.33 | 0.67 | 0.205 | $0.218)$ | 0.185 | 0.021 |
| 113 | 9.42 | 0.67 | 0.205 | $0.217)$ | 0.185 | 0.021 |
| 114 | 9.50 | 0.67 | 0.205 | $0.216)$ | 0.185 | 0.021 |
| 115 | 9.58 | 0.70 | 0.215 | $0.215)$ | 0.194 | 0.022 |
| 116 | 9.67 | 0.70 | 0.215 | $0.214)$ | 0.194 | 0.022 |


| 117 | 9.75 | 0.70 | 0.215 | $0.213)$ | 0.194 | 0.022 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 118 | 9.83 | 0.73 | 0.226 | 0.212) | 0.203 | 0.023 |
| 119 | 9.92 | 0.73 | 0.226 | 0.211) | 0.203 | 0.023 |
| 120 | 10.00 | 0.73 | 0.226 | 0.210) | 0.203 | 0.023 |
| 121 | 10.08 | 0.50 | 0.154 | 0.208) | 0.138 | 0.015 |
| 122 | 10.17 | 0.50 | 0.154 | $0.207)$ | 0.138 | 0.015 |
| 123 | 10.25 | 0.50 | 0.154 | 0.206) | 0.138 | 0.015 |
| 124 | 10.33 | 0.50 | 0.154 | $0.205)$ | 0.138 | 0.015 |
| 125 | 10.42 | 0.50 | 0.154 | $0.204)$ | 0.138 | 0.015 |
| 126 | 10.50 | 0.50 | 0.154 | $0.203)$ | 0.138 | 0.015 |
| 127 | 10.58 | 0.67 | 0.205 | 0.202) | 0.185 | 0.021 |
| 128 | 10.67 | 0.67 | 0.205 | 0.201) | 0.185 | 0.021 |
| 129 | 10.75 | 0.67 | 0.205 | 0.201) | 0.185 | 0.021 |
| 130 | 10.83 | 0.67 | 0.205 | 0.200) | 0.185 | 0.021 |
| 131 | 10.92 | 0.67 | 0.205 | $0.199)$ | 0.185 | 0.021 |
| 132 | 11.00 | 0.67 | 0.205 | 0.198) | 0.185 | 0.021 |
| 133 | 11.08 | 0.63 | 0.195 | 0.197) | 0.175 | 0.019 |
| 134 | 11.17 | 0.63 | 0.195 | 0.196) | 0.175 | 0.019 |
| 135 | 11.25 | 0.63 | 0.195 | $0.195)$ | 0.175 | 0.019 |
| 136 | 11.33 | 0.63 | 0.195 | $0.194)$ | 0.175 | 0.019 |
| 137 | 11.42 | 0.63 | 0.195 | 0.193) | 0.175 | 0.019 |
| 138 | 11.50 | 0.63 | 0.195 | 0.192) | 0.175 | 0.019 |
| 139 | 11.58 | 0.57 | 0.174 | 0.191) | 0.157 | 0.017 |
| 140 | 11.67 | 0.57 | 0.174 | 0.190) | 0.157 | 0.017 |
| 141 | 11.75 | 0.57 | 0.174 | 0.189) | 0.157 | 0.017 |
| 142 | 11.83 | 0.60 | 0.185 | 0.188) | 0.166 | 0.018 |
| 143 | 11.92 | 0.60 | 0.185 | 0.187) | 0.166 | 0.018 |
| 144 | 12.00 | 0.60 | 0.185 | 0.186) | 0.166 | 0.018 |
| 145 | 12.08 | 0.83 | 0.256 | 0.185 | $0.231)$ | 0.071 |
| 146 | 12.17 | 0.83 | 0.256 | 0.184 | $0.231)$ | 0.072 |
| 147 | 12.25 | 0.83 | 0.256 | 0.183 | $0.231)$ | 0.073 |
| 148 | 12.33 | 0.87 | 0.267 | 0.182 | $0.240)$ | 0.084 |
| 149 | 12.42 | 0.87 | 0.267 | 0.182 | $0.240)$ | 0.085 |
| 150 | 12.50 | 0.87 | 0.267 | 0.181 | $0.240)$ | 0.086 |
| 151 | 12.58 | 0.93 | 0.287 | 0.180 | $0.259)$ | 0.108 |
| 152 | 12.67 | 0.93 | 0.287 | 0.179 | $0.259)$ | 0.108 |
| 153 | 12.75 | 0.93 | 0.287 | 0.178 | $0.259)$ | 0.109 |
| 154 | 12.83 | 0.97 | 0.298 | 0.177 | $0.268)$ | 0.121 |
| 155 | 12.92 | 0.97 | 0.298 | 0.176 | $0.268)$ | 0.121 |
| 156 | 13.00 | 0.97 | 0.298 | 0.175 | $0.268)$ | 0.122 |
| 157 | 13.08 | 1.13 | 0.349 | 0.174 | $0.314)$ | 0.174 |
| 158 | 13.17 | 1.13 | 0.349 | 0.173 | $0.314)$ | 0.175 |
| 159 | 13.25 | 1.13 | 0.349 | 0.173 | $0.314)$ | 0.176 |
| 160 | 13.33 | 1.13 | 0.349 | 0.172 | $0.314)$ | 0.177 |
| 161 | 13.42 | 1.13 | 0.349 | 0.171 | $0.314)$ | 0.178 |
| 162 | 13.50 | 1.13 | 0.349 | 0.170 | $0.314)$ | 0.179 |
| 163 | 13.58 | 0.77 | 0.236 | 0.169 | $0.212)$ | 0.067 |
| 164 | 13.67 | 0.77 | 0.236 | 0.168 | $0.212)$ | 0.068 |
| 165 | 13.75 | 0.77 | 0.236 | 0.167 | $0.212)$ | 0.069 |
| 166 | 13.83 | 0.77 | 0.236 | 0.166 | $0.212)$ | 0.069 |
| 167 | 13.92 | 0.77 | 0.236 | 0.166 | $0.212)$ | 0.070 |
| 168 | 14.00 | 0.77 | 0.236 | 0.165 | $0.212)$ | 0.071 |
| 169 | 14.08 | 0.90 | 0.277 | 0.164 | $0.249)$ | 0.113 |
| 170 | 14.17 | 0.90 | 0.277 | 0.163 | $0.249)$ | 0.114 |
| 171 | 14.25 | 0.90 | 0.277 | 0.162 | $0.249)$ | 0.115 |
| 172 | 14.33 | 0.87 | 0.267 | 0.161 | $0.240)$ | 0.105 |
| 173 | 14.42 | 0.87 | 0.267 | 0.161 | $0.240)$ | 0.106 |
| 174 | 14.50 | 0.87 | 0.267 | 0.160 | $0.240)$ | 0.107 |
| 175 | 14.58 | 0.87 | 0.267 | 0.159 | $0.240)$ | 0.108 |
| 176 | 14.67 | 0.87 | 0.267 | 0.158 | 0.240) | 0.109 |


| 177 | 14.75 | 0.87 | 0.267 | 0.157 | 0.240) | 0.109 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 178 | 14.83 | 0.83 | 0.256 | 0.157 | 0.231) | 0.100 |
| 179 | 14.92 | 0.83 | 0.256 | 0.156 | 0.231) | 0.101 |
| 180 | 15.00 | 0.83 | 0.256 | 0.155 | 0.231) | 0.102 |
| 181 | 15.08 | 0.80 | 0.246 | 0.154 | $0.222)$ | 0.092 |
| 182 | 15.17 | 0.80 | 0.246 | 0.153 | $0.222)$ | 0.093 |
| 183 | 15.25 | 0.80 | 0.246 | 0.153 | $0.222)$ | 0.094 |
| 184 | 15.33 | 0.77 | 0.236 | 0.152 | $0.212)$ | 0.084 |
| 185 | 15.42 | 0.77 | 0.236 | 0.151 | $0.212)$ | 0.085 |
| 186 | 15.50 | 0.77 | 0.236 | 0.150 | $0.212)$ | 0.086 |
| 187 | 15.58 | 0.63 | 0.195 | 0.149 | $0.175)$ | 0.045 |
| 188 | 15.67 | 0.63 | 0.195 | 0.149 | $0.175)$ | 0.046 |
| 189 | 15.75 | 0.63 | 0.195 | 0.148 | $0.175)$ | 0.047 |
| 190 | 15.83 | 0.63 | 0.195 | 0.147 | $0.175)$ | 0.048 |
| 191 | 15.92 | 0.63 | 0.195 | 0.146 | $0.175)$ | 0.048 |
| 192 | 16.00 | 0.63 | 0.195 | 0.146 | $0.175)$ | 0.049 |
| 193 | 16.08 | 0.13 | 0.041 | $0.145)$ | 0.037 | 0.004 |
| 194 | 16.17 | 0.13 | 0.041 | $0.144)$ | 0.037 | 0.004 |
| 195 | 16.25 | 0.13 | 0.041 | $0.143)$ | 0.037 | 0.004 |
| 196 | 16.33 | 0.13 | 0.041 | $0.143)$ | 0.037 | 0.004 |
| 197 | 16.42 | 0.13 | 0.041 | $0.142)$ | 0.037 | 0.004 |
| 198 | 16.50 | 0.13 | 0.041 | $0.141)$ | 0.037 | 0.004 |
| 199 | 16.58 | 0.10 | 0.031 | 0.141) | 0.028 | 0.003 |
| 200 | 16.67 | 0.10 | 0.031 | 0.140) | 0.028 | 0.003 |
| 201 | 16.75 | 0.10 | 0.031 | $0.139)$ | 0.028 | 0.003 |
| 202 | 16.83 | 0.10 | 0.031 | 0.138) | 0.028 | 0.003 |
| 203 | 16.92 | 0.10 | 0.031 | 0.138) | 0.028 | 0.003 |
| 204 | 17.00 | 0.10 | 0.031 | $0.137)$ | 0.028 | 0.003 |
| 205 | 17.08 | 0.17 | 0.051 | $0.136)$ | 0.046 | 0.005 |
| 206 | 17.17 | 0.17 | 0.051 | 0.136) | 0.046 | 0.005 |
| 207 | 17.25 | 0.17 | 0.051 | 0.135) | 0.046 | 0.005 |
| 208 | 17.33 | 0.17 | 0.051 | $0.134)$ | 0.046 | 0.005 |
| 209 | 17.42 | 0.17 | 0.051 | $0.134)$ | 0.046 | 0.005 |
| 210 | 17.50 | 0.17 | 0.051 | $0.133)$ | 0.046 | 0.005 |
| 211 | 17.58 | 0.17 | 0.051 | $0.132)$ | 0.046 | 0.005 |
| 212 | 17.67 | 0.17 | 0.051 | $0.132)$ | 0.046 | 0.005 |
| 213 | 17.75 | 0.17 | 0.051 | 0.131) | 0.046 | 0.005 |
| 214 | 17.83 | 0.13 | 0.041 | 0.130) | 0.037 | 0.004 |
| 215 | 17.92 | 0.13 | 0.041 | 0.130) | 0.037 | 0.004 |
| 216 | 18.00 | 0.13 | 0.041 | $0.129)$ | 0.037 | 0.004 |
| 217 | 18.08 | 0.13 | 0.041 | 0.128) | 0.037 | 0.004 |
| 218 | 18.17 | 0.13 | 0.041 | $0.128)$ | 0.037 | 0.004 |
| 219 | 18.25 | 0.13 | 0.041 | $0.127)$ | 0.037 | 0.004 |
| 220 | 18.33 | 0.13 | 0.041 | 0.127) | 0.037 | 0.004 |
| 221 | 18.42 | 0.13 | 0.041 | $0.126)$ | 0.037 | 0.004 |
| 222 | 18.50 | 0.13 | 0.041 | $0.125)$ | 0.037 | 0.004 |
| 223 | 18.58 | 0.10 | 0.031 | $0.125)$ | 0.028 | 0.003 |
| 224 | 18.67 | 0.10 | 0.031 | $0.124)$ | 0.028 | 0.003 |
| 225 | 18.75 | 0.10 | 0.031 | $0.124)$ | 0.028 | 0.003 |
| 226 | 18.83 | 0.07 | 0.021 | $0.123)$ | 0.018 | 0.002 |
| 227 | 18.92 | 0.07 | 0.021 | 0.122) | 0.018 | 0.002 |
| 228 | 19.00 | 0.07 | 0.021 | $0.122)$ | 0.018 | 0.002 |
| 229 | 19.08 | 0.10 | 0.031 | 0.121) | 0.028 | 0.003 |
| 230 | 19.17 | 0.10 | 0.031 | 0.121) | 0.028 | 0.003 |
| 231 | 19.25 | 0.10 | 0.031 | 0.120) | 0.028 | 0.003 |
| 232 | 19.33 | 0.13 | 0.041 | $0.119)$ | 0.037 | 0.004 |
| 233 | 19.42 | 0.13 | 0.041 | $0.119)$ | 0.037 | 0.004 |
| 234 | 19.50 | 0.13 | 0.041 | 0.118) | 0.037 | 0.004 |
| 235 | 19.58 | 0.10 | 0.031 | $0.118)$ | 0.028 | 0.003 |
| 236 | 19.67 | 0.10 | 0.031 | $0.117)$ | 0.028 | 0.003 |




| 1+45 | 0.0034 | 0.02 | Q | 1 | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+50 | 0.0036 | 0.03 | Q | \| | \| |
| 1+55 | 0.0038 | 0.03 | Q | , | \| |
| 2+ 0 | 0.0041 | 0.03 | Q | 1 | \| |
| 2+ 5 | 0.0043 | 0.03 | Q | 1 | 1 |
| 2+10 | 0.0045 | 0.03 | Q | 1 | 1 |
| 2+15 | 0.0047 | 0.03 | Q | , | \| |
| 2+20 | 0.0050 | 0.03 | Q | \| | \| |
| 2+25 | 0.0052 | 0.03 | Q | I | I |
| 2+30 | 0.0054 | 0.03 | Q | 1 | 1 |
| 2+35 | 0.0057 | 0.04 | Q | \| | \| |
| 2+40 | 0.0060 | 0.04 | Q | 1 | \| |
| 2+45 | 0.0062 | 0.04 | Q | 1 | 1 |
| 2+50 | 0.0065 | 0.04 | Q | 1 | 1 |
| 2+55 | 0.0068 | 0.04 | Q | 1 | 1 |
| 3+ 0 | 0.0071 | 0.04 | Q | \| | \| |
| 3+ 5 | 0.0074 | 0.04 | Q | \\| | \| |
| 3+10 | 0.0077 | 0.04 | Q | 1 | 1 |
| 3+15 | 0.0080 | 0.04 | Q | \| | \| |
| 3+20 | 0.0082 | 0.04 | Q | \\| | 1 |
| 3+25 | 0.0085 | 0.04 | Q | 1 | 1 |
| 3+30 | 0.0088 | 0.04 | Q | 1 | 1 |
| 3+35 | 0.0091 | 0.04 | Q | 1 | 1 |
| 3+40 | 0.0094 | 0.04 | QV | \| | 1 |
| 3+45 | 0.0097 | 0.04 | QV | 1 | 1 |
| 3+50 | 0.0100 | 0.04 | QV | \| | \| |
| 3+55 | 0.0103 | 0.05 | QV | \| | I |
| 4+ 0 | 0.0106 | 0.05 | QV | \| |  |
| 4+ 5 | 0.0110 | 0.05 | QV | I |  |
| 4+10 | 0.0113 | 0.05 | QV | \| |  |


| 4+15 | 0.0117 | 0.05 | QV | \| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 4+20 | 0.0120 | 0.05 | QV | \| | \| |
| 4+25 | 0.0124 | 0.06 | QV | \| | \| |
| 4+30 | 0.0128 | 0.06 | QV | \| | \| |
| 4+35 | 0.0132 | 0.06 | QV | । | I |
| 4+40 | 0.0136 | 0.06 | QV | \| | 1 |
| 4+45 | 0.0140 | 0.06 | QV | । | 1 |
| $4+50$ | 0.0144 | 0.06 | QV | \| | \| |
| 4+55 | 0.0149 | 0.06 | QV | 1 | 1 |
| 5+ 0 | 0.0153 | 0.07 | QV | \| | I |
| 5+ 5 | 0.0158 | 0.06 | QV | । | 1 |
| 5+10 | 0.0161 | 0.05 | QV | \| | I |
| 5+15 | 0.0165 | 0.05 | QV | \| | I |
| 5+20 | 0.0168 | 0.05 | QV | I | I |
| 5+25 | 0.0172 | 0.06 | QV | \| | I |
| 5+30 | 0.0176 | 0.06 | QV | । | I |
| 5+35 | 0.0180 | 0.06 | QV | \| | I |
| 5+40 | 0.0185 | 0.06 | Q V | I | 1 |
| 5+45 | 0.0190 | 0.07 | Q V | \| | \| |
| 5+50 | 0.0194 | 0.07 | Q V | । | I |
| 5+55 | 0.0199 | 0.07 | Q V | । | 1 |
| 6+ 0 | 0.0203 | 0.07 | Q V | \| | 1 |
| 6+ 5 | 0.0208 | 0.07 | Q V | । | I |
| 6+10 | 0.0213 | 0.07 | Q V | । | 1 |
| 6+15 | 0.0218 | 0.07 | Q V | I | 1 |
| 6+20 | 0.0223 | 0.07 | Q V | \| | \| |
| 6+25 | 0.0228 | 0.07 | Q V | \| | \| |
| 6+30 | 0.0234 | 0.07 | Q V | \| | \| |
| 6+35 | 0.0239 | 0.08 | Q V | \| | 1 |
| 6+40 | 0.0245 | 0.08 | Q V | \| | \| |


| 6+45 | 0.0250 | 0.08 | Q |  |  | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+50 | 0.0256 | 0.08 | Q | $\checkmark$ |  | \| |
| 6+55 | 0.0262 | 0.08 | Q | $\checkmark$ |  | \| |
| 7+ 0 | 0.0267 | 0.08 | Q | $\checkmark$ |  | \| |
| 7+ 5 | 0.0273 | 0.08 | Q | V |  | \| |
| 7+10 | 0.0279 | 0.08 | Q | V | \| | \| |
| 7+15 | 0.0285 | 0.08 | Q | V | \| | \| |
| 7+20 | 0.0290 | 0.09 | Q | V |  | \| |
| 7+25 | 0.0297 | 0.09 | Q | V |  | \| |
| 7+30 | 0.0303 | 0.09 | Q | V | 1 | \| |
| 7+35 | 0.0309 | 0.09 | Q | V | \| | \| |
| 7+40 | 0.0316 | 0.10 | Q | V |  | \| |
| 7+45 | 0.0323 | 0.10 | Q | V |  | \| |
| 7+50 | 0.0330 | 0.10 | Q | V |  | \| |
| 7+55 | 0.0337 | 0.11 | Q | V |  | \| |
| 8+ 0 | 0.0345 | 0.11 | Q | V |  | \| |
| 8+ 5 | 0.0352 | 0.11 | Q | V |  | \| |
| 8+10 | 0.0361 | 0.12 | Q | V |  | \| |
| 8+15 | 0.0369 | 0.12 | Q | V |  | \| |
| 8+20 | 0.0378 | 0.12 | Q | V |  | \| |
| 8+25 | 0.0386 | 0.12 | Q | V |  | \| |
| 8+30 | 0.0395 | 0.12 | Q | V |  | \| |
| 8+35 | 0.0404 | 0.13 | Q | V |  | \| |
| 8+40 | 0.0413 | 0.13 | Q | V |  | \| |
| 8+45 | 0.0422 | 0.13 | Q | V |  | \| |
| $8+50$ | 0.0431 | 0.14 | Q | V |  | \| |
| $8+55$ | 0.0441 | 0.14 | Q | V |  | 1 |
| 9+ 0 | 0.0451 | 0.14 | Q | V |  | \| |
| 9+ 5 | 0.0461 | 0.15 | Q | v |  | \| |
| 9+10 | 0.0471 | 0.15 | Q | V |  | \| |


| 9+15 | 0.0482 | 0.16 | Q | v | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+20 | 0.0493 | 0.16 | Q | V | \| | \| |
| 9+25 | 0.0504 | 0.16 | Q | V | \| | \| |
| 9+30 | 0.0516 | 0.17 | Q | V | \| | 1 |
| 9+35 | 0.0527 | 0.17 | Q | V | \| | 1 |
| 9+40 | 0.0539 | 0.17 | Q | V | \| | I |
| 9+45 | 0.0551 | 0.17 | Q | V | \| | 1 |
| 9+50 | 0.0564 | 0.18 | Q | V | \| | 1 |
| 9+55 | 0.0576 | 0.18 | Q | v | \| | I |
| 10+ 0 | 0.0589 | 0.18 | Q | V | \| | I |
| 10+ 5 | 0.0600 | 0.17 | Q | V | \| | 1 |
| 10+10 | 0.0610 | 0.14 | Q | V | \| | 1 |
| 10+15 | 0.0618 | 0.13 | Q | V | \| | I |
| 10+20 | 0.0627 | 0.13 | Q | V | \| | 1 |
| 10+25 | 0.0636 | 0.13 | Q | v | \| | \| |
| 10+30 | 0.0644 | 0.12 | Q | V | \| | 1 |
| 10+35 | 0.0654 | 0.14 | Q | V | \| | \| |
| 10+40 | 0.0664 | 0.16 | Q | V | 1 | 1 |
| 10+45 | 0.0676 | 0.16 | Q | V | 1 | \| |
| 10+50 | 0.0687 | 0.17 | Q | V | I | I |
| 10+55 | 0.0699 | 0.17 | Q | V | \| | 1 |
| 11+ 0 | 0.0710 | 0.17 | Q | V | 1 | \| |
| 11+ 5 | 0.0721 | 0.16 | Q | V | 1 | 1 |
| 11+10 | 0.0732 | 0.16 | Q |  |  | 1 |
| 11+15 | 0.0743 | 0.16 | Q |  |  | I |
| 11+20 | 0.0754 | 0.16 | Q |  |  | I |
| 11+25 | 0.0765 | 0.16 | Q |  |  | I |
| 11+30 | 0.0776 | 0.16 | Q |  |  | I |
| 11+35 | 0.0787 | 0.15 | Q |  |  | \| |
| 11+40 | 0.0796 | 0.14 | Q |  |  | I |







| 24+15 | 0.3659 | 0.00 | Q | \| | I | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V\| $24+20$ | 0.3659 | 0.00 | Q | । | \| | । |
| VI |  |  |  |  |  |  |
| $24+25$ | 0.3659 | 0.00 | Q | \| | \| | \| |

$$
\begin{aligned}
& \text { Copyright (c) CIVILCADD/CIVILDESIGN, 1989- 2012, Version 8.2 } \\
& \text { Study date 02/19/21 File: moval } 33 \mathrm{preb} 2410 \text {. out }
\end{aligned}
$$



```
Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978
Program License Serial Number 6232
    English (in-lb) Input Units Used
    English Rainfal| Data (Inches) Input Values Used
    English Units used in output format
Gateway Hei ghts
Predevlopment Conditions
Unit Hydrograph Runoff
Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(AC.) =
Length along longest watercourse= 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00(Ft.)
Length along ongest watercourse = 0.205 Mi
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in el evation= 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./ Mi.
Average Manning's 'N'=0.040
Lag time = 0.064 Hr.
Lag time= 3.83 Mi n
25% of lag time= 0.96 Min.
40% of lag time= 1.53 Min.
Unit time= 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow= 0.00(CFS)
2 YEAR Area rainfal| data:
Area(AC.)[1] Rainfall(ln)[2] Weighting[1*2]
    8.04 1.93 15.52
100 YEAR Area rainfall data:
```



```
STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall= 4.640(In)
                                    Page 1
```

$0.013 \mathrm{Sq} . \mathrm{Mi}$.
moval 33 preb 2410



Unit Hoydir o griraph


The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Ti me | Pattern | Storm Rain | Loss rate(ln./ Hr) |  | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.) | Percent | ( $\mathrm{l} \mathrm{n} / \mathrm{Hr}$ ) |  |  | ( $\mathrm{ln} / \mathrm{Hr}$ ) |
| 1 | 0.08 | 0.07 | 0.024 | $0.352)$ | 0.022 | 0.002 |
| 2 | 0.17 | 0.07 | 0.024 | $0.350)$ | 0.022 | 0.002 |
| 3 | 0.25 | 0.07 | 0.024 | $0.349)$ | 0.022 | 0.002 |
| 4 | 0.33 | 0.10 | 0.037 | $0.348)$ | 0.033 | 0.004 |
| 5 | 0.42 | 0.10 | 0.037 | $0.346)$ | 0.033 | 0.004 |
| 6 | 0.50 | 0.10 | 0.037 | 0.3451 | 0.033 | 0.004 |
| 7 | 0.58 | 0.10 | 0.037 | $0.344)$ | 0.033 | 0.004 |
| 8 | 0.67 | 0.10 | 0.037 | $0.342)$ | 0.033 | 0.004 |
| 9 | 0.75 | 0.10 | 0.037 | $0.341)$ | 0.033 | 0.004 |
| 10 | 0.83 | 0.13 | 0.049 | $0.340)$ | 0.044 | 0.005 |
| 11 | 0.92 | 0.13 | 0.049 | 0.338) | 0.044 | 0.005 |
| 12 | 1. 00 | 0.13 | 0.049 | 0.337) | 0.044 | 0.005 |
| 13 | 1.08 | 0.10 | 0.037 | 0.3361 | 0.033 | 0.004 |
| 14 | 1.17 | 0.10 | 0.037 | 0.3341 | 0.033 | 0.004 |
| 15 | 1. 25 | 0.10 | 0.037 | 0.3331 | 0.033 | 0.004 |
| 16 | 1. 33 | 0.10 | 0.037 | $0.332)$ | 0.033 | 0.004 |
| 17 | 1.42 | 0.10 | 0.037 | 0.3301 | 0.033 | 0.004 |
| 18 | 1. 50 | 0.10 | 0.037 | 0.3291 | 0.033 | 0.004 |
| 19 | 1.58 | 0.10 | 0.037 | 0.3281 | 0.033 | 0.004 |
|  |  |  |  | Page 2 |  |  |


| 20 | 1.67 | 0.10 | 0.037 | moval $\begin{gathered}33 \mathrm{preb} 2410 \\ 0.326)\end{gathered}$ | 0.033 | 0.004 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 21 | 1.75 | 0.10 | 0.037 | (0.325) | 0.033 | 0.004 |
| 22 | 1.83 | 0.13 | 0.049 | 0.324 ) | 0.044 | 0.005 |
| 23 | 1.92 | 0.13 | 0.049 | $0.322)$ | 0.044 | 0.005 |
| 24 | 2.00 | 0.13 | 0.049 | $0.321)$ | 0.044 | 0.005 |
| 25 | 2.08 | 0.13 | 0.049 | $0.320)$ | 0.044 | 0.005 |
| 26 | 2.17 | 0.13 | 0.049 | $0.318)$ | 0.044 | 0.005 |
| 27 | 2.25 | 0.13 | 0.049 | $0.317)$ | 0.044 | 0.005 |
| 28 | 2.33 | 0.13 | 0.049 | $0.316)$ | 0.044 | 0.005 |
| 29 | 2.42 | 0.13 | 0.049 | $0.315)$ | 0.044 | 0.005 |
| 30 | 2.50 | 0.13 | 0.049 | $0.313)$ | 0.044 | 0.005 |
| 31 | 2. 58 | 0.17 | 0.061 | $0.312)$ | 0.055 | 0.006 |
| 32 | 2.67 | 0.17 | 0.061 | $0.311)$ | 0.055 | 0.006 |
| 33 | 2.75 | 0.17 | 0.061 | $0.310)$ | 0.055 | 0.006 |
| 34 | 2.83 | 0.17 | 0.061 | 0.3081 | 0.055 | 0.006 |
| 35 | 2.92 | 0.17 | 0.061 | $0.307)$ | 0.055 | 0.006 |
| 36 | 3.00 | 0.17 | 0.061 | 0.3061 | 0.055 | 0.006 |
| 37 | 3.08 | 0.17 | 0.061 | $0.304)$ | 0.055 | 0.006 |
| 38 | 3. 17 | 0.17 | 0.061 | 0.3031 | 0.055 | 0.006 |
| 39 | 3.25 | 0.17 | 0.061 | $0.302)$ | 0.055 | 0.006 |
| 40 | 3.33 | 0.17 | 0.061 | $0.301)$ | 0.055 | 0.006 |
| 41 | 3. 42 | 0.17 | 0.061 | $0.299)$ | 0.055 | 0.006 |
| 42 | 3.50 | 0.17 | 0.061 | $0.298)$ | 0.055 | 0.006 |
| 43 | 3. 58 | 0.17 | 0.061 | $0.297)$ | 0.055 | 0.006 |
| 44 | 3.67 | 0.17 | 0.061 | 0.2961 | 0.055 | 0.006 |
| 45 | 3.75 | 0.17 | 0.061 | $0.294)$ | 0.055 | 0.006 |
| 46 | 3.83 | 0.20 | 0.073 | $0.293)$ | 0.066 | 0.007 |
| 47 | 3.92 | 0.20 | 0.073 | 0.2921 | 0.066 | 0.007 |
| 48 | 4.00 | 0.20 | 0.073 | $0.291)$ | 0.066 | 0.007 |
| 49 | 4.08 | 0.20 | 0.073 | $0.289)$ | 0.066 | 0.007 |
| 50 | 4.17 | 0.20 | 0.073 | $0.288)$ | 0.066 | 0.007 |
| 51 | 4.25 | 0.20 | 0.073 | $0.287)$ | 0.066 | 0.007 |
| 52 | 4.33 | 0.23 | 0.085 | $0.286)$ | 0.077 | 0.009 |
| 53 | 4.42 | 0.23 | 0.085 | 0.2851 | 0.077 | 0.009 |
| 54 | 4.50 | 0.23 | 0.085 | $0.283)$ | 0.077 | 0.009 |
| 55 | 4.58 | 0.23 | 0.085 | 0.2821 | 0.077 | 0.009 |
| 56 | 4.67 | 0.23 | 0.085 | $0.281)$ | 0.077 | 0.009 |
| 57 | 4.75 | 0.23 | 0.085 | $0.280)$ | 0.077 | 0.009 |
| 58 | 4.83 | 0.27 | 0.097 | 0.2781 | 0.088 | 0.010 |
| 59 | 4.92 | 0.27 | 0.097 | $0.277)$ | 0.088 | 0.010 |
| 60 | 5.00 | 0.27 | 0.097 | 0.2761 | 0.088 | 0.010 |
| 61 | 5.08 | 0.20 | 0.073 | $0.275)$ | 0.066 | 0.007 |
| 62 | 5.17 | 0.20 | 0.073 | 0.2741 | 0.066 | 0.007 |
| 63 | 5.25 | 0.20 | 0.073 | $0.272)$ | 0.066 | 0.007 |
| 64 | 5.33 | 0.23 | 0.085 | $0.271)$ | 0.077 | 0.009 |
| 65 | 5. 42 | 0.23 | 0.085 | $0.270)$ | 0.077 | 0.009 |
| 66 | 5.50 | 0.23 | 0.085 | $0.269)$ | 0.077 | 0.009 |
| 67 | 5. 58 | 0.27 | 0.097 | $0.268)$ | 0.088 | 0.010 |
| 68 | 5.67 | 0.27 | 0.097 | 0.267) | 0.088 | 0.010 |
| 69 | 5.75 | 0.27 | 0.097 | 0.2651 | 0.088 | 0.010 |
| 70 | 5.83 | 0.27 | 0.097 | $0.264)$ | 0.088 | 0.010 |
| 71 | 5.92 | 0.27 | 0.097 | $0.263)$ | 0.088 | 0.010 |
| 72 | 6.00 | 0.27 | 0.097 | 0.2621 | 0.088 | 0.010 |
| 73 | 6.08 | 0.30 | 0.110 | $0.261)$ | 0.099 | 0.011 |
| 74 | 6.17 | 0.30 | 0.110 | 0.2601 | 0.099 | 0.011 |
| 75 | 6.25 | 0.30 | 0.1110 | $0.258)$ | 0.099 | 0.011 |
| 76 | 6.33 | 0.30 | 0.110 | $0.257)$ | 0.099 | 0.011 |
| 77 | 6.42 | 0.30 | 0.110 | 0.2561 | 0.099 | 0.011 |
| 78 | 6.50 | 0.30 | 0.110 | $0.255)$ | 0.099 | 0.011 |
| 79 | 6.58 | 0.33 | 0.122 | $0.254)$ | 0.110 | 0.012 |
| 80 | 6.67 | 0.33 | 0.122 | 0.2531 | 0.110 | 0.012 |
| 81 | 6.75 | 0.33 | 0.122 | $0.252)$ | 0.110 | 0.012 |
| 82 | 6.83 | 0.33 | 0.122 | 0.250) | 0.110 | 0.012 |
|  |  |  |  | Page 3 |  |  |



| 146 | 12. 17 | 0.83 | 0.304 | moval $\begin{gathered}3 \text { preb } 2410 \\ 0.184\end{gathered}$ | 0.2741 | 0.120 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 147 | 12. 25 | 0.83 | 0.304 | 0.183 | 0.2741 | 0.121 |
| 148 | 12.33 | 0.87 | 0.317 | 0.182 | $0.285)$ | 0.134 |
| 149 | 12.42 | 0.87 | 0.317 | 0.182 | 0.285) | 0.135 |
| 150 | 12.50 | 0.87 | 0.317 | 0.181 | 0.285) | 0.136 |
| 151 | 12.58 | 0.93 | 0.341 | 0.180 | $0.307)$ | 0.161 |
| 152 | 12.67 | 0.93 | 0.341 | 0.179 | 0.3071 | 0.162 |
| 153 | 12.75 | 0.93 | 0.341 | 0.178 | $0.307)$ | 0.163 |
| 154 | 12.83 | 0.97 | 0.353 | 0.177 | $0.318)$ | 0.176 |
| 155 | 12.92 | 0.97 | 0.353 | 0.176 | 0.318) | 0.177 |
| 156 | 13.00 | 0.97 | 0.353 | 0.175 | 0.318) | 0.178 |
| 157 | 13.08 | 1. 13 | 0.414 | 0.174 | 0.3731 | 0.240 |
| 158 | 13.17 | 1. 13 | 0.414 | 0.173 | 0.3731 | 0.241 |
| 159 | 13. 25 | 1. 13 | 0.414 | 0.173 | 0.3731 | 0.242 |
| 160 | 13.33 | 1. 13 | 0.414 | 0.172 | 0.3731 | 0.242 |
| 161 | 13.42 | 1. 13 | 0.414 | 0.171 | 0.3731 | 0.243 |
| 162 | 13.50 | 1. 13 | 0.414 | 0.170 | 0.3731 | 0.244 |
| 163 | 13.58 | 0.77 | 0.280 | 0.169 | $0.252)$ | 0.111 |
| 164 | 13.67 | 0.77 | 0.280 | 0.168 | 0.2521 | 0.112 |
| 165 | 13.75 | 0.77 | 0.280 | 0.167 | 0.252) | 0.113 |
| 166 | 13.83 | 0.77 | 0.280 | 0.166 | 0.252) | 0.114 |
| 167 | 13.92 | 0.77 | 0.280 | 0.166 | $0.252)$ | 0.114 |
| 168 | 14.00 | 0.77 | 0.280 | 0.165 | $0.252)$ | 0.115 |
| 169 | 14.08 | 0.90 | 0.329 | 0.164 | 0.2961 | 0.165 |
| 170 | 14.17 | 0.90 | 0.329 | 0.163 | 0.2961 | 0.166 |
| 171 | 14. 25 | 0.90 | 0.329 | 0.162 | 0.2961 | 0.167 |
| 172 | 14.33 | 0.87 | 0.317 | 0.161 | $0.285)$ | 0.155 |
| 173 | 14.42 | 0.87 | 0.317 | 0.161 | 0.285) | 0.156 |
| 174 | 14.50 | 0.87 | 0.317 | 0.160 | 0.285) | 0.157 |
| 175 | 14.58 | 0.87 | 0.317 | 0.159 | 0.285) | 0.158 |
| 176 | 14.67 | 0.87 | 0.317 | 0.158 | $0.285)$ | 0.158 |
| 177 | 14.75 | 0.87 | 0.317 | 0.157 | 0.285) | 0.159 |
| 178 | 14.83 | 0.83 | 0.304 | 0.157 | 0.2741 | 0.148 |
| 179 | 14.92 | 0.83 | 0.304 | 0.156 | $0.274)$ | 0.149 |
| 180 | 15.00 | 0.83 | 0.304 | 0.155 | $0.274)$ | 0.150 |
| 181 | 15.08 | 0.80 | 0.292 | 0.154 | 0.2631 | 0.138 |
| 182 | 15.17 | 0.80 | 0.292 | 0.153 | $0.263)$ | 0.139 |
| 183 | 15. 25 | 0.80 | 0.292 | 0.153 | 0.263) | 0.140 |
| 184 | 15.33 | 0.77 | 0.280 | 0.152 | 0.252) | 0.128 |
| 185 | 15.42 | 0.77 | 0.280 | 0.151 | $0.252)$ | 0.129 |
| 186 | 15.50 | 0.77 | 0.280 | 0.150 | 0.2521 | 0.130 |
| 187 | 15.58 | 0.63 | 0.231 | 0.149 | $0.208)$ | 0.082 |
| 188 | 15.67 | 0.63 | 0.231 | 0.149 | $0.208)$ | 0.083 |
| 189 | 15.75 | 0.63 | 0.231 | 0.148 | $0.208)$ | 0.083 |
| 190 | 15.83 | 0.63 | 0.231 | 0.147 | $0.208)$ | 0.084 |
| 191 | 15.92 | 0.63 | 0.231 | 0.146 | 0.2081 | 0.085 |
| 192 | 16.00 | 0.63 | 0.231 | 0.146 | $0.208)$ | 0.086 |
| 193 | 16. 08 | 0.13 | 0.049 | $0.145)$ | 0.044 | 0.005 |
| 194 | 16.17 | 0.13 | 0.049 | 0.144 ) | 0.044 | 0.005 |
| 195 | 16. 25 | 0.13 | 0.049 | $0.143)$ | 0.044 | 0.005 |
| 196 | 16.33 | 0.13 | 0.049 | $0.143)$ | 0.044 | 0.005 |
| 197 | 16.42 | 0.13 | 0.049 | $0.142)$ | 0.044 | 0.005 |
| 198 | 16.50 | 0.13 | 0.049 | $0.141)$ | 0.044 | 0.005 |
| 199 | 16.58 | 0.10 | 0.037 | $0.141)$ | 0.033 | 0.004 |
| 200 | 16.67 | 0.10 | 0.037 | $0.140)$ | 0.033 | 0.004 |
| 201 | 16.75 | 0.10 | 0.037 | $0.139)$ | 0.033 | 0.004 |
| 202 | 16.83 | 0.10 | 0.037 | $0.138)$ | 0.033 | 0.004 |
| 203 | 16.92 | 0.10 | 0.037 | $0.138)$ | 0.033 | 0.004 |
| 204 | 17.00 | 0.10 | 0.037 | $0.137)$ | 0.033 | 0.004 |
| 205 | 17.08 | 0.17 | 0.061 | $0.136)$ | 0.055 | 0.006 |
| 206 | 17.17 | 0.17 | 0.061 | $0.136)$ | 0.055 | 0.006 |
| 207 | 17. 25 | 0.17 | 0.061 | 0.135) | 0.055 | 0.006 |
| 208 | 17.33 | 0.17 | 0.061 | 0.134) | 0.055 | 0.006 |
|  |  |  |  | Page 5 |  |  |


|  |  |  |  | moval 33 preb 2410 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 209 | 17.42 | 0.17 | 0.061 | (0.134) | 0.055 | 0.006 |
| 210 | 17.50 | 0.17 | 0.061 | $0.133)$ | 0.055 | 0.006 |
| 211 | 17. 58 | 0.17 | 0.061 | $0.132)$ | 0.055 | 0.006 |
| 212 | 17.67 | 0.17 | 0.061 | $0.132)$ | 0.055 | 0.006 |
| 213 | 17.75 | 0.17 | 0.061 | $0.131)$ | 0.055 | 0.006 |
| 214 | 17.83 | 0.13 | 0.049 | $0.130)$ | 0.044 | 0.005 |
| 215 | 17.92 | 0.13 | 0.049 | $0.130)$ | 0.044 | 0.005 |
| 216 | 18.00 | 0.13 | 0.049 | $0.129)$ | 0.044 | 0.005 |
| 217 | 18.08 | 0.13 | 0.049 | $0.128)$ | 0.044 | 0.005 |
| 218 | 18.17 | 0.13 | 0.049 | $0.128)$ | 0.044 | 0.005 |
| 219 | 18. 25 | 0.13 | 0.049 | $0.127)$ | 0.044 | 0.005 |
| 220 | 18.33 | 0.13 | 0.049 | $0.127)$ | 0.044 | 0.005 |
| 221 | 18.42 | 0.13 | 0.049 | $0.126)$ | 0.044 | 0.005 |
| 222 | 18. 50 | 0.13 | 0.049 | 0.125) | 0.044 | 0.005 |
| 223 | 18. 58 | 0.10 | 0.037 | $0.125)$ | 0.033 | 0.004 |
| 224 | 18.67 | 0.10 | 0.037 | $0.124)$ | 0.033 | 0.004 |
| 225 | 18.75 | 0.10 | 0.037 | $0.124)$ | 0.033 | 0.004 |
| 226 | 18.83 | 0.07 | 0.024 | 0.123) | 0.022 | 0.002 |
| 227 | 18.92 | 0.07 | 0.024 | $0.122)$ | 0.022 | 0.002 |
| 228 | 19.00 | 0.07 | 0.024 | 0.122 ) | 0.022 | 0.002 |
| 229 | 19.08 | 0.10 | 0.037 | 0.121) | 0.033 | 0.004 |
| 230 | 19.17 | 0.10 | 0.037 | $0.121)$ | 0.033 | 0.004 |
| 231 | 19. 25 | 0.10 | 0.037 | $0.120)$ | 0.033 | 0.004 |
| 232 | 19.33 | 0.13 | 0.049 | 0.119) | 0.044 | 0.005 |
| 233 | 19.42 | 0.13 | 0.049 | 0.119) | 0.044 | 0.005 |
| 234 | 19.50 | 0.13 | 0.049 | 0.118) | 0.044 | 0.005 |
| 235 | 19.58 | 0.10 | 0.037 | 0.118) | 0.033 | 0.004 |
| 236 | 19.67 | 0.10 | 0.037 | $0.117)$ | 0.033 | 0.004 |
| 237 | 19.75 | 0.10 | 0.037 | $0.117)$ | 0.033 | 0.004 |
| 238 | 19.83 | 0.07 | 0.024 | $0.116)$ | 0.022 | 0.002 |
| 239 | 19.92 | 0.07 | 0.024 | $0.116)$ | 0.022 | 0.002 |
| 240 | 20.00 | 0.07 | 0.024 | $0.115)$ | 0.022 | 0.002 |
| 241 | 20.08 | 0.10 | 0.037 | $0.115)$ | 0.033 | 0.004 |
| 242 | 20.17 | 0.10 | 0.037 | $0.114)$ | 0.033 | 0.004 |
| 243 | 20. 25 | 0.10 | 0.037 | $0.114)$ | 0.033 | 0.004 |
| 244 | 20.33 | 0.10 | 0.037 | $0.113)$ | 0.033 | 0.004 |
| 245 | 20.42 | 0.10 | 0.037 | $0.113)$ | 0.033 | 0.004 |
| 246 | 20.50 | 0.10 | 0.037 | $0.112)$ | 0.033 | 0.004 |
| 247 | 20.58 | 0.10 | 0.037 | $0.112)$ | 0.033 | 0.004 |
| 248 | 20.67 | 0.10 | 0.037 | $0.111)$ | 0.033 | 0.004 |
| 249 | 20.75 | 0.10 | 0.037 | $0.111)$ | 0.033 | 0.004 |
| 250 | 20.83 | 0.07 | 0.024 | $0.110)$ | 0.022 | 0.002 |
| 251 | 20.92 | 0.07 | 0.024 | $0.110)$ | 0.022 | 0.002 |
| 252 | 21.00 | 0.07 | 0.024 | $0.110)$ | 0.022 | 0.002 |
| 253 | 21.08 | 0.10 | 0.037 | $0.109)$ | 0.033 | 0.004 |
| 254 | 21.17 | 0.10 | 0.037 | $0.109)$ | 0.033 | 0.004 |
| 255 | 21.25 | 0.10 | 0.037 | $0.108)$ | 0.033 | 0.004 |
| 256 | 21.33 | 0.07 | 0.024 | $0.108)$ | 0.022 | 0.002 |
| 257 | 21.42 | 0.07 | 0.024 | $0.107)$ | 0.022 | 0.002 |
| 258 | 21.50 | 0.07 | 0.024 | $0.107)$ | 0.022 | 0.002 |
| 259 | 21.58 | 0.10 | 0.037 | $0.107)$ | 0.033 | 0.004 |
| 260 | 21.67 | 0.10 | 0.037 | $0.106)$ | 0.033 | 0.004 |
| 261 | 21.75 | 0.10 | 0.037 | $0.106)$ | 0.033 | 0.004 |
| 262 | 21.83 | 0.07 | 0.024 | $0.105)$ | 0.022 | 0.002 |
| 263 | 21.92 | 0.07 | 0.024 | $0.105)$ | 0.022 | 0.002 |
| 264 | 22.00 | 0.07 | 0.024 | $0.105)$ | 0.022 | 0.002 |
| 265 | 22.08 | 0.10 | 0.037 | $0.104)$ | 0.033 | 0.004 |
| 266 | 22.17 | 0.10 | 0.037 | $0.104)$ | 0.033 | 0.004 |
| 267 | 22. 25 | 0.10 | 0.037 | $0.104)$ | 0.033 | 0.004 |
| 268 | 22.33 | 0.07 | 0.024 | $0.103)$ | 0.022 | 0.002 |
| 269 | 22.42 | 0.07 | 0.024 | $0.103)$ | 0.022 | 0.002 |
| 270 | 22.50 | 0.07 | 0.024 | $0.103)$ | 0.022 | 0.002 |
| 271 | 22.58 | 0.07 | 0.024 | 0.102) | 0.022 | 0.002 |
|  |  |  |  | Page 6 |  |  |




| moval 33 preb 2410 |  |  |
| :---: | :---: | :---: |
| 0.04 | Q |  |
| 0.04 | Q |  |
| 0.04 | Q |  |
| 0.04 | Q |  |
| 0.04 | Q |  |
| 0.04 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.05 | Q |  |
| 0.06 | Q |  |
| 0.06 | Q |  |
| 0.06 | Q |  |
| 0.06 | Q |  |
| 0.06 | QV |  |
| 0.06 | QV |  |
| 0.07 | QV |  |
| 0.07 | QV |  |
| 0.07 | QV |  |
| 0.07 | QV |  |
| 0.07 | QV |  |
| 0.07 | QV |  |
| 0.08 | QV |  |
| 0.08 | QV |  |
| 0.07 | QV |  |
| 0.06 | QV |  |
| 0.06 | QV |  |
| 0.06 | QV |  |
| 0.07 | QV |  |
| 0.07 | QV |  |
| 0.07 | QV |  |
| 0.08 | QV |  |
| 0.08 | QV |  |
| 0.08 | QV |  |
| 0.08 | QV |  |
| 0.08 | QV |  |
| 0.08 | QV |  |
| 0.09 | QV |  |
| 0.09 | QV |  |
| 0.09 | QV |  |
| 0.09 | Q V |  |
| 0.09 | Q V |  |
| 0.09 | Q V |  |
| 0.10 | Q V |  |
| 0.10 | Q V |  |
| 0.10 | Q V |  |
| 0.10 | Q V |  |
| 0.10 | Q V |  |
| 0.10 | Q V |  |
| 0.10 | Q V |  |
| 0.10 | Q V |  |
| 0.10 | Q V |  |
|  |  | 8 |



| 12 moval 33preb2410 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |
| $12+45$ | 0.1825 | 1. 30 |  |  |  |  |
| $12+50$ | 0.1917 | 1.34 | Q | V |  |  |
| $12+55$ | 0.2014 | 1.41 | Q | V |  |  |
| $13+0$ | 0.2113 | 1.43 | Q | V |  |  |
| $13+5$ | 0.2221 | 1.56 | Q | V |  |  |
| $13+10$ | 0.2348 | 1.85 | Q | V |  |  |
| $13+15$ | 0.2480 | 1.92 | Q | V |  |  |
| $13+20$ | 0.2615 | 1.95 | Q | V |  |  |
| $13+25$ | 0.2750 | 1.96 | Q |  | V |  |
| $13+30$ | 0.2886 | 1.97 | Q |  | V |  |
| $13+35$ | 0.3003 | 1.71 | Q |  | V |  |
| $13+40$ | 0.3080 | 1. 11 | Q |  | V |  |
| $13+45$ | 0.3146 | 0.97 | Q |  | V |  |
| $13+50$ | 0.3211 | 0.93 | Q |  | V |  |
| $13+55$ | 0.3274 | 0.93 | Q |  | V |  |
| $14+0$ | 0.3338 | 0.93 | Q |  | V |  |
| $14+5$ | 0.3409 | 1.03 | Q |  | V |  |
| $14+10$ | 0.3496 | 1.26 | Q |  | V |  |
| $14+15$ | 0.3587 | 1. 32 | Q |  | V |  |
| $14+20$ | 0.3678 | 1.32 | Q |  | V |  |
| $14+25$ | 0.3766 | 1.28 | Q |  | V |  |
| $14+30$ | 0.3853 | 1. 27 | Q |  | V |  |
| $14+35$ | 0.3941 | 1.27 | Q |  | V |  |
| $14+40$ | 0.4029 | 1.28 | Q |  | V |  |
| $14+45$ | 0.4118 | 1.28 | Q |  |  |  |
| $14+50$ | 0.4205 | 1.27 | Q |  |  | V |
| $14+55$ | 0.4289 | 1. 22 | Q |  |  | V |
| $15+0$ | 0.4372 | 1. 21 | Q |  |  | V |
| $15+5$ | 0.4454 | 1.19 | Q |  |  | V |
| $15+10$ | 0.4533 | 1.14 | Q |  |  | V |
| $15+15$ | 0.4610 | 1.13 | Q |  |  | V |
| $15+20$ | 0.4687 | 1.11 | Q |  |  | V |
| $15+25$ | 0.4760 | 1.06 | Q |  |  | V |
| $15+30$ | 0.4832 | 1.05 | Q |  |  | V |
| $15+35$ | 0.4898 | 0.96 | Q |  |  | V |
| $15+40$ | 0.4949 | 0.74 | Q |  |  | V |
| $15+45$ | 0.4997 | 0.69 | Q |  |  | V |
| $15+50$ | 0.5044 | 0.68 | Q |  |  | V |
| $15+55$ | 0.5091 | 0.68 | Q |  |  | V |
| $16+0$ | 0.5138 | 0.69 | Q |  |  | V |
| $16+5$ | 0.5175 | 0.53 | Q |  |  | V |
| $16+10$ | 0.5186 | 0.17 | 0 |  |  | V |
| $16+15$ | 0.5192 | 0.07 | Q |  |  | V |
| $16+20$ | 0.5195 | 0.05 | Q |  |  | V |
| $16+25$ | 0.5198 | 0.04 | Q |  |  | V |
| $16+30$ | 0.5201 | 0.04 | Q |  |  | V |
| $16+35$ | 0.5203 | 0.04 | Q |  |  | V |
| $16+40$ | 0.5205 | 0.03 | Q |  |  | V |
| $16+45$ | 0.5207 | 0.03 | Q |  |  | V |
| $16+50$ | 0.5209 | 0.03 | Q |  |  | V |
| $16+55$ | 0.5211 | 0.03 | Q |  |  | V |
| $17+0$ | 0.5214 | 0.03 | Q |  |  | V |
| $17+5$ | 0.5216 | 0.03 | Q |  |  | V |
| $17+10$ | 0.5219 | 0.05 | Q |  |  | V |
| $17+15$ | 0.5222 | 0.05 | Q |  |  | V |
| $17+20$ | 0.5226 | 0.05 | Q |  |  | V |
| $17+25$ | 0.5229 | 0.05 | 0 |  |  | V |
| $17+30$ | 0.5233 | 0.05 | Q |  |  | V |
| $17+35$ | 0.5236 | 0.05 | Q |  |  | V |
| $17+40$ | 0.5239 | 0.05 | Q |  |  | V |
| $17+45$ | 0.5243 | 0.05 | Q |  |  | V |
| $17+50$ | 0.5246 | 0.05 | Q |  |  | V |
|  |  |  | Page |  |  |  |




```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb24100.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            ----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 24 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 YEAR Area rainfall data:
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate | In. / Hr ) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| 1 | 0.08 | 0.07 | 0.037 | ( 0.152) | 0.033 | 0.004 |
| 2 | 0.17 | 0.07 | 0.037 | ( 0.152) | 0.033 | 0.004 |
| 3 | 0.25 | 0.07 | 0.037 | ( 0.151) | 0.033 | 0.004 |
| 4 | 0.33 | 0.10 | 0.056 | ( 0.150) | 0.050 | 0.006 |
| 5 | 0.42 | 0.10 | 0.056 | ( 0.150) | 0.050 | 0.006 |
| 6 | 0.50 | 0.10 | 0.056 | ( 0.149) | 0.050 | 0.006 |
| 7 | 0.58 | 0.10 | 0.056 | ( 0.149) | 0.050 | 0.006 |
| 8 | 0.67 | 0.10 | 0.056 | ( 0.148) | 0.050 | 0.006 |
| 9 | 0.75 | 0.10 | 0.056 | ( 0.147) | 0.050 | 0.006 |
| 10 | 0.83 | 0.13 | 0.074 | ( 0.147) | 0.067 | 0.007 |
| 11 | 0.92 | 0.13 | 0.074 | ( 0.146) | 0.067 | 0.007 |
| 12 | 1.00 | 0.13 | 0.074 | ( 0.146) | 0.067 | 0.007 |
| 13 | 1.08 | 0.10 | 0.056 | ( 0.145) | 0.050 | 0.006 |
| 14 | 1.17 | 0.10 | 0.056 | ( 0.145) | 0.050 | 0.006 |
| 15 | 1.25 | 0.10 | 0.056 | ( 0.144) | 0.050 | 0.006 |
| 16 | 1.33 | 0.10 | 0.056 | ( 0.143) | 0.050 | 0.006 |
| 17 | 1.42 | 0.10 | 0.056 | ( 0.143) | 0.050 | 0.006 |
| 18 | 1.50 | 0.10 | 0.056 | ( 0.142) | 0.050 | 0.006 |
| 19 | 1.58 | 0.10 | 0.056 | ( 0.142) | 0.050 | 0.006 |
| 20 | 1.67 | 0.10 | 0.056 | ( 0.141) | 0.050 | 0.006 |
| 21 | 1.75 | 0.10 | 0.056 | ( 0.141) | 0.050 | 0.006 |
| 22 | 1.83 | 0.13 | 0.074 | ( 0.140) | 0.067 | 0.007 |
| 23 | 1.92 | 0.13 | 0.074 | ( 0.139) | 0.067 | 0.007 |
| 24 | 2.00 | 0.13 | 0.074 | ( 0.139) | 0.067 | 0.007 |
| 25 | 2.08 | 0.13 | 0.074 | ( 0.138) | 0.067 | 0.007 |
| 26 | 2.17 | 0.13 | 0.074 | ( 0.138) | 0.067 | 0.007 |
| 27 | 2.25 | 0.13 | 0.074 | ( 0.137) | 0.067 | 0.007 |
| 28 | 2.33 | 0.13 | 0.074 | ( 0.137) | 0.067 | 0.007 |
| 29 | 2.42 | 0.13 | 0.074 | ( 0.136) | 0.067 | 0.007 |
| 30 | 2.50 | 0.13 | 0.074 | ( 0.136) | 0.067 | 0.007 |
| 31 | 2.58 | 0.17 | 0.093 | ( 0.135) | 0.084 | 0.009 |
| 32 | 2.67 | 0.17 | 0.093 | ( 0.134) | 0.084 | 0.009 |
| 33 | 2.75 | 0.17 | 0.093 | ( 0.134) | 0.084 | 0.009 |
| 34 | 2.83 | 0.17 | 0.093 | ( 0.133) | 0.084 | 0.009 |
| 35 | 2.92 | 0.17 | 0.093 | ( 0.133) | 0.084 | 0.009 |
| 36 | 3.00 | 0.17 | 0.093 | ( 0.132) | 0.084 | 0.009 |
| 37 | 3.08 | 0.17 | 0.093 | ( 0.132) | 0.084 | 0.009 |
| 38 | 3.17 | 0.17 | 0.093 | ( 0.131) | 0.084 | 0.009 |
| 39 | 3.25 | 0.17 | 0.093 | $0.131)$ | 0.084 | 0.009 |
| 40 | 3.33 | 0.17 | 0.093 | ( 0.130) | 0.084 | 0.009 |
| 41 | 3.42 | 0.17 | 0.093 | ( 0.129) | 0.084 | 0.009 |
| 42 | 3.50 | 0.17 | 0.093 | ( 0.129) | 0.084 | 0.009 |
| 43 | 3.58 | 0.17 | 0.093 | ( 0.128) | 0.084 | 0.009 |
| 44 | 3.67 | 0.17 | 0.093 | ( 0.128) | 0.084 | 0.009 |
| 45 | 3.75 | 0.17 | 0.093 | ( 0.127) | 0.084 | 0.009 |
| 46 | 3.83 | 0.20 | 0.111 | ( 0.127) | 0.100 | 0.011 |
| 47 | 3.92 | 0.20 | 0.111 | ( 0.126) | 0.100 | 0.011 |
| 48 | 4.00 | 0.20 | 0.111 | ( 0.126) | 0.100 | 0.011 |
| 49 | 4.08 | 0.20 | 0.111 | ( 0.125) | 0.100 | 0.011 |
| 50 | 4.17 | 0.20 | 0.111 | ( 0.125) | 0.100 | 0.011 |
| 51 | 4.25 | 0.20 | 0.111 | ( 0.124) | 0.100 | 0.011 |
| 52 | 4.33 | 0.23 | 0.130 | $0.124)$ | 0.117 | 0.013 |
| 53 | 4.42 | 0.23 | 0.130 | ( 0.123) | 0.117 | 0.013 |
| 54 | 4.50 | 0.23 | 0.130 | ( 0.123) | 0.117 | 0.013 |
| 55 | 4.58 | 0.23 | 0.130 | ( 0.122) | 0.117 | 0.013 |
| 56 | 4.67 | 0.23 | 0.130 | $0.121)$ | 0.117 | 0.013 |


| 57 | 4.75 | 0.23 | 0.130 | ( 0.121) | 0.117 | 0.013 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 58 | 4.83 | 0.27 | 0.148 | 0.120 | $0.134)$ | 0.028 |
| 59 | 4.92 | 0.27 | 0.148 | 0.120 | $0.134)$ | 0.029 |
| 60 | 5.00 | 0.27 | 0.148 | 0.119 | $0.134)$ | 0.029 |
| 61 | 5.08 | 0.20 | 0.111 | 0.119) | 0.100 | 0.011 |
| 62 | 5.17 | 0.20 | 0.111 | $0.118)$ | 0.100 | 0.011 |
| 63 | 5.25 | 0.20 | 0.111 | 0.118) | 0.100 | 0.011 |
| 64 | 5.33 | 0.23 | 0.130 | $0.117)$ | 0.117 | 0.013 |
| 65 | 5.42 | 0.23 | 0.130 | 0.117 | $0.117)$ | 0.013 |
| 66 | 5.50 | 0.23 | 0.130 | 0.116 | $0.117)$ | 0.014 |
| 67 | 5.58 | 0.27 | 0.148 | 0.116 | $0.134)$ | 0.033 |
| 68 | 5.67 | 0.27 | 0.148 | 0.115 | $0.134)$ | 0.033 |
| 69 | 5.75 | 0.27 | 0.148 | 0.115 | $0.134)$ | 0.034 |
| 70 | 5.83 | 0.27 | 0.148 | 0.114 | $0.134)$ | 0.034 |
| 71 | 5.92 | 0.27 | 0.148 | 0.114 | $0.134)$ | 0.035 |
| 72 | 6.00 | 0.27 | 0.148 | 0.113 | $0.134)$ | 0.035 |
| 73 | 6.08 | 0.30 | 0.167 | 0.113 | $0.150)$ | 0.054 |
| 74 | 6.17 | 0.30 | 0.167 | 0.112 | $0.150)$ | 0.055 |
| 75 | 6.25 | 0.30 | 0.167 | 0.112 | 0.150) | 0.055 |
| 76 | 6.33 | 0.30 | 0.167 | 0.111 | 0.150) | 0.056 |
| 77 | 6.42 | 0.30 | 0.167 | 0.111 | $0.150)$ | 0.056 |
| 78 | 6.50 | 0.30 | 0.167 | 0.110 | 0.150) | 0.057 |
| 79 | 6.58 | 0.33 | 0.186 | 0.110 | 0.167) | 0.076 |
| 80 | 6.67 | 0.33 | 0.186 | 0.109 | 0.167) | 0.076 |
| 81 | 6.75 | 0.33 | 0.186 | 0.109 | 0.167) | 0.077 |
| 82 | 6.83 | 0.33 | 0.186 | 0.108 | $0.167)$ | 0.077 |
| 83 | 6.92 | 0.33 | 0.186 | 0.108 | $0.167)$ | 0.078 |
| 84 | 7.00 | 0.33 | 0.186 | 0.107 | $0.167)$ | 0.078 |
| 85 | 7.08 | 0.33 | 0.186 | 0.107 | 0.167) | 0.079 |
| 86 | 7.17 | 0.33 | 0.186 | 0.106 | $0.167)$ | 0.079 |
| 87 | 7.25 | 0.33 | 0.186 | 0.106 | $0.167)$ | 0.080 |
| 88 | 7.33 | 0.37 | 0.204 | 0.105 | $0.184)$ | 0.099 |
| 89 | 7.42 | 0.37 | 0.204 | 0.105 | $0.184)$ | 0.099 |
| 90 | 7.50 | 0.37 | 0.204 | 0.104 | $0.184)$ | 0.100 |
| 91 | 7.58 | 0.40 | 0.223 | 0.104 | 0.200) | 0.119 |
| 92 | 7.67 | 0.40 | 0.223 | 0.103 | 0.200) | 0.119 |
| 93 | 7.75 | 0.40 | 0.223 | 0.103 | 0.200) | 0.120 |
| 94 | 7.83 | 0.43 | 0.241 | 0.102 | 0.217) | 0.139 |
| 95 | 7.92 | 0.43 | 0.241 | 0.102 | 0.217) | 0.139 |
| 96 | 8.00 | 0.43 | 0.241 | 0.102 | 0.217) | 0.140 |
| 97 | 8.08 | 0.50 | 0.278 | 0.101 | 0.251) | 0.177 |
| 98 | 8.17 | 0.50 | 0.278 | 0.101 | 0.251) | 0.178 |
| 99 | 8.25 | 0.50 | 0.278 | 0.100 | 0.251) | 0.178 |
| 100 | 8.33 | 0.50 | 0.278 | 0.100 | 0.251) | 0.179 |
| 101 | 8.42 | 0.50 | 0.278 | 0.099 | 0.251) | 0.179 |
| 102 | 8.50 | 0.50 | 0.278 | 0.099 | 0.251) | 0.180 |
| 103 | 8.58 | 0.53 | 0.297 | 0.098 | 0.267) | 0.199 |
| 104 | 8.67 | 0.53 | 0.297 | 0.098 | 0.267) | 0.199 |
| 105 | 8.75 | 0.53 | 0.297 | 0.097 | 0.267) | 0.200 |
| 106 | 8.83 | 0.57 | 0.316 | 0.097 | 0.284) | 0.219 |
| 107 | 8.92 | 0.57 | 0.316 | 0.096 | $0.284)$ | 0.219 |
| 108 | 9.00 | 0.57 | 0.316 | 0.096 | 0.284) | 0.220 |
| 109 | 9.08 | 0.63 | 0.353 | 0.096 | 0.317) | 0.257 |
| 110 | 9.17 | 0.63 | 0.353 | 0.095 | 0.317) | 0.258 |
| 111 | 9.25 | 0.63 | 0.353 | 0.095 | 0.317) | 0.258 |
| 112 | 9.33 | 0.67 | 0.371 | 0.094 | $0.334)$ | 0.277 |
| 113 | 9.42 | 0.67 | 0.371 | 0.094 | $0.334)$ | 0.277 |
| 114 | 9.50 | 0.67 | 0.371 | 0.093 | $0.334)$ | 0.278 |
| 115 | 9.58 | 0.70 | 0.390 | 0.093 | 0.351) | 0.297 |
| 116 | 9.67 | 0.70 | 0.390 | 0.092 | 0.351) | 0.297 |


| 117 | 9.75 | 0.70 | 0.390 | 0.092 | 0.351) | 0.298 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 118 | 9.83 | 0.73 | 0.408 | 0.091 | 0.367) | 0.317 |
| 119 | 9.92 | 0.73 | 0.408 | 0.091 | 0.367) | 0.317 |
| 120 | 10.00 | 0.73 | 0.408 | 0.091 | 0.367) | 0.318 |
| 121 | 10.08 | 0.50 | 0.278 | 0.090 | 0.251) | 0.188 |
| 122 | 10.17 | 0.50 | 0.278 | 0.090 | 0.251) | 0.189 |
| 123 | 10.25 | 0.50 | 0.278 | 0.089 | 0.251) | 0.189 |
| 124 | 10.33 | 0.50 | 0.278 | 0.089 | 0.251) | 0.190 |
| 125 | 10.42 | 0.50 | 0.278 | 0.088 | 0.251) | 0.190 |
| 126 | 10.50 | 0.50 | 0.278 | 0.088 | 0.251) | 0.190 |
| 127 | 10.58 | 0.67 | 0.371 | 0.088 | $0.334)$ | 0.284 |
| 128 | 10.67 | 0.67 | 0.371 | 0.087 | $0.334)$ | 0.284 |
| 129 | 10.75 | 0.67 | 0.371 | 0.087 | $0.334)$ | 0.284 |
| 130 | 10.83 | 0.67 | 0.371 | 0.086 | $0.334)$ | 0.285 |
| 131 | 10.92 | 0.67 | 0.371 | 0.086 | $0.334)$ | 0.285 |
| 132 | 11.00 | 0.67 | 0.371 | 0.085 | $0.334)$ | 0.286 |
| 133 | 11.08 | 0.63 | 0.353 | 0.085 | 0.317) | 0.268 |
| 134 | 11.17 | 0.63 | 0.353 | 0.085 | 0.317) | 0.268 |
| 135 | 11.25 | 0.63 | 0.353 | 0.084 | 0.317) | 0.268 |
| 136 | 11.33 | 0.63 | 0.353 | 0.084 | 0.317) | 0.269 |
| 137 | 11.42 | 0.63 | 0.353 | 0.083 | 0.317) | 0.269 |
| 138 | 11.50 | 0.63 | 0.353 | 0.083 | 0.317) | 0.270 |
| 139 | 11.58 | 0.57 | 0.316 | 0.083 | $0.284)$ | 0.233 |
| 140 | 11.67 | 0.57 | 0.316 | 0.082 | $0.284)$ | 0.233 |
| 141 | 11.75 | 0.57 | 0.316 | 0.082 | $0.284)$ | 0.234 |
| 142 | 11.83 | 0.60 | 0.334 | 0.081 | 0.301) | 0.253 |
| 143 | 11.92 | 0.60 | 0.334 | 0.081 | 0.301) | 0.253 |
| 144 | 12.00 | 0.60 | 0.334 | 0.080 | 0.301) | 0.254 |
| 145 | 12.08 | 0.83 | 0.464 | 0.080 | 0.418) | 0.384 |
| 146 | 12.17 | 0.83 | 0.464 | 0.080 | 0.418) | 0.384 |
| 147 | 12.25 | 0.83 | 0.464 | 0.079 | 0.418) | 0.385 |
| 148 | 12.33 | 0.87 | 0.483 | 0.079 | $0.434)$ | 0.404 |
| 149 | 12.42 | 0.87 | 0.483 | 0.078 | $0.434)$ | 0.404 |
| 150 | 12.50 | 0.87 | 0.483 | 0.078 | $0.434)$ | 0.404 |
| 151 | 12.58 | 0.93 | 0.520 | 0.078 | 0.468) | 0.442 |
| 152 | 12.67 | 0.93 | 0.520 | 0.077 | $0.468)$ | 0.442 |
| 153 | 12.75 | 0.93 | 0.520 | 0.077 | 0.468) | 0.443 |
| 154 | 12.83 | 0.97 | 0.538 | 0.077 | $0.484)$ | 0.462 |
| 155 | 12.92 | 0.97 | 0.538 | 0.076 | $0.484)$ | 0.462 |
| 156 | 13.00 | 0.97 | 0.538 | 0.076 | $0.484)$ | 0.462 |
| 157 | 13.08 | 1.13 | 0.631 | 0.075 | 0.568) | 0.556 |
| 158 | 13.17 | 1.13 | 0.631 | 0.075 | 0.568) | 0.556 |
| 159 | 13.25 | 1.13 | 0.631 | 0.075 | 0.568) | 0.556 |
| 160 | 13.33 | 1.13 | 0.631 | 0.074 | 0.568) | 0.557 |
| 161 | 13.42 | 1.13 | 0.631 | 0.074 | 0.568) | 0.557 |
| 162 | 13.50 | 1.13 | 0.631 | 0.073 | $0.568)$ | 0.558 |
| 163 | 13.58 | 0.77 | 0.427 | 0.073 | $0.384)$ | 0.354 |
| 164 | 13.67 | 0.77 | 0.427 | 0.073 | $0.384)$ | 0.354 |
| 165 | 13.75 | 0.77 | 0.427 | 0.072 | $0.384)$ | 0.355 |
| 166 | 13.83 | 0.77 | 0.427 | 0.072 | $0.384)$ | 0.355 |
| 167 | 13.92 | 0.77 | 0.427 | 0.072 | $0.384)$ | 0.355 |
| 168 | 14.00 | 0.77 | 0.427 | 0.071 | $0.384)$ | 0.356 |
| 169 | 14.08 | 0.90 | 0.501 | 0.071 | 0.451) | 0.430 |
| 170 | 14.17 | 0.90 | 0.501 | 0.071 | 0.451) | 0.431 |
| 171 | 14.25 | 0.90 | 0.501 | 0.070 | 0.451) | 0.431 |
| 172 | 14.33 | 0.87 | 0.483 | 0.070 | 0.434) | 0.413 |
| 173 | 14.42 | 0.87 | 0.483 | 0.069 | $0.434)$ | 0.413 |
| 174 | 14.50 | 0.87 | 0.483 | 0.069 | $0.434)$ | 0.413 |
| 175 | 14.58 | 0.87 | 0.483 | 0.069 | $0.434)$ | 0.414 |
| 176 | 14.67 | 0.87 | 0.483 | 0.068 | $0.434)$ | 0.414 |


| 177 | 14.75 | 0.87 | 0.483 | 0.068 | $0.434)$ | 0.414 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 178 | 14.83 | 0.83 | 0.464 | 0.068 | $0.418)$ | 0.396 |
| 179 | 14.92 | 0.83 | 0.464 | 0.067 | $0.418)$ | 0.397 |
| 180 | 15.00 | 0.83 | 0.464 | 0.067 | $0.418)$ | 0.397 |
| 181 | 15.08 | 0.80 | 0.445 | 0.067 | $0.401)$ | 0.379 |
| 182 | 15.17 | 0.80 | 0.445 | 0.066 | $0.401)$ | 0.379 |
| 183 | 15.25 | 0.80 | 0.445 | 0.066 | $0.401)$ | 0.379 |
| 184 | 15.33 | 0.77 | 0.427 | 0.066 | $0.384)$ | 0.361 |
| 185 | 15.42 | 0.77 | 0.427 | 0.065 | $0.384)$ | 0.362 |
| 186 | 15.50 | 0.77 | 0.427 | 0.065 | $0.384)$ | 0.362 |
| 187 | 15.58 | 0.63 | 0.353 | 0.065 | $0.317)$ | 0.288 |
| 188 | 15.67 | 0.63 | 0.353 | 0.064 | 0.317) | 0.288 |
| 189 | 15.75 | 0.63 | 0.353 | 0.064 | $0.317)$ | 0.289 |
| 190 | 15.83 | 0.63 | 0.353 | 0.064 | $0.317)$ | 0.289 |
| 191 | 15.92 | 0.63 | 0.353 | 0.063 | 0.317) | 0.289 |
| 192 | 16.00 | 0.63 | 0.353 | 0.063 | 0.317) | 0.290 |
| 193 | 16.08 | 0.13 | 0.074 | 0.063 | 0.067) | 0.012 |
| 194 | 16.17 | 0.13 | 0.074 | 0.062 | $0.067)$ | 0.012 |
| 195 | 16.25 | 0.13 | 0.074 | 0.062 | 0.067) | 0.012 |
| 196 | 16.33 | 0.13 | 0.074 | 0.062 | 0.067) | 0.013 |
| 197 | 16.42 | 0.13 | 0.074 | 0.061 | $0.067)$ | 0.013 |
| 198 | 16.50 | 0.13 | 0.074 | 0.061 | $0.067)$ | 0.013 |
| 199 | 16.58 | 0.10 | 0.056 | 0.061) | 0.050 | 0.006 |
| 200 | 16.67 | 0.10 | 0.056 | 0.060) | 0.050 | 0.006 |
| 201 | 16.75 | 0.10 | 0.056 | 0.060) | 0.050 | 0.006 |
| 202 | 16.83 | 0.10 | 0.056 | 0.060) | 0.050 | 0.006 |
| 203 | 16.92 | 0.10 | 0.056 | 0.060) | 0.050 | 0.006 |
| 204 | 17.00 | 0.10 | 0.056 | $0.059)$ | 0.050 | 0.006 |
| 205 | 17.08 | 0.17 | 0.093 | 0.059 | $0.084)$ | 0.034 |
| 206 | 17.17 | 0.17 | 0.093 | 0.059 | $0.084)$ | 0.034 |
| 207 | 17.25 | 0.17 | 0.093 | 0.058 | $0.084)$ | 0.034 |
| 208 | 17.33 | 0.17 | 0.093 | 0.058 | $0.084)$ | 0.035 |
| 209 | 17.42 | 0.17 | 0.093 | 0.058 | $0.084)$ | 0.035 |
| 210 | 17.50 | 0.17 | 0.093 | 0.058 | $0.084)$ | 0.035 |
| 211 | 17.58 | 0.17 | 0.093 | 0.057 | $0.084)$ | 0.036 |
| 212 | 17.67 | 0.17 | 0.093 | 0.057 | $0.084)$ | 0.036 |
| 213 | 17.75 | 0.17 | 0.093 | 0.057 | $0.084)$ | 0.036 |
| 214 | 17.83 | 0.13 | 0.074 | 0.056 | 0.067) | 0.018 |
| 215 | 17.92 | 0.13 | 0.074 | 0.056 | $0.067)$ | 0.018 |
| 216 | 18.00 | 0.13 | 0.074 | 0.056 | 0.067) | 0.018 |
| 217 | 18.08 | 0.13 | 0.074 | 0.056 | 0.067) | 0.019 |
| 218 | 18.17 | 0.13 | 0.074 | 0.055 | $0.067)$ | 0.019 |
| 219 | 18.25 | 0.13 | 0.074 | 0.055 | 0.067) | 0.019 |
| 220 | 18.33 | 0.13 | 0.074 | 0.055 | 0.067) | 0.020 |
| 221 | 18.42 | 0.13 | 0.074 | 0.054 | 0.067) | 0.020 |
| 222 | 18.50 | 0.13 | 0.074 | 0.054 | $0.067)$ | 0.020 |
| 223 | 18.58 | 0.10 | 0.056 | $0.054)$ | 0.050 | 0.006 |
| 224 | 18.67 | 0.10 | 0.056 | $0.054)$ | 0.050 | 0.006 |
| 225 | 18.75 | 0.10 | 0.056 | $0.053)$ | 0.050 | 0.006 |
| 226 | 18.83 | 0.07 | 0.037 | $0.053)$ | 0.033 | 0.004 |
| 227 | 18.92 | 0.07 | 0.037 | 0.053) | 0.033 | 0.004 |
| 228 | 19.00 | 0.07 | 0.037 | 0.053) | 0.033 | 0.004 |
| 229 | 19.08 | 0.10 | 0.056 | $0.052)$ | 0.050 | 0.006 |
| 230 | 19.17 | 0.10 | 0.056 | 0.052) | 0.050 | 0.006 |
| 231 | 19.25 | 0.10 | 0.056 | $0.052)$ | 0.050 | 0.006 |
| 232 | 19.33 | 0.13 | 0.074 | 0.052 | 0.067) | 0.023 |
| 233 | 19.42 | 0.13 | 0.074 | 0.051 | 0.067) | 0.023 |
| 234 | 19.50 | 0.13 | 0.074 | 0.051 | $0.067)$ | 0.023 |
| 235 | 19.58 | 0.10 | 0.056 | 0.051) | 0.050 | 0.006 |
| 236 | 19.67 | 0.10 | 0.056 | 0.051) | 0.050 | 0.006 |



Total soil loss = 50082.4 Cubic Feet


| 1+45 | 0.0062 | 0.05 | Q | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+50 | 0.0065 | 0.05 | Q | 1 | 1 |
| 1+55 | 0.0069 | 0.06 | Q | I | 1 |
| 2+ 0 | 0.0074 | 0.06 | Q | 1 | 1 |
| 2+ 5 | 0.0078 | 0.06 | Q | 1 | 1 |
| 2+10 | 0.0082 | 0.06 | Q | 1 | 1 |
| 2+15 | 0.0086 | 0.06 | Q | 1 | 1 |
| 2+20 | 0.0090 | 0.06 | Q | I | 1 |
| 2+25 | 0.0094 | 0.06 | Q | 1 | 1 |
| 2+30 | 0.0098 | 0.06 | Q | 1 | 1 |
| 2+35 | 0.0103 | 0.06 | Q | 1 | 1 |
| 2+40 | 0.0108 | 0.07 | Q | 1 | 1 |
| 2+45 | 0.0113 | 0.07 | Q | I | 1 |
| 2+50 | 0.0118 | 0.08 | Q | 1 | 1 |
| 2+55 | 0.0123 | 0.08 | Q | 1 | 1 |
| 3+ 0 | 0.0128 | 0.08 | Q | 1 | 1 |
| 3+ 5 | 0.0134 | 0.08 | Q | 1 | I |
| 3+10 | 0.0139 | 0.08 | Q | 1 | 1 |
| 3+15 | 0.0144 | 0.08 | Q | 1 | 1 |
| 3+20 | 0.0149 | 0.08 | Q | 1 | 1 |
| 3+25 | 0.0154 | 0.08 | Q | I | 1 |
| 3+30 | 0.0159 | 0.08 | Q | 1 | 1 |
| 3+35 | 0.0165 | 0.08 | Q | 1 | 1 |
| 3+40 | 0.0170 | 0.08 | Q | 1 | 1 |
| 3+45 | 0.0175 | 0.08 | Q | I | 1 |
| 3+50 | 0.0180 | 0.08 | Q | 1 | I |
| 3+55 | 0.0186 | 0.09 | Q | 1 | 1 |
| 4+ 0 | 0.0193 | 0.09 | Q | 1 | 1 |
| 4+ 5 | 0.0199 | 0.09 | Q | I | 1 |
| 4+10 | 0.0205 | 0.09 | Q | \| | \| |


| 4+15 | 0.0211 | 0.09 | Q | \\| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 4+20 | 0.0218 | 0.09 | Q | \\| | \| |
| 4+25 | 0.0225 | 0.10 | Q | 1 | \| |
| 4+30 | 0.0232 | 0.10 | Q | I | 1 |
| 4+35 | 0.0239 | 0.11 | Q | \| | \| |
| 4+40 | 0.0246 | 0.11 | Q | \| | \| |
| 4+45 | 0.0254 | 0.11 | Q | 1 | \| |
| 4+50 | 0.0263 | 0.14 | Q | 1 | \| |
| $4+55$ | 0.0277 | 0.20 | Q | 1 | 1 |
| 5+ 0 | 0.0293 | 0.23 | Q | I | \| |
| 5+5 | 0.0306 | 0.20 | Q | 1 | I |
| 5+10 | 0.0314 | 0.12 | Q | 1 | \| |
| 5+15 | 0.0321 | 0.10 | Q | I | \| |
| 5+20 | 0.0328 | 0.10 | Q | , | \| |
| 5+25 | 0.0335 | 0.10 | Q | 1 | I |
| 5+30 | 0.0342 | 0.11 | Q | 1 | \| |
| 5+35 | 0.0352 | 0.15 | Q | 1 | 1 |
| 5+40 | 0.0369 | 0.24 | Q | 1 | \| |
| 5+45 | 0.0387 | 0.26 | VQ | 1 | I |
| 5+50 | 0.0405 | 0.27 | VQ | I | \| |
| 5+55 | 0.0424 | 0.28 | VQ | 1 | 1 |
| 6+ 0 | 0.0444 | 0.28 | VQ | 1 | \| |
| 6+ 5 | 0.0466 | 0.32 | VQ | 1 | \| |
| 6+10 | 0.0494 | 0.41 | IQ | \| | \| |
| 6+15 | 0.0524 | 0.44 | IQ | 1 | 1 |
| 6+20 | 0.0555 | 0.45 | IQ | 1 | \| |
| 6+25 | 0.0586 | 0.45 | IQ | 1 | \| |
| 6+30 | 0.0617 | 0.46 | IQ | \| | \| |
| 6+35 | 0.0652 | 0.50 | IQ | 1 | \| |
| 6+40 | 0.0692 | 0.59 | IVQ | 1 | \| |


| 6+45 | 0.0734 | 0.61 | IVQ | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 6+50 | 0.0777 | 0.62 | IVQ | 1 | 1 |
| 6+55 | 0.0820 | 0.63 | IVQ | 1 | 1 |
| 7+ 0 | 0.0863 | 0.63 | IVQ | 1 | 1 |
| 7+ 5 | 0.0907 | 0.63 | IVQ | 1 | 1 |
| 7+10 | 0.0951 | 0.64 | IVQ | 1 | 1 |
| 7+15 | 0.0995 | 0.64 | \| Q | 1 | 1 |
| 7+20 | 0.1042 | 0.68 | \\| Q | 1 | 1 |
| 7+25 | 0.1095 | 0.77 | I VQ | \| | \| |
| 7+30 | 0.1150 | 0.80 | I VQ | 1 | 1 |
| 7+35 | 0.1208 | 0.84 | I VQ | 1 | 1 |
| 7+40 | 0.1273 | 0.93 | I VQ | 1 | 1 |
| 7+45 | 0.1339 | 0.96 | I VQ | 1 | 1 |
| 7+50 | 0.1408 | 1.01 | \\| V Q | 1 | \| |
| 7+55 | 0.1483 | 1.09 | I VQ | 1 | 1 |
| 8+ 0 | 0.1561 | 1.12 | I VQ | 1 | 1 |
| 8+ 5 | 0.1644 | 1.21 | I VQ | 1 | 1 |
| $8+10$ | 0.1739 | 1.38 | I V Q | 1 | 1 |
| $8+15$ | 0.1837 | 1.43 | I V Q | 1 | 1 |
| 8+20 | 0.1936 | 1.44 | I V Q | 1 | 1 |
| $8+25$ | 0.2036 | 1.45 | I VQ | 1 | 1 |
| 8+30 | 0.2136 | 1.45 | I VQ | 1 | \| |
| 8+35 | 0.2239 | 1.49 | I VQ | 1 | 1 |
| $8+40$ | 0.2347 | 1.58 | I V Q | 1 | 1 |
| $8+45$ | 0.2458 | 1.61 | I VQ | 1 | 1 |
| $8+50$ | 0.2572 | 1.65 | I VQ | \\| | \| |
| 8+55 | 0.2692 | 1.74 | I VQ | 1 | 1 |
| 9+ 0 | 0.2814 | 1.77 | I V Q | 1 | 1 |
| 9+ 5 | 0.2941 | 1.85 | I VQ | 1 | 1 |
| 9+10 | 0.3081 | 2.02 | \\| V Q |  | 1 |



| 11+45 | 0.7610 | 1.91 | \| | Q |  |  | v |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11+50 | 0.7743 | 1.94 | \| | Q | 1 |  | v |  |  |  |
| 11+55 | 0.7882 | 2.02 | \| |  | Q \| |  | $v$ |  |  |  |
| 12+ 0 | 0.8023 | 2.04 | 1 |  | Q \| |  | v |  |  |  |
| 12+ 5 | 0.8182 | 2.31 | \| |  | Q\| |  | v |  |  |  |
| 12+10 | 0.8382 | 2.91 | \| |  | IQ |  | v |  |  |  |
| 12+15 | 0.8593 | 3.06 | \| |  |  | Q | v |  |  |  |
| 12+20 | 0.8809 | 3.14 | \| |  |  | Q | v |  |  |  |
| 12+25 | 0.9032 | 3.24 | \| |  |  | Q |  | V |  |  |
| 12+30 | 0.9257 | 3.27 | \| |  | 1 | Q |  | $v$ |  |  |
| 12+35 | 0.9488 | 3.35 | 1 |  | 1 | Q |  | V |  |  |
| $12+40$ | 0.9731 | 3.52 | I |  | 1 | Q | Q |  |  |  |
| 12+45 | 0.9977 | 3.57 | I |  | \| |  |  |  |  |  |
| 12+50 | 1.0226 | 3.62 | \| |  | \| |  |  |  |  |  |
| 12+55 | 1.0482 | 3.71 | \| |  | \| |  | Q |  |  |  |
| $13+0$ | 1.0739 | 3.74 | \| |  | 1 |  | Q |  |  |  |
| $13+5$ | 1.1010 | 3.93 | \| |  | \| |  | Q |  | V |  |
| 13+10 | 1.1310 | 4.36 | I |  | \| |  | Q |  | V |  |
| 13+15 | 1.1618 | 4.47 | \| |  | \| |  | Q |  | V |  |
| 13+20 | 1.1928 | 4.50 | \| |  | \| |  | Q |  |  |  |
| 13+25 | 1.2239 | 4.51 | 1 |  | \| |  |  | Q |  |  |
| 13+30 | 1.2550 | 4.52 | 1 |  | I |  |  | Q |  | $\checkmark$ |
| 13+35 | 1.2833 | 4.11 | \| |  | 1 |  | Q |  |  | V |
| $13+40$ | 1.3052 | 3.19 | \| |  |  | Q |  |  |  | V |
| 13+45 | 1.3256 | 2.96 | I |  | IQ |  |  |  |  | V |
| 13+50 | 1.3456 | 2.90 | I |  | IQ |  |  |  |  | V |
| $13+55$ | 1.3654 | 2.88 | 1 |  | IQ |  |  |  |  | V |
| 14+ 0 | 1.3853 | 2.88 | 1 |  | IQ |  |  |  |  |  |
| 14+ 5 | 1.4062 | 3.03 | 1 |  |  | Q |  |  |  |  |
| 14+10 | 1.4294 | 3.37 | \| |  |  |  |  |  |  |  |


| 14+15 | 1.4532 | 3.46 | \| |  | Q | V1 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 14+20 | 1.4769 | 3.45 | \| |  | Q | V |  |  |  |  |
| 14+25 | 1.5002 | 3.37 | \| |  | Q | V |  |  |  |  |
| 14+30 | 1.5233 | 3.36 | \| |  | Q |  |  |  |  |  |
| 14+35 | 1.5464 | 3.35 | \| |  | Q |  |  |  |  |  |
| $14+40$ | 1.5695 | 3.36 | \| |  | Q |  | V |  |  |  |
| 14+45 | 1.5926 | 3.36 | \| |  | Q |  | V |  |  |  |
| 14+50 | 1.6155 | 3.32 | \| |  | Q |  | V |  |  |  |
| 14+55 | 1.6378 | 3.24 | \| | Q | Q |  | V |  |  | $\stackrel{7}{7}$ |
| 15+ 0 | 1.6600 | 3.22 | \| | Q | Q |  |  |  |  | - |
| 15+ 5 | 1.6819 | 3.18 | \| | Q | Q |  | V | V |  | $\stackrel{\text { ® }}{ }$ |
| 15+10 | 1.7033 | 3.10 | \| | Q | Q |  | V | V |  | - |
| 15+15 | 1.7245 | 3.08 | 1 | Q | Q |  |  | V |  | 눌 |
| 15+20 | 1.7455 | 3.04 | \| | Q | Q |  |  | V |  | \% |
| 15+25 | 1.7658 | 2.96 | \| | \|Q |  |  |  | V |  | OV |
| 15+30 | 1.7861 | 2.94 | \| | \|Q |  |  |  | V |  | \% |
| 15+35 | 1.8053 | 2.79 | \| | \|Q |  |  |  | V |  |  |
| $15+40$ | 1.8222 | 2.45 | \| | Q\| |  |  |  | V | V | ¢ |
| 15+45 | 1.8385 | 2.37 | \| | Q\| |  |  |  | V | V | - |
| 15+50 | 1.8547 | 2.35 | \| | Q\| |  |  |  | V | V | $\stackrel{\text { O }}{\text { 인 }}$ |
| 15+55 | 1.8708 | 2.35 | 1 | Q\| |  |  |  |  | V | $\stackrel{\square}{ \pm}$ |
| 16+ 0 | 1.8870 | 2.35 | \| | Q\| |  |  |  |  | V | E |
| $16+5$ | 1.8993 | 1.79 | \| | Q \| |  |  |  |  | V | $\stackrel{\text { \% }}{ \pm}$ |
| 16+10 | 1.9030 | 0.54 | \\| Q | \| |  |  |  |  | V |  |
| 16+15 | 1.9045 | 0.22 | Q | \| |  |  |  |  | V |  |
| 16+20 | 1.9054 | 0.13 | Q | \| |  |  |  |  | V |  |
| 16+25 | 1.9061 | 0.11 | Q | 1 |  |  |  |  | V |  |
| 16+30 | 1.9069 | 0.10 | Q | \| |  |  |  |  | V |  |
| 16+35 | 1.9075 | 0.09 | Q | \| |  |  |  |  | V |  |
| $16+40$ | 1.9079 | 0.06 | Q | 1 |  |  |  |  | V |  |






## Proposed Condition SCS Hydrograph Runoff

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post12.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
0.47
1.86

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post15.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
0.47
1.86

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value


| 0+45 | 0.0754 | 2.92 | \| |  | IQ | V I |  | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+50 | 0.1204 | 6.54 | \| |  | \| | \| | Q | v |
| 0+55 | 0.1536 | 4.82 | \| |  | \| | Q |  | \| |
| 1+ 0 | 0.1628 | 1.33 | 1 | Q | I | 1 |  | \| |
| 1+ 5 | 0.1652 | 0.35 | IQ |  | \| | 1 |  | \| |
| 1+10 | 0.1654 | 0.02 | Q |  | \| | \| |  | \| |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post110.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
0.47
1.86

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post1100.out
                    _+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a :
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
0.47
1.86

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
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                Study date 11/09/21 File: moval33post32.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a :
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
0.80
3.20

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

$\begin{array}{llllll}\text { Time (h+m) Volume Ac.Ft } & \text { Q(CFS) } & 0 & 2.5 & 5.0 & 7.5\end{array}$ 10.0



```
        U n i t H y d roggraph A n aly y i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post35.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
0.80
3.20

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective




```
        U n i t H y d r o g r a p h A n a l y s i s
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                Study date 11/09/21 File: moval33post310.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a :
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
0.80
3.20

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective




```
        U n i t H y d r o g r a p h A n a l y s i s
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                Study date 11/09/21 File: moval33post3100.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a :
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
0.80
3.20

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective




```
        U n i t H y d r o g r a p h A n a l y s i s
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                8.2
                Study date 11/09/21 File: moval33post62.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a :
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.09
4.36

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.50 | 0.065 | ( 0.155) | 0.025 | 0.041 |
| 2 | 0.17 | 0.60 | 0.078 | ( 0.155) | 0.030 | 0.049 |
| 3 | 0.25 | 0.60 | 0.078 | (0.155) | 0.030 | 0.049 |
| 4 | 0.33 | 0.60 | 0.078 | ( 0.155) | 0.030 | 0.049 |
| 5 | 0.42 | 0.60 | 0.078 | ( 0.155) | 0.030 | 0.049 |
| 6 | 0.50 | 0.70 | 0.092 | ( 0.155) | 0.035 | 0.057 |
| 7 | 0.58 | 0.70 | 0.092 | (0.155) | 0.035 | 0.057 |
| 8 | 0.67 | 0.70 | 0.092 | ( 0.155) | 0.035 | 0.057 |
| 9 | 0.75 | 0.70 | 0.092 | (0.155) | 0.035 | 0.057 |
| 10 | 0.83 | 0.70 | 0.092 | (0.155) | 0.035 | 0.057 |
| 11 | 0.92 | 0.70 | 0.092 | ( 0.155) | 0.035 | 0.057 |
| 12 | 1.00 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 13 | 1.08 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 14 | 1.17 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 15 | 1.25 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 16 | 1.33 | 0.80 | 0.105 | (0.155) | 0.040 | 0.065 |
| 17 | 1.42 | 0.80 | 0.105 | (0.155) | 0.040 | 0.065 |
| 18 | 1.50 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 19 | 1.58 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 20 | 1.67 | 0.80 | 0.105 | (0.155) | 0.040 | 0.065 |
| 21 | 1.75 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 22 | 1.83 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 23 | 1.92 | 0.80 | 0.105 | (0.155) | 0.040 | 0.065 |
| 24 | 2.00 | 0.90 | 0.118 | ( 0.155) | 0.045 | 0.073 |
| 25 | 2.08 | 0.80 | 0.105 | ( 0.155) | 0.040 | 0.065 |
| 26 | 2.17 | 0.90 | 0.118 | ( 0.155) | 0.045 | 0.073 |
| 27 | 2.25 | 0.90 | 0.118 | (0.155) | 0.045 | 0.073 |
| 28 | 2.33 | 0.90 | 0.118 | ( 0.155) | 0.045 | 0.073 |
| 29 | 2.42 | 0.90 | 0.118 | ( 0.155) | 0.045 | 0.073 |
| 30 | 2.50 | 0.90 | 0.118 | (0.155) | 0.045 | 0.073 |
| 31 | 2.58 | 0.90 | 0.118 | ( 0.155) | 0.045 | 0.073 |
| 32 | 2.67 | 0.90 | 0.118 | ( 0.155) | 0.045 | 0.073 |
| 33 | 2.75 | 1.00 | 0.131 | ( 0.155) | 0.050 | 0.081 |
| 34 | 2.83 | 1.00 | 0.131 | (0.155) | 0.050 | 0.081 |
| 35 | 2.92 | 1.00 | 0.131 | ( 0.155) | 0.050 | 0.081 |
| 36 | 3.00 | 1.00 | 0.131 | (0.155) | 0.050 | 0.081 |
| 37 | 3.08 | 1.00 | 0.131 | (0.155) | 0.050 | 0.081 |
| 38 | 3.17 | 1.10 | 0.144 | ( 0.155) | 0.055 | 0.089 |
| 39 | 3.25 | 1.10 | 0.144 | ( 0.155) | 0.055 | 0.089 |
| 40 | 3.33 | 1.10 | 0.144 | ( 0.155) | 0.055 | 0.089 |
| 41 | 3.42 | 1.20 | 0.157 | ( 0.155) | 0.060 | 0.097 |
| 42 | 3.50 | 1.30 | 0.170 | ( 0.155) | 0.065 | 0.105 |
| 43 | 3.58 | 1.40 | 0.183 | (0.155) | 0.070 | 0.114 |
| 44 | 3.67 | 1.40 | 0.183 | (0.155) | 0.070 | 0.114 |
| 45 | 3.75 | 1.50 | 0.196 | ( 0.155) | 0.075 | 0.122 |
| 46 | 3.83 | 1.50 | 0.196 | ( 0.155) | 0.075 | 0.122 |
| 47 | 3.92 | 1.60 | 0.209 | ( 0.155) | 0.080 | 0.130 |
| 48 | 4.00 | 1.60 | 0.209 | ( 0.155) | 0.080 | 0.130 |
| 49 | 4.08 | 1.70 | 0.222 | ( 0.155) | 0.084 | 0.138 |
| 50 | 4.17 | 1.80 | 0.235 | ( 0.155) | 0.089 | 0.146 |
| 51 | 4.25 | 1.90 | 0.249 | (0.155) | 0.094 | 0.154 |
| 52 | 4.33 | 2.00 | 0.262 | ( 0.155) | 0.099 | 0.162 |
| 53 | 4.42 | 2.10 | 0.275 | ( 0.155) | 0.104 | 0.170 |
| 54 | 4.50 | 2.10 | 0.275 | (0.155) | 0.104 | 0.170 |
| 55 | 4.58 | 2.20 | 0.288 | (0.155) | 0.109 | 0.178 |
| 56 | 4.67 | 2.30 | 0.301 | ( 0.155) | 0.114 | 0.187 |
| 57 | 4.75 | 2.40 | 0.314 | (0.155) | 0.119 | 0.195 |
| 58 | 4.83 | 2.40 | 0.314 | (0.155) | 0.119 | 0.195 |
| 59 | 4.92 | 2.50 | 0.327 | ( 0.155) | 0.124 | 0.203 |



| 0+55 | 0.0152 | 0.23 | Q V |  | 1 | \| |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1+ 0 | 0.0169 | 0.25 | Q V |  | 1 | \| |  |
| 1+ 5 | 0.0187 | 0.26 | IQ V |  | \| | \| |  |
| 1+10 | 0.0205 | 0.26 | IQ V | $\checkmark$ | । | \| |  |
| 1+15 | 0.0223 | 0.26 | IQ V | $\checkmark$ | \| | \| |  |
| 1+20 | 0.0241 | 0.26 | IQ | $v$ | 1 | \| |  |
| 1+25 | 0.0259 | 0.26 | IQ | $v$ | 1 | \| |  |
| 1+30 | 0.0277 | 0.26 | IQ | $v$ | I | \| |  |
| 1+35 | 0.0295 | 0.26 | IQ | v | I | \| |  |
| 1+40 | 0.0313 | 0.26 | IQ | v | 1 | \| |  |
| 1+45 | 0.0331 | 0.26 | IQ | V | 1 | \| |  |
| 1+50 | 0.0349 | 0.26 | IQ | V | \| | \| |  |
| 1+55 | 0.0367 | 0.26 | IQ | v | \| | \| |  |
| 2+ 0 | 0.0387 | 0.28 | IQ | v | 1 | \| |  |
| 2+ 5 | 0.0406 | 0.28 | IQ | v | 1 | \| |  |
| 2+10 | 0.0425 | 0.28 | IQ | V | 1 | \| |  |
| 2+15 | 0.0445 | 0.29 | IQ | V | 1 | \| |  |
| 2+20 | 0.0466 | 0.29 | IQ | V | 1 | I |  |
| 2+25 | 0.0486 | 0.29 | IQ |  | $\vee 1$ | \| |  |
| 2+30 | 0.0506 | 0.29 | IQ |  | v I | \| |  |
| 2+35 | 0.0526 | 0.29 | IQ |  | v I | 1 |  |
| 2+40 | 0.0547 | 0.29 | IQ |  | VI | 1 |  |
| 2+45 | 0.0568 | 0.31 | IQ |  | V1 | 1 |  |
| 2+50 | 0.0591 | 0.33 | IQ |  | v | \| |  |
| 2+55 | 0.0613 | 0.33 | IQ |  | v | \| |  |
| 3+ 0 | 0.0636 | 0.33 | IQ |  | V | \| |  |
| $3+5$ | 0.0658 | 0.33 | IQ |  | IV | \| |  |
| 3+10 | 0.0682 | 0.34 | IQ |  | IV | 1 |  |
| 3+15 | 0.0707 | 0.36 | IQ |  | I V | 1 |  |
| 3+20 | 0.0731 | 0.36 | \|Q |  | \| V | \| | 1 |




```
        U n i t H y d r o g r a p h A n a l y s i s
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                8.2
                Study date 11/09/21 File: moval33post65.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.09
4.36

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.50 | 0.086 | ( 0.155) | 0.033 | 0.053 |
| 2 | 0.17 | 0.60 | 0.103 | ( 0.155) | 0.039 | 0.064 |
| 3 | 0.25 | 0.60 | 0.103 | (0.155) | 0.039 | 0.064 |
| 4 | 0.33 | 0.60 | 0.103 | ( 0.155) | 0.039 | 0.064 |
| 5 | 0.42 | 0.60 | 0.103 | ( 0.155) | 0.039 | 0.064 |
| 6 | 0.50 | 0.70 | 0.120 | ( 0.155) | 0.046 | 0.075 |
| 7 | 0.58 | 0.70 | 0.120 | ( 0.155) | 0.046 | 0.075 |
| 8 | 0.67 | 0.70 | 0.120 | ( 0.155) | 0.046 | 0.075 |
| 9 | 0.75 | 0.70 | 0.120 | ( 0.155) | 0.046 | 0.075 |
| 10 | 0.83 | 0.70 | 0.120 | ( 0.155) | 0.046 | 0.075 |
| 11 | 0.92 | 0.70 | 0.120 | ( 0.155) | 0.046 | 0.075 |
| 12 | 1.00 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 13 | 1.08 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 14 | 1.17 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 15 | 1.25 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 16 | 1.33 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 17 | 1.42 | 0.80 | 0.137 | (0.155) | 0.052 | 0.085 |
| 18 | 1.50 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 19 | 1.58 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 20 | 1.67 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 21 | 1.75 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 22 | 1.83 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 23 | 1.92 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 24 | 2.00 | 0.90 | 0.155 | ( 0.155) | 0.059 | 0.096 |
| 25 | 2.08 | 0.80 | 0.137 | ( 0.155) | 0.052 | 0.085 |
| 26 | 2.17 | 0.90 | 0.155 | (0.155) | 0.059 | 0.096 |
| 27 | 2.25 | 0.90 | 0.155 | ( 0.155) | 0.059 | 0.096 |
| 28 | 2.33 | 0.90 | 0.155 | ( 0.155) | 0.059 | 0.096 |
| 29 | 2.42 | 0.90 | 0.155 | ( 0.155) | 0.059 | 0.096 |
| 30 | 2.50 | 0.90 | 0.155 | ( 0.155) | 0.059 | 0.096 |
| 31 | 2.58 | 0.90 | 0.155 | ( 0.155) | 0.059 | 0.096 |
| 32 | 2.67 | 0.90 | 0.155 | ( 0.155) | 0.059 | 0.096 |
| 33 | 2.75 | 1.00 | 0.172 | ( 0.155) | 0.065 | 0.107 |
| 34 | 2.83 | 1.00 | 0.172 | (0.155) | 0.065 | 0.107 |
| 35 | 2.92 | 1.00 | 0.172 | (0.155) | 0.065 | 0.107 |
| 36 | 3.00 | 1.00 | 0.172 | ( 0.155) | 0.065 | 0.107 |
| 37 | 3.08 | 1.00 | 0.172 | ( 0.155) | 0.065 | 0.107 |
| 38 | 3.17 | 1.10 | 0.189 | ( 0.155) | 0.072 | 0.117 |
| 39 | 3.25 | 1.10 | 0.189 | ( 0.155) | 0.072 | 0.117 |
| 40 | 3.33 | 1.10 | 0.189 | ( 0.155) | 0.072 | 0.117 |
| 41 | 3.42 | 1.20 | 0.206 | ( 0.155) | 0.078 | 0.128 |
| 42 | 3.50 | 1.30 | 0.223 | ( 0.155) | 0.085 | 0.138 |
| 43 | 3.58 | 1.40 | 0.241 | ( 0.155) | 0.091 | 0.149 |
| 44 | 3.67 | 1.40 | 0.241 | ( 0.155) | 0.091 | 0.149 |
| 45 | 3.75 | 1.50 | 0.258 | ( 0.155) | 0.098 | 0.160 |
| 46 | 3.83 | 1.50 | 0.258 | ( 0.155) | 0.098 | 0.160 |
| 47 | 3.92 | 1.60 | 0.275 | ( 0.155) | 0.104 | 0.170 |
| 48 | 4.00 | 1.60 | 0.275 | ( 0.155) | 0.104 | 0.170 |
| 49 | 4.08 | 1.70 | 0.292 | ( 0.155) | 0.111 | 0.181 |
| 50 | 4.17 | 1.80 | 0.309 | ( 0.155) | 0.118 | 0.192 |
| 51 | 4.25 | 1.90 | 0.326 | ( 0.155) | 0.124 | 0.202 |
| 52 | 4.33 | 2.00 | 0.344 | ( 0.155) | 0.131 | 0.213 |
| 53 | 4.42 | 2.10 | 0.361 | ( 0.155) | 0.137 | 0.224 |
| 54 | 4.50 | 2.10 | 0.361 | ( 0.155) | 0.137 | 0.224 |
| 55 | 4.58 | 2.20 | 0.378 | ( 0.155) | 0.144 | 0.234 |
| 56 | 4.67 | 2.30 | 0.395 | ( 0.155) | 0.150 | 0.245 |
| 57 | 4.75 | 2.40 | 0.412 | 0.155 | ( 0.157) | 0.258 |
| 58 | 4.83 | 2.40 | 0.412 | 0.155 | ( 0.157) | 0.258 |
| 59 | 4.92 | 2.50 | 0.430 | 0.155 | ( 0.163) | 0.275 |





| V\| | $5+55$ | 0.3154 | 0.17 | Q | \| | \| | \| |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| V\| | $6+0$ | 0.3161 | 0.11 | Q | \| | \| | \| |
| V\| | $6+5$ | 0.3164 | 0.04 | Q | \| | \| | \| |
| V\| | $6+10$ | 0.3164 | 0.00 | Q | \| | \| | \| |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post610.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a :
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.09
4.36

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.50 | 0.101 | ( 0.155) | 0.039 | 0.063 |
| 2 | 0.17 | 0.60 | 0.122 | ( 0.155) | 0.046 | 0.075 |
| 3 | 0.25 | 0.60 | 0.122 | ( 0.155) | 0.046 | 0.075 |
| 4 | 0.33 | 0.60 | 0.122 | ( 0.155) | 0.046 | 0.075 |
| 5 | 0.42 | 0.60 | 0.122 | ( 0.155) | 0.046 | 0.075 |
| 6 | 0.50 | 0.70 | 0.142 | ( 0.155) | 0.054 | 0.088 |
| 7 | 0.58 | 0.70 | 0.142 | ( 0.155) | 0.054 | 0.088 |
| 8 | 0.67 | 0.70 | 0.142 | ( 0.155) | 0.054 | 0.088 |
| 9 | 0.75 | 0.70 | 0.142 | ( 0.155) | 0.054 | 0.088 |
| 10 | 0.83 | 0.70 | 0.142 | ( 0.155) | 0.054 | 0.088 |
| 11 | 0.92 | 0.70 | 0.142 | ( 0.155) | 0.054 | 0.088 |
| 12 | 1.00 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 13 | 1.08 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 14 | 1.17 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 15 | 1.25 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 16 | 1.33 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 17 | 1.42 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 18 | 1.50 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 19 | 1.58 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 20 | 1.67 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 21 | 1.75 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 22 | 1.83 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 23 | 1.92 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 24 | 2.00 | 0.90 | 0.183 | ( 0.155) | 0.069 | 0.113 |
| 25 | 2.08 | 0.80 | 0.162 | ( 0.155) | 0.062 | 0.101 |
| 26 | 2.17 | 0.90 | 0.183 | ( 0.155 ) | 0.069 | 0.113 |
| 27 | 2.25 | 0.90 | 0.183 | ( 0.155) | 0.069 | 0.113 |
| 28 | 2.33 | 0.90 | 0.183 | ( 0.155) | 0.069 | 0.113 |
| 29 | 2.42 | 0.90 | 0.183 | ( 0.155) | 0.069 | 0.113 |
| 30 | 2.50 | 0.90 | 0.183 | ( 0.155) | 0.069 | 0.113 |
| 31 | 2.58 | 0.90 | 0.183 | ( 0.155) | 0.069 | 0.113 |
| 32 | 2.67 | 0.90 | 0.183 | ( 0.155) | 0.069 | 0.113 |
| 33 | 2.75 | 1.00 | 0.203 | ( 0.155) | 0.077 | 0.126 |
| 34 | 2.83 | 1.00 | 0.203 | ( 0.155) | 0.077 | 0.126 |
| 35 | 2.92 | 1.00 | 0.203 | ( 0.155) | 0.077 | 0.126 |
| 36 | 3.00 | 1.00 | 0.203 | ( 0.155) | 0.077 | 0.126 |
| 37 | 3.08 | 1.00 | 0.203 | ( 0.155) | 0.077 | 0.126 |
| 38 | 3.17 | 1.10 | 0.223 | ( 0.155) | 0.085 | 0.138 |
| 39 | 3.25 | 1.10 | 0.223 | ( 0.155) | 0.085 | 0.138 |
| 40 | 3.33 | 1.10 | 0.223 | ( 0.155) | 0.085 | 0.138 |
| 41 | 3.42 | 1.20 | 0.243 | ( 0.155) | 0.093 | 0.151 |
| 42 | 3.50 | 1.30 | 0.264 | ( 0.155) | 0.100 | 0.164 |
| 43 | 3.58 | 1.40 | 0.284 | ( 0.155) | 0.108 | 0.176 |
| 44 | 3.67 | 1.40 | 0.284 | ( 0.155) | 0.108 | 0.176 |
| 45 | 3.75 | 1.50 | 0.304 | ( 0.155) | 0.116 | 0.189 |
| 46 | 3.83 | 1.50 | 0.304 | ( 0.155) | 0.116 | 0.189 |
| 47 | 3.92 | 1.60 | 0.325 | ( 0.155) | 0.123 | 0.201 |
| 48 | 4.00 | 1.60 | 0.325 | ( 0.155) | 0.123 | 0.201 |
| 49 | 4.08 | 1.70 | 0.345 | ( 0.155) | 0.131 | 0.214 |
| 50 | 4.17 | 1.80 | 0.365 | ( 0.155) | 0.139 | 0.226 |
| 51 | 4.25 | 1.90 | 0.385 | ( 0.155) | 0.146 | 0.239 |
| 52 | 4.33 | 2.00 | 0.406 | ( 0.155) | 0.154 | 0.252 |
| 53 | 4.42 | 2.10 | 0.426 | 0.155 | ( 0.162) | 0.271 |
| 54 | 4.50 | 2.10 | 0.426 | 0.155 | ( 0.162) | 0.271 |
| 55 | 4.58 | 2.20 | 0.446 | 0.155 | ( 0.170) | 0.292 |
| 56 | 4.67 | 2.30 | 0.467 | 0.155 | ( 0.177) | 0.312 |
| 57 | 4.75 | 2.40 | 0.487 | 0.155 | ( 0.185) | 0.332 |
| 58 | 4.83 | 2.40 | 0.487 | 0.155 | ( 0.185) | 0.332 |
| 59 | 4.92 | 2.50 | 0.507 | 0.155 | ( 0.193) | 0.352 |






```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post6100.out
                    _+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a :
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.09
4.36

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.50 | 0.153 | ( 0.080) | 0.058 | 0.095 |
| 2 | 0.17 | 0.60 | 0.184 | ( 0.080) | 0.070 | 0.114 |
| 3 | 0.25 | 0.60 | 0.184 | ( 0.080) | 0.070 | 0.114 |
| 4 | 0.33 | 0.60 | 0.184 | ( 0.080) | 0.070 | 0.114 |
| 5 | 0.42 | 0.60 | 0.184 | ( 0.080) | 0.070 | 0.114 |
| 6 | 0.50 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 7 | 0.58 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 8 | 0.67 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 9 | 0.75 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 10 | 0.83 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 11 | 0.92 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 12 | 1.00 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 13 | 1.08 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 14 | 1.17 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 15 | 1.25 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 16 | 1.33 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 17 | 1.42 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 18 | 1.50 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 19 | 1.58 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 20 | 1.67 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 21 | 1.75 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 22 | 1.83 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 23 | 1.92 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 24 | 2.00 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 25 | 2.08 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 26 | 2.17 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 27 | 2.25 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 28 | 2.33 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 29 | 2.42 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 30 | 2.50 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 31 | 2.58 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 32 | 2.67 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 33 | 2.75 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 34 | 2.83 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 35 | 2.92 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 36 | 3.00 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 37 | 3.08 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 38 | 3.17 | 1.10 | 0.337 | 0.080 | ( 0.128) | 0.256 |
| 39 | 3.25 | 1.10 | 0.337 | 0.080 | ( 0.128) | 0.256 |
| 40 | 3.33 | 1.10 | 0.337 | 0.080 | ( 0.128) | 0.256 |
| 41 | 3.42 | 1.20 | 0.367 | 0.080 | ( 0.140) | 0.287 |
| 42 | 3.50 | 1.30 | 0.398 | 0.080 | ( 0.151) | 0.317 |
| 43 | 3.58 | 1.40 | 0.428 | 0.080 | ( 0.163) | 0.348 |
| 44 | 3.67 | 1.40 | 0.428 | 0.080 | ( 0.163) | 0.348 |
| 45 | 3.75 | 1.50 | 0.459 | 0.080 | ( 0.174) | 0.379 |
| 46 | 3.83 | 1.50 | 0.459 | 0.080 | ( 0.174) | 0.379 |
| 47 | 3.92 | 1.60 | 0.490 | 0.080 | ( 0.186) | 0.409 |
| 48 | 4.00 | 1.60 | 0.490 | 0.080 | ( 0.186) | 0.409 |
| 49 | 4.08 | 1.70 | 0.520 | 0.080 | ( 0.198) | 0.440 |
| 50 | 4.17 | 1.80 | 0.551 | 0.080 | ( 0.209) | 0.470 |
| 51 | 4.25 | 1.90 | 0.581 | 0.080 | ( 0.221) | 0.501 |
| 52 | 4.33 | 2.00 | 0.612 | 0.080 | ( 0.233) | 0.532 |
| 53 | 4.42 | 2.10 | 0.643 | 0.080 | ( 0.244) | 0.562 |
| 54 | 4.50 | 2.10 | 0.643 | 0.080 | ( 0.244) | 0.562 |
| 55 | 4.58 | 2.20 | 0.673 | 0.080 | ( 0.256) | 0.593 |
| 56 | 4.67 | 2.30 | 0.704 | 0.080 | ( 0.267) | 0.623 |
| 57 | 4.75 | 2.40 | 0.734 | 0.080 | ( 0.279) | 0.654 |
| 58 | 4.83 | 2.40 | 0.734 | 0.080 | ( 0.279) | 0.654 |
| 59 | 4.92 | 2.50 | 0.765 | 0.080 | ( 0.291) | 0.685 |






```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post242.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.93
7.72

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value
Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.07 | 0.015 | ( 0.274) | 0.006 | 0.010 |
| 2 | 0.17 | 0.07 | 0.015 | (0.273) | 0.006 | 0.010 |
| 3 | 0.25 | 0.07 | 0.015 | (0.272) | 0.006 | 0.010 |
| 4 | 0.33 | 0.10 | 0.023 | (0.271) | 0.009 | 0.014 |
| 5 | 0.42 | 0.10 | 0.023 | ( 0.270) | 0.009 | 0.014 |
| 6 | 0.50 | 0.10 | 0.023 | ( 0.269) | 0.009 | 0.014 |
| 7 | 0.58 | 0.10 | 0.023 | ( 0.268) | 0.009 | 0.014 |
| 8 | 0.67 | 0.10 | 0.023 | ( 0.267) | 0.009 | 0.014 |
| 9 | 0.75 | 0.10 | 0.023 | ( 0.266) | 0.009 | 0.014 |
| 10 | 0.83 | 0.13 | 0.031 | (0.265) | 0.012 | 0.019 |
| 11 | 0.92 | 0.13 | 0.031 | ( 0.264) | 0.012 | 0.019 |
| 12 | 1.00 | 0.13 | 0.031 | ( 0.263) | 0.012 | 0.019 |
| 13 | 1.08 | 0.10 | 0.023 | ( 0.262) | 0.009 | 0.014 |
| 14 | 1.17 | 0.10 | 0.023 | ( 0.261) | 0.009 | 0.014 |
| 15 | 1.25 | 0.10 | 0.023 | ( 0.260) | 0.009 | 0.014 |
| 16 | 1.33 | 0.10 | 0.023 | ( 0.259) | 0.009 | 0.014 |
| 17 | 1.42 | 0.10 | 0.023 | (0.258) | 0.009 | 0.014 |
| 18 | 1.50 | 0.10 | 0.023 | ( 0.257) | 0.009 | 0.014 |
| 19 | 1.58 | 0.10 | 0.023 | ( 0.255) | 0.009 | 0.014 |
| 20 | 1.67 | 0.10 | 0.023 | (0.254) | 0.009 | 0.014 |
| 21 | 1.75 | 0.10 | 0.023 | (0.253) | 0.009 | 0.014 |
| 22 | 1.83 | 0.13 | 0.031 | (0.252) | 0.012 | 0.019 |
| 23 | 1.92 | 0.13 | 0.031 | (0.251) | 0.012 | 0.019 |
| 24 | 2.00 | 0.13 | 0.031 | (0.250) | 0.012 | 0.019 |
| 25 | 2.08 | 0.13 | 0.031 | ( 0.249) | 0.012 | 0.019 |
| 26 | 2.17 | 0.13 | 0.031 | ( 0.248) | 0.012 | 0.019 |
| 27 | 2.25 | 0.13 | 0.031 | (0.247) | 0.012 | 0.019 |
| 28 | 2.33 | 0.13 | 0.031 | (0.246) | 0.012 | 0.019 |
| 29 | 2.42 | 0.13 | 0.031 | (0.245) | 0.012 | 0.019 |
| 30 | 2.50 | 0.13 | 0.031 | ( 0.244) | 0.012 | 0.019 |
| 31 | 2.58 | 0.17 | 0.039 | ( 0.243) | 0.015 | 0.024 |
| 32 | 2.67 | 0.17 | 0.039 | ( 0.242) | 0.015 | 0.024 |
| 33 | 2.75 | 0.17 | 0.039 | ( 0.241) | 0.015 | 0.024 |
| 34 | 2.83 | 0.17 | 0.039 | (0.240) | 0.015 | 0.024 |
| 35 | 2.92 | 0.17 | 0.039 | (0.239) | 0.015 | 0.024 |
| 36 | 3.00 | 0.17 | 0.039 | ( 0.238) | 0.015 | 0.024 |
| 37 | 3.08 | 0.17 | 0.039 | (0.237) | 0.015 | 0.024 |
| 38 | 3.17 | 0.17 | 0.039 | (0.236) | 0.015 | 0.024 |
| 39 | 3.25 | 0.17 | 0.039 | (0.235) | 0.015 | 0.024 |
| 40 | 3.33 | 0.17 | 0.039 | ( 0.234) | 0.015 | 0.024 |
| 41 | 3.42 | 0.17 | 0.039 | ( 0.233) | 0.015 | 0.024 |
| 42 | 3.50 | 0.17 | 0.039 | ( 0.232) | 0.015 | 0.024 |
| 43 | 3.58 | 0.17 | 0.039 | ( 0.232) | 0.015 | 0.024 |
| 44 | 3.67 | 0.17 | 0.039 | (0.231) | 0.015 | 0.024 |
| 45 | 3.75 | 0.17 | 0.039 | ( 0.230) | 0.015 | 0.024 |
| 46 | 3.83 | 0.20 | 0.046 | ( 0.229) | 0.018 | 0.029 |
| 47 | 3.92 | 0.20 | 0.046 | ( 0.228) | 0.018 | 0.029 |
| 48 | 4.00 | 0.20 | 0.046 | ( 0.227) | 0.018 | 0.029 |
| 49 | 4.08 | 0.20 | 0.046 | ( 0.226) | 0.018 | 0.029 |
| 50 | 4.17 | 0.20 | 0.046 | ( 0.225) | 0.018 | 0.029 |
| 51 | 4.25 | 0.20 | 0.046 | (0.224) | 0.018 | 0.029 |
| 52 | 4.33 | 0.23 | 0.054 | (0.223) | 0.021 | 0.034 |
| 53 | 4.42 | 0.23 | 0.054 | (0.222) | 0.021 | 0.034 |
| 54 | 4.50 | 0.23 | 0.054 | ( 0.221) | 0.021 | 0.034 |
| 55 | 4.58 | 0.23 | 0.054 | ( 0.220) | 0.021 | 0.034 |
| 56 | 4.67 | 0.23 | 0.054 | ( 0.219) | 0.021 | 0.034 |
| 57 | 4.75 | 0.23 | 0.054 | ( 0.218) | 0.021 | 0.034 |
| 58 | 4.83 | 0.27 | 0.062 | ( 0.217) | 0.023 | 0.038 |
| 59 | 4.92 | 0.27 | 0.062 | ( 0.216) | 0.023 | 0.038 |


| 60 | 5.00 | 0.27 | 0.062 | 0.215) | 0.023 | 0.038 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 61 | 5.08 | 0.20 | 0.046 | $0.214)$ | 0.018 | 0.029 |
| 62 | 5.17 | 0.20 | 0.046 | $0.213)$ | 0.018 | 0.029 |
| 63 | 5.25 | 0.20 | 0.046 | 0.212) | 0.018 | 0.029 |
| 64 | 5.33 | 0.23 | 0.054 | $0.212)$ | 0.021 | 0.034 |
| 65 | 5.42 | 0.23 | 0.054 | 0.211) | 0.021 | 0.034 |
| 66 | 5.50 | 0.23 | 0.054 | 0.210) | 0.021 | 0.034 |
| 67 | 5.58 | 0.27 | 0.062 | $0.209)$ | 0.023 | 0.038 |
| 68 | 5.67 | 0.27 | 0.062 | 0.208) | 0.023 | 0.038 |
| 69 | 5.75 | 0.27 | 0.062 | 0.207) | 0.023 | 0.038 |
| 70 | 5.83 | 0.27 | 0.062 | $0.206)$ | 0.023 | 0.038 |
| 71 | 5.92 | 0.27 | 0.062 | $0.205)$ | 0.023 | 0.038 |
| 72 | 6.00 | 0.27 | 0.062 | $0.204)$ | 0.023 | 0.038 |
| 73 | 6.08 | 0.30 | 0.069 | $0.203)$ | 0.026 | 0.043 |
| 74 | 6.17 | 0.30 | 0.069 | $0.202)$ | 0.026 | 0.043 |
| 75 | 6.25 | 0.30 | 0.069 | $0.202)$ | 0.026 | 0.043 |
| 76 | 6.33 | 0.30 | 0.069 | 0.201) | 0.026 | 0.043 |
| 77 | 6.42 | 0.30 | 0.069 | 0.200) | 0.026 | 0.043 |
| 78 | 6.50 | 0.30 | 0.069 | $0.199)$ | 0.026 | 0.043 |
| 79 | 6.58 | 0.33 | 0.077 | $0.198)$ | 0.029 | 0.048 |
| 80 | 6.67 | 0.33 | 0.077 | $0.197)$ | 0.029 | 0.048 |
| 81 | 6.75 | 0.33 | 0.077 | $0.196)$ | 0.029 | 0.048 |
| 82 | 6.83 | 0.33 | 0.077 | $0.195)$ | 0.029 | 0.048 |
| 83 | 6.92 | 0.33 | 0.077 | $0.194)$ | 0.029 | 0.048 |
| 84 | 7.00 | 0.33 | 0.077 | $0.193)$ | 0.029 | 0.048 |
| 85 | 7.08 | 0.33 | 0.077 | $0.193)$ | 0.029 | 0.048 |
| 86 | 7.17 | 0.33 | 0.077 | 0.192) | 0.029 | 0.048 |
| 87 | 7.25 | 0.33 | 0.077 | $0.191)$ | 0.029 | 0.048 |
| 88 | 7.33 | 0.37 | 0.085 | 0.190) | 0.032 | 0.053 |
| 89 | 7.42 | 0.37 | 0.085 | $0.189)$ | 0.032 | 0.053 |
| 90 | 7.50 | 0.37 | 0.085 | $0.188)$ | 0.032 | 0.053 |
| 91 | 7.58 | 0.40 | 0.093 | $0.187)$ | 0.035 | 0.057 |
| 92 | 7.67 | 0.40 | 0.093 | $0.187)$ | 0.035 | 0.057 |
| 93 | 7.75 | 0.40 | 0.093 | $0.186)$ | 0.035 | 0.057 |
| 94 | 7.83 | 0.43 | 0.100 | $0.185)$ | 0.038 | 0.062 |
| 95 | 7.92 | 0.43 | 0.100 | $0.184)$ | 0.038 | 0.062 |
| 96 | 8.00 | 0.43 | 0.100 | $0.183)$ | 0.038 | 0.062 |
| 97 | 8.08 | 0.50 | 0.116 | $0.182)$ | 0.044 | 0.072 |
| 98 | 8.17 | 0.50 | 0.116 | 0.181) | 0.044 | 0.072 |
| 99 | 8.25 | 0.50 | 0.116 | 0.181) | 0.044 | 0.072 |
| 100 | 8.33 | 0.50 | 0.116 | 0.180) | 0.044 | 0.072 |
| 101 | 8.42 | 0.50 | 0.116 | $0.179)$ | 0.044 | 0.072 |
| 102 | 8.50 | 0.50 | 0.116 | $0.178)$ | 0.044 | 0.072 |
| 103 | 8.58 | 0.53 | 0.124 | 0.177) | 0.047 | 0.077 |
| 104 | 8.67 | 0.53 | 0.124 | $0.176)$ | 0.047 | 0.077 |
| 105 | 8.75 | 0.53 | 0.124 | $0.176)$ | 0.047 | 0.077 |
| 106 | 8.83 | 0.57 | 0.131 | $0.175)$ | 0.050 | 0.081 |
| 107 | 8.92 | 0.57 | 0.131 | $0.174)$ | 0.050 | 0.081 |
| 108 | 9.00 | 0.57 | 0.131 | $0.173)$ | 0.050 | 0.081 |
| 109 | 9.08 | 0.63 | 0.147 | $0.172)$ | 0.056 | 0.091 |
| 110 | 9.17 | 0.63 | 0.147 | 0.171) | 0.056 | 0.091 |
| 111 | 9.25 | 0.63 | 0.147 | 0.171) | 0.056 | 0.091 |
| 112 | 9.33 | 0.67 | 0.154 | 0.170) | 0.059 | 0.096 |
| 113 | 9.42 | 0.67 | 0.154 | $0.169)$ | 0.059 | 0.096 |
| 114 | 9.50 | 0.67 | 0.154 | $0.168)$ | 0.059 | 0.096 |
| 115 | 9.58 | 0.70 | 0.162 | $0.167)$ | 0.062 | 0.101 |
| 116 | 9.67 | 0.70 | 0.162 | $0.167)$ | 0.062 | 0.101 |
| 117 | 9.75 | 0.70 | 0.162 | $0.166)$ | 0.062 | 0.101 |
| 118 | 9.83 | 0.73 | 0.170 | 0.165) | 0.065 | 0.105 |
| 119 | 9.92 | 0.73 | 0.170 | $0.164)$ | 0.065 | 0.105 |


| 120 | 10.00 | 0.73 | 0.170 | $0.163)$ | 0.065 | 0.105 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 121 | 10.08 | 0.50 | 0.116 | 0.163) | 0.044 | 0.072 |
| 122 | 10.17 | 0.50 | 0.116 | $0.162)$ | 0.044 | 0.072 |
| 123 | 10.25 | 0.50 | 0.116 | 0.161) | 0.044 | 0.072 |
| 124 | 10.33 | 0.50 | 0.116 | 0.160) | 0.044 | 0.072 |
| 125 | 10.42 | 0.50 | 0.116 | 0.159) | 0.044 | 0.072 |
| 126 | 10.50 | 0.50 | 0.116 | $0.159)$ | 0.044 | 0.072 |
| 127 | 10.58 | 0.67 | 0.154 | $0.158)$ | 0.059 | 0.096 |
| 128 | 10.67 | 0.67 | 0.154 | 0.157) | 0.059 | 0.096 |
| 129 | 10.75 | 0.67 | 0.154 | $0.156)$ | 0.059 | 0.096 |
| 130 | 10.83 | 0.67 | 0.154 | $0.156)$ | 0.059 | 0.096 |
| 131 | 10.92 | 0.67 | 0.154 | $0.155)$ | 0.059 | 0.096 |
| 132 | 11.00 | 0.67 | 0.154 | $0.154)$ | 0.059 | 0.096 |
| 133 | 11.08 | 0.63 | 0.147 | $0.153)$ | 0.056 | 0.091 |
| 134 | 11.17 | 0.63 | 0.147 | $0.153)$ | 0.056 | 0.091 |
| 135 | 11.25 | 0.63 | 0.147 | 0.152) | 0.056 | 0.091 |
| 136 | 11.33 | 0.63 | 0.147 | 0.151) | 0.056 | 0.091 |
| 137 | 11.42 | 0.63 | 0.147 | 0.150) | 0.056 | 0.091 |
| 138 | 11.50 | 0.63 | 0.147 | 0.150) | 0.056 | 0.091 |
| 139 | 11.58 | 0.57 | 0.131 | $0.149)$ | 0.050 | 0.081 |
| 140 | 11.67 | 0.57 | 0.131 | $0.148)$ | 0.050 | 0.081 |
| 141 | 11.75 | 0.57 | 0.131 | 0.147) | 0.050 | 0.081 |
| 142 | 11.83 | 0.60 | 0.139 | 0.147) | 0.053 | 0.086 |
| 143 | 11.92 | 0.60 | 0.139 | 0.146) | 0.053 | 0.086 |
| 144 | 12.00 | 0.60 | 0.139 | $0.145)$ | 0.053 | 0.086 |
| 145 | 12.08 | 0.83 | 0.193 | $0.144)$ | 0.073 | 0.120 |
| 146 | 12.17 | 0.83 | 0.193 | $0.144)$ | 0.073 | 0.120 |
| 147 | 12.25 | 0.83 | 0.193 | $0.143)$ | 0.073 | 0.120 |
| 148 | 12.33 | 0.87 | 0.201 | $0.142)$ | 0.076 | 0.124 |
| 149 | 12.42 | 0.87 | 0.201 | $0.142)$ | 0.076 | 0.124 |
| 150 | 12.50 | 0.87 | 0.201 | 0.141) | 0.076 | 0.124 |
| 151 | 12.58 | 0.93 | 0.216 | 0.140) | 0.082 | 0.134 |
| 152 | 12.67 | 0.93 | 0.216 | $0.139)$ | 0.082 | 0.134 |
| 153 | 12.75 | 0.93 | 0.216 | 0.139) | 0.082 | 0.134 |
| 154 | 12.83 | 0.97 | 0.224 | $0.138)$ | 0.085 | 0.139 |
| 155 | 12.92 | 0.97 | 0.224 | 0.137) | 0.085 | 0.139 |
| 156 | 13.00 | 0.97 | 0.224 | 0.137) | 0.085 | 0.139 |
| 157 | 13.08 | 1.13 | 0.262 | $0.136)$ | 0.100 | 0.163 |
| 158 | 13.17 | 1.13 | 0.262 | $0.135)$ | 0.100 | 0.163 |
| 159 | 13.25 | 1.13 | 0.262 | $0.135)$ | 0.100 | 0.163 |
| 160 | 13.33 | 1.13 | 0.262 | $0.134)$ | 0.100 | 0.163 |
| 161 | 13.42 | 1.13 | 0.262 | $0.133)$ | 0.100 | 0.163 |
| 162 | 13.50 | 1.13 | 0.262 | $0.133)$ | 0.100 | 0.163 |
| 163 | 13.58 | 0.77 | 0.178 | 0.132) | 0.067 | 0.110 |
| 164 | 13.67 | 0.77 | 0.178 | 0.131) | 0.067 | 0.110 |
| 165 | 13.75 | 0.77 | 0.178 | 0.130) | 0.067 | 0.110 |
| 166 | 13.83 | 0.77 | 0.178 | 0.130) | 0.067 | 0.110 |
| 167 | 13.92 | 0.77 | 0.178 | $0.129)$ | 0.067 | 0.110 |
| 168 | 14.00 | 0.77 | 0.178 | $0.129)$ | 0.067 | 0.110 |
| 169 | 14.08 | 0.90 | 0.208 | $0.128)$ | 0.079 | 0.129 |
| 170 | 14.17 | 0.90 | 0.208 | 0.127) | 0.079 | 0.129 |
| 171 | 14.25 | 0.90 | 0.208 | $0.127)$ | 0.079 | 0.129 |
| 172 | 14.33 | 0.87 | 0.201 | $0.126)$ | 0.076 | 0.124 |
| 173 | 14.42 | 0.87 | 0.201 | $0.125)$ | 0.076 | 0.124 |
| 174 | 14.50 | 0.87 | 0.201 | $0.125)$ | 0.076 | 0.124 |
| 175 | 14.58 | 0.87 | 0.201 | $0.124)$ | 0.076 | 0.124 |
| 176 | 14.67 | 0.87 | 0.201 | $0.123)$ | 0.076 | 0.124 |
| 177 | 14.75 | 0.87 | 0.201 | 0.123) | 0.076 | 0.124 |
| 178 | 14.83 | 0.83 | 0.193 | $0.122)$ | 0.073 | 0.120 |
| 179 | 14.92 | 0.83 | 0.193 | 0.121) | 0.073 | 0.120 |




```
            Peak flow rate of this hydrograph = 0.656(CFS)
```


$1+55 \quad 0.0092 \quad 0.08$ Q

2+ 0
2+ 5
2+10
2+15
$2+20$
$2+25$
2+30
2+35
$2+40$
$2+45$
2+50
2+55
3+ 0
3+ 5
3+10
3+15
$3+20$
3+25
$3+30$
3+35
$3+40$
$3+45$
$3+50$
3+55
.0243
0.0251
0.0259
0.0267
0.0275
0.0284

4+ 0
4+ 5
4+10
$4+15$

4+20
-
0.08 Q
0.08 QV
0.08 QV
0.08 QV
0.08 QV
0.08 QV
0.08 QV
0.09 QV
0.10 QV
0.10 QV
0.10 QV
0.10 QV
0.10 QV
0.10 QV
0.10 QV
0.10 QV
0.10 QV
0.10 Q V
0.10 Q V
0.10 Q V
0.10 Q V
0.10 Q V
0.11 Q V
0.12 Q V
0.12 Q V
0.12 Q V
0.12 Q V
0.12 Q V
0.13 Q V

| $4+25$ | 0.0293 | 0.13 | $Q$ | $V$ |
| :--- | :--- | :--- | :--- | :--- |
| $4+30$ | 0.0303 | 0.14 | $Q$ | $V$ |
| $4+35$ | 0.0312 | 0.14 | $Q$ | $V$ |
| $4+40$ | 0.0321 | 0.14 | $Q$ | $V$ |
| $4+45$ | 0.0331 | 0.14 | $Q$ | $V$ |
| $4+50$ | 0.0341 | 0.15 | $Q$ | $V$ |
| $4+55$ | 0.0351 | 0.15 | $Q$ | $V$ |



| 9+25 | 0.1185 | 0.39 | IQ | IV | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 9+30 | 0.1212 | 0.39 | IQ | \\| V | 1 |
| $9+35$ | 0.1239 | 0.40 | IQ | IV | 1 |
| 9+40 | 0.1267 | 0.40 | IQ | \\| V | 1 |
| $9+45$ | 0.1295 | 0.41 | IQ | I V | 1 |
| 9+50 | 0.1323 | 0.42 | IQ | 1 V | 1 |
| 9+55 | 0.1353 | 0.42 | IQ | \| V | \| |


| 11+55 | 0.1931 | 0.35 | IQ |
| :---: | :---: | :---: | :---: |
| 12+ 0 | 0.1955 | 0.35 | IQ |
| 12+ 5 | 0.1984 | 0.42 | IQ |
| 12+10 | 0.2017 | 0.48 | IQ |
| 12+15 | 0.2050 | 0.48 | IQ |
| 12+20 | 0.2084 | 0.49 | IQ |

$12+25$
$12+30$
|
12+35
0.50 | Q
|
$12+40$
$12+45$
|
$12+50$
12+55
$13+0$
$13+5$
$13+10$
|
$13+15$
|
$13+20$
|
$13+25$
$13+30$
|
13+35
.2189
0.52 | Q
0.54 | Q
0.54 | Q
0.55 | Q
0.56 | Q
0.56 | Q
0.61 | Q
0.65 | Q
0.66 । Q
0.66 | Q
0.66 | Q
0.66 | Q
0.54 | Q
0.45 IQ
|
$13+45$
$13+50$
$13+55$
,
14+ 0
$14+5$ |
$14+10$
$14+15$
. 2942
0.52 | Q
$14+20$
0.2977
0.51 | Q

| 14+25 | 0.3012 | 0.50 | Q |
| :---: | :---: | :---: | :---: |
| 14+30 | 0.3047 | 0.50 | Q |
| 14+35 | 0.3081 | 0.50 | Q |
| 14+40 | 0.3116 | 0.50 | Q |
| 14+45 | 0.3150 | 0.50 | Q |

$$
0.48 \quad \mathrm{IQ}
$$

$$
0.3251
$$

$$
0.48 \quad \mathrm{IQ}
$$

|

$15+10$
0.3315

| 0.46 | IQ |
| :--- | :--- |
| 0.46 | IQ |

0.3184
0.3217
0.49 IQ

$$
15+5
$$

$$
0.3283
$$

|

$$
15+15
$$

$$
0.3347
$$

$$
15+20
$$

$$
0.3378
$$

$$
\begin{array}{ll}
0.46 & \mathrm{IQ} \\
0.45 & \mathrm{IQ}
\end{array}
$$

$$
\begin{array}{ll}
0.45 & \mathrm{IQ} \\
0.44 & \mathrm{IQ}
\end{array}
$$

I
15+55

16+ 0
0.3409
0.3439
0.3467
$0.44 \quad \mathrm{IQ}$
1
1
1

$$
15+25
$$

$$
15+30
$$

I

$$
15+35
$$

$$
15+40
$$

$$
15+45
$$

$$
15+50
$$

|
|
$16+5$
$16+10$
$16+15$
$16+20$
| $16+25$
$16+25$
$16+30$
0.3630
0.3635

| 0.40 | IQ |
| :--- | :--- |
| 0.37 | IQ |


| $16+55$ | 0.3656 | 0.06 | $Q$ |
| :--- | :--- | :--- | :--- |
| $17+0$ | 0.3660 | 0.06 | $Q$ |
| $17+5$ | 0.3665 | 0.08 | $Q$ |
| $17+10$ | 0.3672 | 0.10 | $Q$ |
| $17+15$ | 0.3678 | 0.10 | $Q$ |
| $17+20$ | 0.3685 | 0.10 | $Q$ |
| $17+25$ | 0.3692 | 0.10 | $Q$ |

$17+30$
0.3692
0.10 Q
$17+35$
$0.3698 \quad 0.10 \quad \mathrm{Q}$
$17+40$
0.3705
0.10 Q
$17+45$
|
$17+50$
|
17+55
$18+0$
I $18+5$
|
$18+10$ 18+15
$18+20$
|
$18+25$
$18+30$
$18+35$
$18+40$
$18+45$
$18+50$
| $18+55$
$19+0$
$19+5$ $19+5$ 19+10
$19+15$
$19+20$
0.3799
0.3804
0.06
0.0
0.

| 19+25 | 0.3809 | 0.08 | Q | \| | I | \| | v |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19+30 | 0.3815 | 0.08 | Q | \| | \| | \| | V |
| 19+35 | 0.3819 | 0.07 | Q | \| | \| | \| | v |
| 19+40 | 0.3823 | 0.06 | Q | \| | \| | \| | v |
| 19+45 | 0.3827 | 0.06 | Q | \| | \| | \| | v |
| 19+50 | 0.3830 | 0.05 | Q | \| | \| | \| | v |
| 19+55 | 0.3833 | 0.04 | Q | \| | \| | 1 | v |
| 20+ 0 | 0.3836 | 0.04 | Q | \| | \| | I | V |
| 20+ 5 | 0.3839 | 0.05 | Q | \| | \| | \| | v |
| 20+10 | 0.3843 | 0.06 | Q | \| | \| | \| | v |
| 20+15 | 0.3847 | 0.06 | Q | \| | \| | 1 | v |
| 20+20 | 0.3851 | 0.06 | Q | \| | \| | \| | v |
| 20+25 | 0.3855 | 0.06 | Q | \| | \| | I | v |
| 20+30 | 0.3859 | 0.06 | Q | \| | \| | I | v |
| 20+35 | 0.3863 | 0.06 | Q | \| | \| | \| | v |
| 20+40 | 0.3867 | 0.06 | Q | \| | \| | , | v |
| 20+45 | 0.3871 | 0.06 | Q | \| | \| | , | v |
| 20+50 | 0.3874 | 0.05 | Q | \| | \| | , | v |
| 20+55 | 0.3877 | 0.04 | Q | \| | \| | 1 | V |
| 21+ 0 | 0.3880 | 0.04 | Q | \| | \| | , | V |
| 21+ 5 | 0.3883 | 0.05 | Q | \| | \| | I | v |
| 21+10 | 0.3887 | 0.06 | Q | \| | \| | , | v |
| 21+15 | 0.3891 | 0.06 | Q | \| | \| | 1 |  |
| 21+20 | 0.3894 | 0.05 | Q | । | 1 | \| |  |
| 21+25 | 0.3897 | 0.04 | 0 | \| | , | , |  |
|  |  |  |  |  |  |  |  |
| 21+30 | 0.3900 | 0.04 | Q | \| | \| | \| |  |
| 21+35 | 0.3903 | 0.05 | Q | \| | \| | \| |  |
| 21+40 | 0.3907 | 0.06 | Q | \| | । | \| |  |
| 21+45 | 0.3911 | 0.06 | 0 | , | । | , |  |
|  |  |  |  |  |  |  |  |
| 21+50 | 0.3914 | 0.05 | Q | \| | \| | \| |  |



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post245.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.93
7.72

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.07 | 0.021 | ( 0.274) | 0.008 | 0.013 |
| 2 | 0.17 | 0.07 | 0.021 | (0.273) | 0.008 | 0.013 |
| 3 | 0.25 | 0.07 | 0.021 | ( 0.272) | 0.008 | 0.013 |
| 4 | 0.33 | 0.10 | 0.031 | ( 0.271) | 0.012 | 0.019 |
| 5 | 0.42 | 0.10 | 0.031 | ( 0.270) | 0.012 | 0.019 |
| 6 | 0.50 | 0.10 | 0.031 | ( 0.269) | 0.012 | 0.019 |
| 7 | 0.58 | 0.10 | 0.031 | ( 0.268) | 0.012 | 0.019 |
| 8 | 0.67 | 0.10 | 0.031 | ( 0.267) | 0.012 | 0.019 |
| 9 | 0.75 | 0.10 | 0.031 | ( 0.266) | 0.012 | 0.019 |
| 10 | 0.83 | 0.13 | 0.041 | ( 0.265) | 0.016 | 0.025 |
| 11 | 0.92 | 0.13 | 0.041 | ( 0.264) | 0.016 | 0.025 |
| 12 | 1.00 | 0.13 | 0.041 | ( 0.263) | 0.016 | 0.025 |
| 13 | 1.08 | 0.10 | 0.031 | ( 0.262) | 0.012 | 0.019 |
| 14 | 1.17 | 0.10 | 0.031 | ( 0.261) | 0.012 | 0.019 |
| 15 | 1.25 | 0.10 | 0.031 | ( 0.260) | 0.012 | 0.019 |
| 16 | 1.33 | 0.10 | 0.031 | ( 0.259) | 0.012 | 0.019 |
| 17 | 1.42 | 0.10 | 0.031 | ( 0.258) | 0.012 | 0.019 |
| 18 | 1.50 | 0.10 | 0.031 | ( 0.257) | 0.012 | 0.019 |
| 19 | 1.58 | 0.10 | 0.031 | ( 0.255) | 0.012 | 0.019 |
| 20 | 1.67 | 0.10 | 0.031 | ( 0.254) | 0.012 | 0.019 |
| 21 | 1.75 | 0.10 | 0.031 | ( 0.253) | 0.012 | 0.019 |
| 22 | 1.83 | 0.13 | 0.041 | ( 0.252) | 0.016 | 0.025 |
| 23 | 1.92 | 0.13 | 0.041 | (0.251) | 0.016 | 0.025 |
| 24 | 2.00 | 0.13 | 0.041 | ( 0.250) | 0.016 | 0.025 |
| 25 | 2.08 | 0.13 | 0.041 | ( 0.249) | 0.016 | 0.025 |
| 26 | 2.17 | 0.13 | 0.041 | ( 0.248) | 0.016 | 0.025 |
| 27 | 2.25 | 0.13 | 0.041 | ( 0.247) | 0.016 | 0.025 |
| 28 | 2.33 | 0.13 | 0.041 | ( 0.246) | 0.016 | 0.025 |
| 29 | 2.42 | 0.13 | 0.041 | ( 0.245) | 0.016 | 0.025 |
| 30 | 2.50 | 0.13 | 0.041 | ( 0.244) | 0.016 | 0.025 |
| 31 | 2.58 | 0.17 | 0.051 | ( 0.243) | 0.019 | 0.032 |
| 32 | 2.67 | 0.17 | 0.051 | ( 0.242) | 0.019 | 0.032 |
| 33 | 2.75 | 0.17 | 0.051 | ( 0.241) | 0.019 | 0.032 |
| 34 | 2.83 | 0.17 | 0.051 | ( 0.240) | 0.019 | 0.032 |
| 35 | 2.92 | 0.17 | 0.051 | ( 0.239) | 0.019 | 0.032 |
| 36 | 3.00 | 0.17 | 0.051 | ( 0.238) | 0.019 | 0.032 |
| 37 | 3.08 | 0.17 | 0.051 | ( 0.237) | 0.019 | 0.032 |
| 38 | 3.17 | 0.17 | 0.051 | ( 0.236) | 0.019 | 0.032 |
| 39 | 3.25 | 0.17 | 0.051 | ( 0.235) | 0.019 | 0.032 |
| 40 | 3.33 | 0.17 | 0.051 | ( 0.234) | 0.019 | 0.032 |
| 41 | 3.42 | 0.17 | 0.051 | ( 0.233) | 0.019 | 0.032 |
| 42 | 3.50 | 0.17 | 0.051 | ( 0.232) | 0.019 | 0.032 |
| 43 | 3.58 | 0.17 | 0.051 | ( 0.232) | 0.019 | 0.032 |
| 44 | 3.67 | 0.17 | 0.051 | ( 0.231) | 0.019 | 0.032 |
| 45 | 3.75 | 0.17 | 0.051 | ( 0.230) | 0.019 | 0.032 |
| 46 | 3.83 | 0.20 | 0.062 | ( 0.229) | 0.023 | 0.038 |
| 47 | 3.92 | 0.20 | 0.062 | ( 0.228) | 0.023 | 0.038 |
| 48 | 4.00 | 0.20 | 0.062 | ( 0.227) | 0.023 | 0.038 |
| 49 | 4.08 | 0.20 | 0.062 | ( 0.226) | 0.023 | 0.038 |
| 50 | 4.17 | 0.20 | 0.062 | ( 0.225) | 0.023 | 0.038 |
| 51 | 4.25 | 0.20 | 0.062 | (0.224) | 0.023 | 0.038 |
| 52 | 4.33 | 0.23 | 0.072 | ( 0.223) | 0.027 | 0.045 |
| 53 | 4.42 | 0.23 | 0.072 | ( 0.222) | 0.027 | 0.045 |
| 54 | 4.50 | 0.23 | 0.072 | ( 0.221) | 0.027 | 0.045 |
| 55 | 4.58 | 0.23 | 0.072 | ( 0.220) | 0.027 | 0.045 |
| 56 | 4.67 | 0.23 | 0.072 | ( 0.219) | 0.027 | 0.045 |
| 57 | 4.75 | 0.23 | 0.072 | ( 0.218) | 0.027 | 0.045 |
| 58 | 4.83 | 0.27 | 0.082 | ( 0.217) | 0.031 | 0.051 |
| 59 | 4.92 | 0.27 | 0.082 | ( 0.216) | 0.031 | 0.051 |


| 60 | 5.00 | 0.27 | 0.082 | $0.215)$ | 0.031 | 0.051 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 61 | 5.08 | 0.20 | 0.062 | $0.214)$ | 0.023 | 0.038 |
| 62 | 5.17 | 0.20 | 0.062 | $0.213)$ | 0.023 | 0.038 |
| 63 | 5.25 | 0.20 | 0.062 | $0.212)$ | 0.023 | 0.038 |
| 64 | 5.33 | 0.23 | 0.072 | $0.212)$ | 0.027 | 0.045 |
| 65 | 5.42 | 0.23 | 0.072 | 0.211) | 0.027 | 0.045 |
| 66 | 5.50 | 0.23 | 0.072 | 0.210) | 0.027 | 0.045 |
| 67 | 5.58 | 0.27 | 0.082 | $0.209)$ | 0.031 | 0.051 |
| 68 | 5.67 | 0.27 | 0.082 | 0.208) | 0.031 | 0.051 |
| 69 | 5.75 | 0.27 | 0.082 | $0.207)$ | 0.031 | 0.051 |
| 70 | 5.83 | 0.27 | 0.082 | $0.206)$ | 0.031 | 0.051 |
| 71 | 5.92 | 0.27 | 0.082 | $0.205)$ | 0.031 | 0.051 |
| 72 | 6.00 | 0.27 | 0.082 | $0.204)$ | 0.031 | 0.051 |
| 73 | 6.08 | 0.30 | 0.092 | $0.203)$ | 0.035 | 0.057 |
| 74 | 6.17 | 0.30 | 0.092 | $0.202)$ | 0.035 | 0.057 |
| 75 | 6.25 | 0.30 | 0.092 | $0.202)$ | 0.035 | 0.057 |
| 76 | 6.33 | 0.30 | 0.092 | $0.201)$ | 0.035 | 0.057 |
| 77 | 6.42 | 0.30 | 0.092 | 0.200) | 0.035 | 0.057 |
| 78 | 6.50 | 0.30 | 0.092 | $0.199)$ | 0.035 | 0.057 |
| 79 | 6.58 | 0.33 | 0.103 | $0.198)$ | 0.039 | 0.064 |
| 80 | 6.67 | 0.33 | 0.103 | $0.197)$ | 0.039 | 0.064 |
| 81 | 6.75 | 0.33 | 0.103 | $0.196)$ | 0.039 | 0.064 |
| 82 | 6.83 | 0.33 | 0.103 | $0.195)$ | 0.039 | 0.064 |
| 83 | 6.92 | 0.33 | 0.103 | $0.194)$ | 0.039 | 0.064 |
| 84 | 7.00 | 0.33 | 0.103 | $0.193)$ | 0.039 | 0.064 |
| 85 | 7.08 | 0.33 | 0.103 | $0.193)$ | 0.039 | 0.064 |
| 86 | 7.17 | 0.33 | 0.103 | $0.192)$ | 0.039 | 0.064 |
| 87 | 7.25 | 0.33 | 0.103 | $0.191)$ | 0.039 | 0.064 |
| 88 | 7.33 | 0.37 | 0.113 | 0.190) | 0.043 | 0.070 |
| 89 | 7.42 | 0.37 | 0.113 | $0.189)$ | 0.043 | 0.070 |
| 90 | 7.50 | 0.37 | 0.113 | $0.188)$ | 0.043 | 0.070 |
| 91 | 7.58 | 0.40 | 0.123 | $0.187)$ | 0.047 | 0.076 |
| 92 | 7.67 | 0.40 | 0.123 | $0.187)$ | 0.047 | 0.076 |
| 93 | 7.75 | 0.40 | 0.123 | $0.186)$ | 0.047 | 0.076 |
| 94 | 7.83 | 0.43 | 0.133 | $0.185)$ | 0.051 | 0.083 |
| 95 | 7.92 | 0.43 | 0.133 | $0.184)$ | 0.051 | 0.083 |
| 96 | 8.00 | 0.43 | 0.133 | $0.183)$ | 0.051 | 0.083 |
| 97 | 8.08 | 0.50 | 0.154 | $0.182)$ | 0.058 | 0.095 |
| 98 | 8.17 | 0.50 | 0.154 | 0.181) | 0.058 | 0.095 |
| 99 | 8.25 | 0.50 | 0.154 | 0.181) | 0.058 | 0.095 |
| 100 | 8.33 | 0.50 | 0.154 | 0.180) | 0.058 | 0.095 |
| 101 | 8.42 | 0.50 | 0.154 | $0.179)$ | 0.058 | 0.095 |
| 102 | 8.50 | 0.50 | 0.154 | $0.178)$ | 0.058 | 0.095 |
| 103 | 8.58 | 0.53 | 0.164 | 0.177) | 0.062 | 0.102 |
| 104 | 8.67 | 0.53 | 0.164 | $0.176)$ | 0.062 | 0.102 |
| 105 | 8.75 | 0.53 | 0.164 | $0.176)$ | 0.062 | 0.102 |
| 106 | 8.83 | 0.57 | 0.174 | $0.175)$ | 0.066 | 0.108 |
| 107 | 8.92 | 0.57 | 0.174 | $0.174)$ | 0.066 | 0.108 |
| 108 | 9.00 | 0.57 | 0.174 | $0.173)$ | 0.066 | 0.108 |
| 109 | 9.08 | 0.63 | 0.195 | $0.172)$ | 0.074 | 0.121 |
| 110 | 9.17 | 0.63 | 0.195 | 0.171) | 0.074 | 0.121 |
| 111 | 9.25 | 0.63 | 0.195 | 0.171) | 0.074 | 0.121 |
| 112 | 9.33 | 0.67 | 0.205 | 0.170) | 0.078 | 0.127 |
| 113 | 9.42 | 0.67 | 0.205 | $0.169)$ | 0.078 | 0.127 |
| 114 | 9.50 | 0.67 | 0.205 | $0.168)$ | 0.078 | 0.127 |
| 115 | 9.58 | 0.70 | 0.215 | $0.167)$ | 0.082 | 0.134 |
| 116 | 9.67 | 0.70 | 0.215 | $0.167)$ | 0.082 | 0.134 |
| 117 | 9.75 | 0.70 | 0.215 | $0.166)$ | 0.082 | 0.134 |
| 118 | 9.83 | 0.73 | 0.226 | 0.165) | 0.086 | 0.140 |
| 119 | 9.92 | 0.73 | 0.226 | $0.164)$ | 0.086 | 0.140 |


| 120 | 10.00 | 0.73 | 0.226 | $0.163)$ | 0.086 | 0.140 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 121 | 10.08 | 0.50 | 0.154 | 0.163) | 0.058 | 0.095 |
| 122 | 10.17 | 0.50 | 0.154 | $0.162)$ | 0.058 | 0.095 |
| 123 | 10.25 | 0.50 | 0.154 | 0.161) | 0.058 | 0.095 |
| 124 | 10.33 | 0.50 | 0.154 | 0.160) | 0.058 | 0.095 |
| 125 | 10.42 | 0.50 | 0.154 | 0.159) | 0.058 | 0.095 |
| 126 | 10.50 | 0.50 | 0.154 | $0.159)$ | 0.058 | 0.095 |
| 127 | 10.58 | 0.67 | 0.205 | $0.158)$ | 0.078 | 0.127 |
| 128 | 10.67 | 0.67 | 0.205 | 0.157) | 0.078 | 0.127 |
| 129 | 10.75 | 0.67 | 0.205 | $0.156)$ | 0.078 | 0.127 |
| 130 | 10.83 | 0.67 | 0.205 | $0.156)$ | 0.078 | 0.127 |
| 131 | 10.92 | 0.67 | 0.205 | $0.155)$ | 0.078 | 0.127 |
| 132 | 11.00 | 0.67 | 0.205 | $0.154)$ | 0.078 | 0.127 |
| 133 | 11.08 | 0.63 | 0.195 | $0.153)$ | 0.074 | 0.121 |
| 134 | 11.17 | 0.63 | 0.195 | $0.153)$ | 0.074 | 0.121 |
| 135 | 11.25 | 0.63 | 0.195 | 0.152) | 0.074 | 0.121 |
| 136 | 11.33 | 0.63 | 0.195 | 0.151) | 0.074 | 0.121 |
| 137 | 11.42 | 0.63 | 0.195 | 0.150) | 0.074 | 0.121 |
| 138 | 11.50 | 0.63 | 0.195 | 0.150) | 0.074 | 0.121 |
| 139 | 11.58 | 0.57 | 0.174 | $0.149)$ | 0.066 | 0.108 |
| 140 | 11.67 | 0.57 | 0.174 | $0.148)$ | 0.066 | 0.108 |
| 141 | 11.75 | 0.57 | 0.174 | 0.147) | 0.066 | 0.108 |
| 142 | 11.83 | 0.60 | 0.185 | 0.147) | 0.070 | 0.114 |
| 143 | 11.92 | 0.60 | 0.185 | $0.146)$ | 0.070 | 0.114 |
| 144 | 12.00 | 0.60 | 0.185 | $0.145)$ | 0.070 | 0.114 |
| 145 | 12.08 | 0.83 | 0.256 | $0.144)$ | 0.097 | 0.159 |
| 146 | 12.17 | 0.83 | 0.256 | $0.144)$ | 0.097 | 0.159 |
| 147 | 12.25 | 0.83 | 0.256 | $0.143)$ | 0.097 | 0.159 |
| 148 | 12.33 | 0.87 | 0.267 | $0.142)$ | 0.101 | 0.165 |
| 149 | 12.42 | 0.87 | 0.267 | $0.142)$ | 0.101 | 0.165 |
| 150 | 12.50 | 0.87 | 0.267 | 0.141) | 0.101 | 0.165 |
| 151 | 12.58 | 0.93 | 0.287 | 0.140) | 0.109 | 0.178 |
| 152 | 12.67 | 0.93 | 0.287 | $0.139)$ | 0.109 | 0.178 |
| 153 | 12.75 | 0.93 | 0.287 | 0.139) | 0.109 | 0.178 |
| 154 | 12.83 | 0.97 | 0.298 | $0.138)$ | 0.113 | 0.184 |
| 155 | 12.92 | 0.97 | 0.298 | 0.137) | 0.113 | 0.184 |
| 156 | 13.00 | 0.97 | 0.298 | 0.137) | 0.113 | 0.184 |
| 157 | 13.08 | 1.13 | 0.349 | $0.136)$ | 0.133 | 0.216 |
| 158 | 13.17 | 1.13 | 0.349 | $0.135)$ | 0.133 | 0.216 |
| 159 | 13.25 | 1.13 | 0.349 | $0.135)$ | 0.133 | 0.216 |
| 160 | 13.33 | 1.13 | 0.349 | $0.134)$ | 0.133 | 0.216 |
| 161 | 13.42 | 1.13 | 0.349 | $0.133)$ | 0.133 | 0.216 |
| 162 | 13.50 | 1.13 | 0.349 | 0.133 | $0.133)$ | 0.216 |
| 163 | 13.58 | 0.77 | 0.236 | 0.132) | 0.090 | 0.146 |
| 164 | 13.67 | 0.77 | 0.236 | 0.131) | 0.090 | 0.146 |
| 165 | 13.75 | 0.77 | 0.236 | 0.130) | 0.090 | 0.146 |
| 166 | 13.83 | 0.77 | 0.236 | 0.130) | 0.090 | 0.146 |
| 167 | 13.92 | 0.77 | 0.236 | $0.129)$ | 0.090 | 0.146 |
| 168 | 14.00 | 0.77 | 0.236 | $0.129)$ | 0.090 | 0.146 |
| 169 | 14.08 | 0.90 | 0.277 | $0.128)$ | 0.105 | 0.172 |
| 170 | 14.17 | 0.90 | 0.277 | 0.127) | 0.105 | 0.172 |
| 171 | 14.25 | 0.90 | 0.277 | $0.127)$ | 0.105 | 0.172 |
| 172 | 14.33 | 0.87 | 0.267 | $0.126)$ | 0.101 | 0.165 |
| 173 | 14.42 | 0.87 | 0.267 | $0.125)$ | 0.101 | 0.165 |
| 174 | 14.50 | 0.87 | 0.267 | $0.125)$ | 0.101 | 0.165 |
| 175 | 14.58 | 0.87 | 0.267 | $0.124)$ | 0.101 | 0.165 |
| 176 | 14.67 | 0.87 | 0.267 | $0.123)$ | 0.101 | 0.165 |
| 177 | 14.75 | 0.87 | 0.267 | 0.123) | 0.101 | 0.165 |
| 178 | 14.83 | 0.83 | 0.256 | $0.122)$ | 0.097 | 0.159 |
| 179 | 14.92 | 0.83 | 0.256 | 0.121) | 0.097 | 0.159 |



| 240 | 20.00 | 0.07 | 0.021 | 0.090) | 0.008 | 0.013 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 241 | 20.08 | 0.10 | 0.031 | 0.089) | 0.012 | 0.019 |
| 242 | 20.17 | 0.10 | 0.031 | 0.089) | 0.012 | 0.019 |
| 243 | 20.25 | 0.10 | 0.031 | $0.089)$ | 0.012 | 0.019 |
| 244 | 20.33 | 0.10 | 0.031 | $0.088)$ | 0.012 | 0.019 |
| 245 | 20.42 | 0.10 | 0.031 | $0.088)$ | 0.012 | 0.019 |
| 246 | 20.50 | 0.10 | 0.031 | $0.088)$ | 0.012 | 0.019 |
| 247 | 20.58 | 0.10 | 0.031 | $0.087)$ | 0.012 | 0.019 |
| 248 | 20.67 | 0.10 | 0.031 | $0.087)$ | 0.012 | 0.019 |
| 249 | 20.75 | 0.10 | 0.031 | $0.086)$ | 0.012 | 0.019 |
| 250 | 20.83 | 0.07 | 0.021 | $0.086)$ | 0.008 | 0.013 |
| 251 | 20.92 | 0.07 | 0.021 | $0.086)$ | 0.008 | 0.013 |
| 252 | 21.00 | 0.07 | 0.021 | $0.085)$ | 0.008 | 0.013 |
| 253 | 21.08 | 0.10 | 0.031 | 0.085) | 0.012 | 0.019 |
| 254 | 21.17 | 0.10 | 0.031 | $0.085)$ | 0.012 | 0.019 |
| 255 | 21.25 | 0.10 | 0.031 | $0.084)$ | 0.012 | 0.019 |
| 256 | 21.33 | 0.07 | 0.021 | $0.084)$ | 0.008 | 0.013 |
| 257 | 21.42 | 0.07 | 0.021 | $0.084)$ | 0.008 | 0.013 |
| 258 | 21.50 | 0.07 | 0.021 | $0.083)$ | 0.008 | 0.013 |
| 259 | 21.58 | 0.10 | 0.031 | $0.083)$ | 0.012 | 0.019 |
| 260 | 21.67 | 0.10 | 0.031 | $0.083)$ | 0.012 | 0.019 |
| 261 | 21.75 | 0.10 | 0.031 | $0.083)$ | 0.012 | 0.019 |
| 262 | 21.83 | 0.07 | 0.021 | $0.082)$ | 0.008 | 0.013 |
| 263 | 21.92 | 0.07 | 0.021 | $0.082)$ | 0.008 | 0.013 |
| 264 | 22.00 | 0.07 | 0.021 | $0.082)$ | 0.008 | 0.013 |
| 265 | 22.08 | 0.10 | 0.031 | 0.081) | 0.012 | 0.019 |
| 266 | 22.17 | 0.10 | 0.031 | 0.081) | 0.012 | 0.019 |
| 267 | 22.25 | 0.10 | 0.031 | 0.081) | 0.012 | 0.019 |
| 268 | 22.33 | 0.07 | 0.021 | 0.081) | 0.008 | 0.013 |
| 269 | 22.42 | 0.07 | 0.021 | 0.080) | 0.008 | 0.013 |
| 270 | 22.50 | 0.07 | 0.021 | 0.080) | 0.008 | 0.013 |
| 271 | 22.58 | 0.07 | 0.021 | 0.080) | 0.008 | 0.013 |
| 272 | 22.67 | 0.07 | 0.021 | 0.080) | 0.008 | 0.013 |
| 273 | 22.75 | 0.07 | 0.021 | 0.079) | 0.008 | 0.013 |
| 274 | 22.83 | 0.07 | 0.021 | 0.079) | 0.008 | 0.013 |
| 275 | 22.92 | 0.07 | 0.021 | 0.079) | 0.008 | 0.013 |
| 276 | 23.00 | 0.07 | 0.021 | 0.079) | 0.008 | 0.013 |
| 277 | 23.08 | 0.07 | 0.021 | 0.079) | 0.008 | 0.013 |
| 278 | 23.17 | 0.07 | 0.021 | 0.079) | 0.008 | 0.013 |
| 279 | 23.25 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 280 | 23.33 | 0.07 | 0.021 | 0.078) | 0.008 | 0.013 |
| 281 | 23.42 | 0.07 | 0.021 | 0.078) | 0.008 | 0.013 |
| 282 | 23.50 | 0.07 | 0.021 | 0.078) | 0.008 | 0.013 |
| 283 | 23.58 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 284 | 23.67 | 0.07 | 0.021 | 0.078) | 0.008 | 0.013 |
| 285 | 23.75 | 0.07 | 0.021 | 0.078) | 0.008 | 0.013 |
| 286 | 23.83 | 0.07 | 0.021 | 0.077) | 0.008 | 0.013 |
| 287 | 23.92 | 0.07 | 0.021 | 0.077) | 0.008 | 0.013 |
| 288 | 24.00 | 0.07 | 0.021 | 0.077) | 0.008 | 0.013 |
| (Loss Rate Not Used) |  |  |  |  |  |  |
|  | Flood volume = Effective rainfall 1.59(In) 19.1 |  |  |  | 0.5(Ac.Ft) |  |
|  |  |  |  |  |  |  |
|  | Total soil loss $=0.325(A c . F t)$ |  |  |  |  |  |
|  | Total rainfall $=2.56(\mathrm{In})$ |  |  |  |  |  |
|  | Flood volume $=$ 23088.7 Cubic Feet |  |  |  |  |  |
|  | Total soil loss $=$ 14151.1 Cubic Feet |  |  |  |  |  |

```
            Peak flow rate of this hydrograph = 0.872(CFS)
```



| 1+55 | 0.0122 | 0.10 | Q | \\| | I |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2+ 0 | 0.0129 | 0.10 | Q | \| | \| |
| 2+ 5 | 0.0136 | 0.10 | QV | 1 | \| |
| 2+10 | 0.0143 | 0.10 | QV | , | 1 |
| 2+15 | 0.0150 | 0.10 | QV | \\| | \| |
| 2+20 | 0.0157 | 0.10 | QV | , | \| |
| 2+25 | 0.0164 | 0.10 | QV | 1 | \| |
| 2+30 | 0.0172 | 0.10 | QV | \| | \| |
| 2+35 | 0.0180 | 0.12 | QV | 1 | 1 |
| 2+40 | 0.0188 | 0.13 | QV | I | \| |
| 2+45 | 0.0197 | 0.13 | QV | 1 | \| |
| 2+50 | 0.0206 | 0.13 | QV | 1 | \| |
| 2+55 | 0.0215 | 0.13 | QV | 1 | \| |
| $3+0$ | 0.0224 | 0.13 | QV | 1 | \| |
| $3+5$ | 0.0232 | 0.13 | QV | 1 | I |
| 3+10 | 0.0241 | 0.13 | QV | 1 | \| |
| 3+15 | 0.0250 | 0.13 | QV | 1 | I |
| $3+20$ | 0.0259 | 0.13 | QV | 1 | 1 |
| $3+25$ | 0.0268 | 0.13 | Q V | 1 | I |
| 3+30 | 0.0277 | 0.13 | Q V | 1 | \| |
| 3+35 | 0.0285 | 0.13 | Q V | 1 | I |
| 3+40 | 0.0294 | 0.13 | Q V | 1 | 1 |
| $3+45$ | 0.0303 | 0.13 | Q V | 1 | 1 |
| 3+50 | 0.0313 | 0.14 | Q V | 1 | \| |
| 3+55 | 0.0324 | 0.15 | Q V | 1 | 1 |
| 4+ 0 | 0.0334 | 0.15 | Q V | 1 | 1 |
| 4+ 5 | 0.0345 | 0.15 | Q V | 1 | I |
| 4+10 | 0.0355 | 0.15 | Q V | 1 | \| |
| 4+15 | 0.0366 | 0.15 | Q V | 1 | 1 |
| 4+20 | 0.0377 | 0.17 | Q V | \| | \| |


| $4+25$ | 0.0390 | 0.18 | $Q$ | $V$ |
| :--- | :--- | :--- | :--- | :--- |
| $4+30$ | 0.0402 | 0.18 | $Q$ | $V$ |
| $4+35$ | 0.0415 | 0.18 | $Q$ | $V$ |
| $4+40$ | 0.0427 | 0.18 | $Q$ | $V$ |
| $4+45$ | 0.0439 | 0.18 | $Q$ | $V$ |
| $4+50$ | 0.0453 | 0.19 | $Q$ | $V$ |
| $4+55$ | 0.0467 | 0.20 | $Q$ | $V$ |


| 6+55 | 0.0817 | 0.26 | IQ | V I | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 7+ 0 | 0.0834 | 0.26 | IQ | V I | \| |
| 7+ 5 | 0.0852 | 0.26 | IQ | V I | \\| |
| 7+10 | 0.0870 | 0.26 | IQ | V I | \| |
| 7+15 | 0.0887 | 0.26 | IQ | v I | \| |
| 7+20 | 0.0906 | 0.27 | IQ | V I | \| |
| 7+25 | 0.0925 | 0.28 | IQ | $\checkmark 1$ | \| |
| 7+30 | 0.0945 | 0.28 | IQ | $\vee 1$ | \| |
| 7+35 | 0.0965 | 0.30 | IQ | $\vee$ I | \| |
| 7+40 | 0.0986 | 0.31 | IQ | $\vee$ I | \| |
| 7+45 | 0.1007 | 0.31 | IQ | $\checkmark$ I | \| |
| 7+50 | 0.1030 | 0.32 | IQ | $\checkmark$ I | \| |
| 7+55 | 0.1053 | 0.33 | IQ | $\vee$ I | \| |
| $8+0$ | 0.1076 | 0.33 | IQ | v I | 1 |
| $8+5$ | 0.1100 | 0.36 | IQ | V I | \| |
| 8+10 | 0.1127 | 0.38 | IQ | V I | \| |
| $8+15$ | 0.1153 | 0.38 | IQ | v I | \| |
| $8+20$ | 0.1180 | 0.38 | IQ | v I | 1 |
| $8+25$ | 0.1206 | 0.38 | IQ | VI | I |
| 8+30 | 0.1233 | 0.38 | IQ | VI | \| |
| $8+35$ | 0.1260 | 0.40 | IQ | v 1 | \| |
| $8+40$ | 0.1288 | 0.41 | IQ | vI | 1 |
| 8+45 | 0.1317 | 0.41 | IQ | VI | \| |
| $8+50$ | 0.1346 | 0.42 | IQ | V | \| |
| $8+55$ | 0.1376 | 0.44 | IQ | V | \| |
| $9+0$ | 0.1406 | 0.44 | IQ | V | \| |
| 9+ 5 | 0.1438 | 0.46 | IQ | V | \| |
| 9+10 | 0.1471 | 0.49 | IQ | IV | 1 |
| 9+15 | 0.1505 | 0.49 | IQ | IV | 1 |
| 9+20 | 0.1540 | 0.50 | \\| Q | IV | \| |


| 9+25 | 0.1575 | 0.51 | \| Q | IV |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+30 | 0.1610 | 0.51 | \| Q |  | v |  |  |
| 9+35 | 0.1646 | 0.53 | \| Q | \| | v |  |  |
| 9+40 | 0.1684 | 0.54 | \| Q | \| | v |  |  |
| 9+45 | 0.1721 | 0.54 | \| Q | \| | v |  |  |
| 9+50 | 0.1759 | 0.55 | \| Q | 1 | v |  |  |
| 9+55 | 0.1798 | 0.56 | \| Q | 1 | v |  |  |
| 10+ 0 | 0.1836 | 0.56 | \| Q | \\| | v |  |  |
| 10+ 5 | 0.1869 | 0.47 | IQ | \| | v |  |  |
| 10+10 | 0.1895 | 0.39 | IQ | 1 | V |  |  |
| 10+15 | 0.1922 | 0.38 | IQ | \| | v |  |  |
| 10+20 | 0.1948 | 0.38 | IQ | \| | v |  |  |
| 10+25 | 0.1975 | 0.38 | IQ | \| | V |  |  |
| 10+30 | 0.2001 | 0.38 | IQ | 1 | v |  |  |
| 10+35 | 0.2033 | 0.45 | IQ | \| | v |  |  |
| 10+40 | 0.2068 | 0.51 | \| Q | 1 | v |  |  |
| 10+45 | 0.2103 | 0.51 | \| Q | 1 | V |  |  |
| 10+50 | 0.2138 | 0.51 | \\| Q | 1 | v |  |  |
| 10+55 | 0.2174 | 0.51 | \| Q | 1 | v |  |  |
| 11+ 0 | 0.2209 | 0.51 | \\| Q | 1 | v |  |  |
| 11+ 5 | 0.2243 | 0.50 | IQ | 1 | v |  |  |
| 11+10 | 0.2277 | 0.49 | IQ | 1 |  |  |  |
| 11+15 | 0.2311 | 0.49 | IQ | 1 |  |  |  |
| 11+20 | 0.2344 | 0.49 | IQ | 1 |  |  |  |
| 11+25 | 0.2378 | 0.49 | IQ | 1 |  |  |  |
| 11+30 | 0.2411 | 0.49 | IQ | 1 |  | $v$ |  |
| 11+35 | 0.2443 | 0.46 | IQ | 1 |  | V |  |
| $11+40$ | 0.2473 | 0.44 | IQ | 1 |  | V |  |
| 11+45 | 0.2503 | 0.44 | IQ | 1 |  | V |  |
| 11+50 | 0.2534 | 0.45 | IQ | \| |  | v |  |


| $11+55$ | 0.2566 | 0.46 | IQ |
| :--- | :--- | :--- | :--- |
| $12+0$ | 0.2598 | 0.46 | IQ |
| $12+5$ | 0.2636 | 0.56 | $\mid \mathrm{Q}$ |
| $12+10$ | 0.2680 | 0.64 | $\mid \mathrm{Q}$ |
| $12+15$ | 0.2724 | 0.64 | $\mid \mathrm{Q}$ |
| $12+20$ | 0.2769 | 0.66 | $\mid \mathrm{Q}$ |
| $12+25$ | 0.2815 | 0.67 | Q |

|
$12+30$
|
\|
$12+35$
$12+40$
$12+45$ | $12+50$ 12+55
$13+0$
$13+5$
$13+10$
|
|
13+15
$13+20$
|
$13+25$
$13+30$
|
13+35
$13+40$
$13+45$ $13+50$
$13+55$ |

14+ 0
$14+5$
$14+10$
14+15
$14+20$

| $14+25$ | 0.4003 | 0.67 | $\mid Q Q$ | $\mid$ | $\mid$ | V |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mid$ | $14+30$ | 0.4049 | 0.67 | $\mid Q Q$ | $\mid$ | $\mid$ |
| $\mid$ | $14+35$ | 0.4095 | 0.67 | $\mid Q Q$ | $\mid$ | $\mid$ |
| $\mid$ | $14+40$ | 0.4140 | 0.67 | $\mid Q Q$ | $\mid$ | $\mid$ |
| $\mid$ | $14+45$ | 0.4186 | 0.67 | $\mid Q Q$ | $\mid$ | $\mid V$ |
| $\mid$ | $14+50$ | 0.4231 | 0.65 | $\mid Q Q$ | $\mid$ | $\mid V$ |
| $\mid$ | $14+55$ | 0.4276 | 0.64 | $\mid Q Q$ | $\mid$ | $\mid V$ |

0.4405
0.63 | Q
0.62 | Q
$15+15$
|
$15+20$ $15+25$
$15+30$
$15+35$
\|
$15+40$
|
$15+45$
|
$15+50$
|
$15+55$
|
$16+0$
$16+5$
|
$16+10$
$16+15$
$16+20$
| $16+25$
$16+30$
$16+35$
|
$16+40$
|
$16+45$
$16+50$

| $16+55$ | 0.4858 | 0.08 | Q |
| :--- | :--- | :--- | :--- |
| $17+0$ | 0.4863 | 0.08 | Q |
| $17+5$ | 0.4870 | 0.10 | Q |
| $17+10$ | 0.4879 | 0.13 | Q |
| $17+15$ | 0.4888 | 0.13 | Q |
| $17+20$ | 0.4897 | 0.13 | Q |
| $17+25$ | 0.4906 | 0.13 | Q |


| 19+25 | 0.5062 | 0.10 | Q | \| | \| | \| | V |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19+30 | 0.5069 | 0.10 | Q | \| | \| | \| | V |
| 19+35 | 0.5075 | 0.09 | Q | \| | \| | \| | V |
| 19+40 | 0.5081 | 0.08 | Q | \| | \| | \| | v |
| 19+45 | 0.5086 | 0.08 | Q | \| | \| | \| | v |
| 19+50 | 0.5090 | 0.06 | Q | \| | \| | \| | V |
| 19+55 | 0.5094 | 0.05 | Q | \| | \| | , | V |
| 20+ 0 | 0.5097 | 0.05 | Q | \| | \| | \| | V |
| 20+ 5 | 0.5102 | 0.07 | Q | \| | \| | \| | V |
| 20+10 | 0.5107 | 0.08 | Q | \| | \| | \| | v |
| 20+15 | 0.5112 | 0.08 | Q | \| | \| | \| | V |
| 20+20 | 0.5118 | 0.08 | Q | \| | \| | I | v |
| 20+25 | 0.5123 | 0.08 | Q | \| | \| | I | v |
| 20+30 | 0.5128 | 0.08 | Q | \| | \| | \| | v |
| 20+35 | 0.5134 | 0.08 | Q | \| | \| | \| | V |
| 20+40 | 0.5139 | 0.08 | Q | \| | \| | \| | V |
| 20+45 | 0.5144 | 0.08 | Q | \| | \| | , | v |
| 20+50 | 0.5149 | 0.06 | Q | \| | \| | , | V |
| 20+55 | 0.5152 | 0.05 | Q | I | \| | \| | V |
| 21+ 0 | 0.5156 | 0.05 | Q | \| | \| | 1 | V |
| 21+ 5 | 0.5160 | 0.07 | Q | \| | I | 1 | V |
| 21+10 | 0.5165 | 0.08 | Q | \| | \| | 1 | V |
| 21+15 | 0.5171 | 0.08 | Q | \| | , | , |  |
| 21+20 | 0.5175 | 0.06 | Q | । | , | \| |  |
|  |  |  |  |  |  |  |  |
| 21+25 | 0.5179 | 0.05 | Q | \| | \| | \| |  |
| 21+30 | 0.5182 | 0.05 | Q | I | । | 1 |  |
| 21+35 | 0.5187 | 0.07 | Q | \| | \| | 1 |  |
| 21+40 | 0.5192 | 0.08 | Q | \| | \| | \| |  |
| 21+45 | 0.5197 | 0.08 | Q | \| | \| | \| |  |
| 21+50 | 0.5202 | 0.06 | Q | \| | । | \| |  |



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post2410.out
                    _+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.93
7.72

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.07 | 0.024 | ( 0.274) | 0.009 | 0.015 |
| 2 | 0.17 | 0.07 | 0.024 | (0.273) | 0.009 | 0.015 |
| 3 | 0.25 | 0.07 | 0.024 | ( 0.272) | 0.009 | 0.015 |
| 4 | 0.33 | 0.10 | 0.037 | ( 0.271) | 0.014 | 0.023 |
| 5 | 0.42 | 0.10 | 0.037 | ( 0.270) | 0.014 | 0.023 |
| 6 | 0.50 | 0.10 | 0.037 | ( 0.269) | 0.014 | 0.023 |
| 7 | 0.58 | 0.10 | 0.037 | ( 0.268) | 0.014 | 0.023 |
| 8 | 0.67 | 0.10 | 0.037 | ( 0.267) | 0.014 | 0.023 |
| 9 | 0.75 | 0.10 | 0.037 | ( 0.266) | 0.014 | 0.023 |
| 10 | 0.83 | 0.13 | 0.049 | ( 0.265) | 0.019 | 0.030 |
| 11 | 0.92 | 0.13 | 0.049 | ( 0.264) | 0.019 | 0.030 |
| 12 | 1.00 | 0.13 | 0.049 | ( 0.263) | 0.019 | 0.030 |
| 13 | 1.08 | 0.10 | 0.037 | ( 0.262) | 0.014 | 0.023 |
| 14 | 1.17 | 0.10 | 0.037 | ( 0.261) | 0.014 | 0.023 |
| 15 | 1.25 | 0.10 | 0.037 | ( 0.260) | 0.014 | 0.023 |
| 16 | 1.33 | 0.10 | 0.037 | ( 0.259) | 0.014 | 0.023 |
| 17 | 1.42 | 0.10 | 0.037 | ( 0.258) | 0.014 | 0.023 |
| 18 | 1.50 | 0.10 | 0.037 | ( 0.257) | 0.014 | 0.023 |
| 19 | 1.58 | 0.10 | 0.037 | ( 0.255) | 0.014 | 0.023 |
| 20 | 1.67 | 0.10 | 0.037 | ( 0.254) | 0.014 | 0.023 |
| 21 | 1.75 | 0.10 | 0.037 | ( 0.253) | 0.014 | 0.023 |
| 22 | 1.83 | 0.13 | 0.049 | ( 0.252) | 0.019 | 0.030 |
| 23 | 1.92 | 0.13 | 0.049 | (0.251) | 0.019 | 0.030 |
| 24 | 2.00 | 0.13 | 0.049 | ( 0.250) | 0.019 | 0.030 |
| 25 | 2.08 | 0.13 | 0.049 | ( 0.249) | 0.019 | 0.030 |
| 26 | 2.17 | 0.13 | 0.049 | ( 0.248) | 0.019 | 0.030 |
| 27 | 2.25 | 0.13 | 0.049 | ( 0.247) | 0.019 | 0.030 |
| 28 | 2.33 | 0.13 | 0.049 | ( 0.246) | 0.019 | 0.030 |
| 29 | 2.42 | 0.13 | 0.049 | ( 0.245) | 0.019 | 0.030 |
| 30 | 2.50 | 0.13 | 0.049 | ( 0.244) | 0.019 | 0.030 |
| 31 | 2.58 | 0.17 | 0.061 | ( 0.243) | 0.023 | 0.038 |
| 32 | 2.67 | 0.17 | 0.061 | ( 0.242) | 0.023 | 0.038 |
| 33 | 2.75 | 0.17 | 0.061 | ( 0.241) | 0.023 | 0.038 |
| 34 | 2.83 | 0.17 | 0.061 | ( 0.240) | 0.023 | 0.038 |
| 35 | 2.92 | 0.17 | 0.061 | ( 0.239) | 0.023 | 0.038 |
| 36 | 3.00 | 0.17 | 0.061 | ( 0.238) | 0.023 | 0.038 |
| 37 | 3.08 | 0.17 | 0.061 | ( 0.237) | 0.023 | 0.038 |
| 38 | 3.17 | 0.17 | 0.061 | ( 0.236) | 0.023 | 0.038 |
| 39 | 3.25 | 0.17 | 0.061 | ( 0.235) | 0.023 | 0.038 |
| 40 | 3.33 | 0.17 | 0.061 | ( 0.234) | 0.023 | 0.038 |
| 41 | 3.42 | 0.17 | 0.061 | ( 0.233) | 0.023 | 0.038 |
| 42 | 3.50 | 0.17 | 0.061 | ( 0.232) | 0.023 | 0.038 |
| 43 | 3.58 | 0.17 | 0.061 | ( 0.232) | 0.023 | 0.038 |
| 44 | 3.67 | 0.17 | 0.061 | ( 0.231) | 0.023 | 0.038 |
| 45 | 3.75 | 0.17 | 0.061 | ( 0.230) | 0.023 | 0.038 |
| 46 | 3.83 | 0.20 | 0.073 | ( 0.229) | 0.028 | 0.045 |
| 47 | 3.92 | 0.20 | 0.073 | ( 0.228) | 0.028 | 0.045 |
| 48 | 4.00 | 0.20 | 0.073 | ( 0.227) | 0.028 | 0.045 |
| 49 | 4.08 | 0.20 | 0.073 | ( 0.226) | 0.028 | 0.045 |
| 50 | 4.17 | 0.20 | 0.073 | ( 0.225) | 0.028 | 0.045 |
| 51 | 4.25 | 0.20 | 0.073 | (0.224) | 0.028 | 0.045 |
| 52 | 4.33 | 0.23 | 0.085 | ( 0.223) | 0.032 | 0.053 |
| 53 | 4.42 | 0.23 | 0.085 | ( 0.222) | 0.032 | 0.053 |
| 54 | 4.50 | 0.23 | 0.085 | ( 0.221) | 0.032 | 0.053 |
| 55 | 4.58 | 0.23 | 0.085 | ( 0.220) | 0.032 | 0.053 |
| 56 | 4.67 | 0.23 | 0.085 | ( 0.219) | 0.032 | 0.053 |
| 57 | 4.75 | 0.23 | 0.085 | ( 0.218) | 0.032 | 0.053 |
| 58 | 4.83 | 0.27 | 0.097 | ( 0.217) | 0.037 | 0.060 |
| 59 | 4.92 | 0.27 | 0.097 | ( 0.216) | 0.037 | 0.060 |


| 60 | 5.00 | 0.27 | 0.097 | $0.215)$ | 0.037 | 0.060 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 61 | 5.08 | 0.20 | 0.073 | $0.214)$ | 0.028 | 0.045 |
| 62 | 5.17 | 0.20 | 0.073 | $0.213)$ | 0.028 | 0.045 |
| 63 | 5.25 | 0.20 | 0.073 | $0.212)$ | 0.028 | 0.045 |
| 64 | 5.33 | 0.23 | 0.085 | $0.212)$ | 0.032 | 0.053 |
| 65 | 5.42 | 0.23 | 0.085 | 0.211) | 0.032 | 0.053 |
| 66 | 5.50 | 0.23 | 0.085 | 0.210) | 0.032 | 0.053 |
| 67 | 5.58 | 0.27 | 0.097 | $0.209)$ | 0.037 | 0.060 |
| 68 | 5.67 | 0.27 | 0.097 | 0.208) | 0.037 | 0.060 |
| 69 | 5.75 | 0.27 | 0.097 | $0.207)$ | 0.037 | 0.060 |
| 70 | 5.83 | 0.27 | 0.097 | $0.206)$ | 0.037 | 0.060 |
| 71 | 5.92 | 0.27 | 0.097 | $0.205)$ | 0.037 | 0.060 |
| 72 | 6.00 | 0.27 | 0.097 | $0.204)$ | 0.037 | 0.060 |
| 73 | 6.08 | 0.30 | 0.110 | $0.203)$ | 0.042 | 0.068 |
| 74 | 6.17 | 0.30 | 0.110 | $0.202)$ | 0.042 | 0.068 |
| 75 | 6.25 | 0.30 | 0.110 | $0.202)$ | 0.042 | 0.068 |
| 76 | 6.33 | 0.30 | 0.110 | $0.201)$ | 0.042 | 0.068 |
| 77 | 6.42 | 0.30 | 0.110 | 0.200) | 0.042 | 0.068 |
| 78 | 6.50 | 0.30 | 0.110 | $0.199)$ | 0.042 | 0.068 |
| 79 | 6.58 | 0.33 | 0.122 | $0.198)$ | 0.046 | 0.076 |
| 80 | 6.67 | 0.33 | 0.122 | $0.197)$ | 0.046 | 0.076 |
| 81 | 6.75 | 0.33 | 0.122 | $0.196)$ | 0.046 | 0.076 |
| 82 | 6.83 | 0.33 | 0.122 | $0.195)$ | 0.046 | 0.076 |
| 83 | 6.92 | 0.33 | 0.122 | $0.194)$ | 0.046 | 0.076 |
| 84 | 7.00 | 0.33 | 0.122 | $0.193)$ | 0.046 | 0.076 |
| 85 | 7.08 | 0.33 | 0.122 | $0.193)$ | 0.046 | 0.076 |
| 86 | 7.17 | 0.33 | 0.122 | $0.192)$ | 0.046 | 0.076 |
| 87 | 7.25 | 0.33 | 0.122 | $0.191)$ | 0.046 | 0.076 |
| 88 | 7.33 | 0.37 | 0.134 | 0.190) | 0.051 | 0.083 |
| 89 | 7.42 | 0.37 | 0.134 | $0.189)$ | 0.051 | 0.083 |
| 90 | 7.50 | 0.37 | 0.134 | $0.188)$ | 0.051 | 0.083 |
| 91 | 7.58 | 0.40 | 0.146 | $0.187)$ | 0.056 | 0.091 |
| 92 | 7.67 | 0.40 | 0.146 | $0.187)$ | 0.056 | 0.091 |
| 93 | 7.75 | 0.40 | 0.146 | $0.186)$ | 0.056 | 0.091 |
| 94 | 7.83 | 0.43 | 0.158 | $0.185)$ | 0.060 | 0.098 |
| 95 | 7.92 | 0.43 | 0.158 | $0.184)$ | 0.060 | 0.098 |
| 96 | 8.00 | 0.43 | 0.158 | $0.183)$ | 0.060 | 0.098 |
| 97 | 8.08 | 0.50 | 0.183 | $0.182)$ | 0.069 | 0.113 |
| 98 | 8.17 | 0.50 | 0.183 | 0.181) | 0.069 | 0.113 |
| 99 | 8.25 | 0.50 | 0.183 | 0.181) | 0.069 | 0.113 |
| 100 | 8.33 | 0.50 | 0.183 | 0.180) | 0.069 | 0.113 |
| 101 | 8.42 | 0.50 | 0.183 | $0.179)$ | 0.069 | 0.113 |
| 102 | 8.50 | 0.50 | 0.183 | $0.178)$ | 0.069 | 0.113 |
| 103 | 8.58 | 0.53 | 0.195 | 0.177) | 0.074 | 0.121 |
| 104 | 8.67 | 0.53 | 0.195 | $0.176)$ | 0.074 | 0.121 |
| 105 | 8.75 | 0.53 | 0.195 | $0.176)$ | 0.074 | 0.121 |
| 106 | 8.83 | 0.57 | 0.207 | $0.175)$ | 0.079 | 0.128 |
| 107 | 8.92 | 0.57 | 0.207 | $0.174)$ | 0.079 | 0.128 |
| 108 | 9.00 | 0.57 | 0.207 | $0.173)$ | 0.079 | 0.128 |
| 109 | 9.08 | 0.63 | 0.231 | $0.172)$ | 0.088 | 0.143 |
| 110 | 9.17 | 0.63 | 0.231 | 0.171) | 0.088 | 0.143 |
| 111 | 9.25 | 0.63 | 0.231 | 0.171) | 0.088 | 0.143 |
| 112 | 9.33 | 0.67 | 0.244 | 0.170) | 0.093 | 0.151 |
| 113 | 9.42 | 0.67 | 0.244 | $0.169)$ | 0.093 | 0.151 |
| 114 | 9.50 | 0.67 | 0.244 | $0.168)$ | 0.093 | 0.151 |
| 115 | 9.58 | 0.70 | 0.256 | $0.167)$ | 0.097 | 0.159 |
| 116 | 9.67 | 0.70 | 0.256 | $0.167)$ | 0.097 | 0.159 |
| 117 | 9.75 | 0.70 | 0.256 | $0.166)$ | 0.097 | 0.159 |
| 118 | 9.83 | 0.73 | 0.268 | 0.165) | 0.102 | 0.166 |
| 119 | 9.92 | 0.73 | 0.268 | $0.164)$ | 0.102 | 0.166 |


| 120 | 10.00 | 0.73 | 0.268 | 0.163) | 0.102 | 0.166 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 121 | 10.08 | 0.50 | 0.183 | 0.163) | 0.069 | 0.113 |
| 122 | 10.17 | 0.50 | 0.183 | 0.162) | 0.069 | 0.113 |
| 123 | 10.25 | 0.50 | 0.183 | 0.161) | 0.069 | 0.113 |
| 124 | 10.33 | 0.50 | 0.183 | 0.160) | 0.069 | 0.113 |
| 125 | 10.42 | 0.50 | 0.183 | 0.159) | 0.069 | 0.113 |
| 126 | 10.50 | 0.50 | 0.183 | 0.159) | 0.069 | 0.113 |
| 127 | 10.58 | 0.67 | 0.244 | 0.158) | 0.093 | 0.151 |
| 128 | 10.67 | 0.67 | 0.244 | 0.157) | 0.093 | 0.151 |
| 129 | 10.75 | 0.67 | 0.244 | $0.156)$ | 0.093 | 0.151 |
| 130 | 10.83 | 0.67 | 0.244 | 0.156) | 0.093 | 0.151 |
| 131 | 10.92 | 0.67 | 0.244 | $0.155)$ | 0.093 | 0.151 |
| 132 | 11.00 | 0.67 | 0.244 | $0.154)$ | 0.093 | 0.151 |
| 133 | 11.08 | 0.63 | 0.231 | 0.153) | 0.088 | 0.143 |
| 134 | 11.17 | 0.63 | 0.231 | 0.153) | 0.088 | 0.143 |
| 135 | 11.25 | 0.63 | 0.231 | 0.152) | 0.088 | 0.143 |
| 136 | 11.33 | 0.63 | 0.231 | 0.151) | 0.088 | 0.143 |
| 137 | 11.42 | 0.63 | 0.231 | 0.150) | 0.088 | 0.143 |
| 138 | 11.50 | 0.63 | 0.231 | 0.150) | 0.088 | 0.143 |
| 139 | 11.58 | 0.57 | 0.207 | 0.149) | 0.079 | 0.128 |
| 140 | 11.67 | 0.57 | 0.207 | 0.148) | 0.079 | 0.128 |
| 141 | 11.75 | 0.57 | 0.207 | 0.147) | 0.079 | 0.128 |
| 142 | 11.83 | 0.60 | 0.219 | 0.147) | 0.083 | 0.136 |
| 143 | 11.92 | 0.60 | 0.219 | 0.146) | 0.083 | 0.136 |
| 144 | 12.00 | 0.60 | 0.219 | $0.145)$ | 0.083 | 0.136 |
| 145 | 12.08 | 0.83 | 0.304 | $0.144)$ | 0.116 | 0.189 |
| 146 | 12.17 | 0.83 | 0.304 | $0.144)$ | 0.116 | 0.189 |
| 147 | 12.25 | 0.83 | 0.304 | $0.143)$ | 0.116 | 0.189 |
| 148 | 12.33 | 0.87 | 0.317 | $0.142)$ | 0.120 | 0.196 |
| 149 | 12.42 | 0.87 | 0.317 | 0.142) | 0.120 | 0.196 |
| 150 | 12.50 | 0.87 | 0.317 | 0.141) | 0.120 | 0.196 |
| 151 | 12.58 | 0.93 | 0.341 | 0.140) | 0.130 | 0.211 |
| 152 | 12.67 | 0.93 | 0.341 | 0.139) | 0.130 | 0.211 |
| 153 | 12.75 | 0.93 | 0.341 | 0.139) | 0.130 | 0.211 |
| 154 | 12.83 | 0.97 | 0.353 | 0.138) | 0.134 | 0.219 |
| 155 | 12.92 | 0.97 | 0.353 | 0.137) | 0.134 | 0.219 |
| 156 | 13.00 | 0.97 | 0.353 | $0.137)$ | 0.134 | 0.219 |
| 157 | 13.08 | 1.13 | 0.414 | 0.136 | 0.157) | 0.278 |
| 158 | 13.17 | 1.13 | 0.414 | 0.135 | $0.157)$ | 0.279 |
| 159 | 13.25 | 1.13 | 0.414 | 0.135 | $0.157)$ | 0.280 |
| 160 | 13.33 | 1.13 | 0.414 | 0.134 | 0.157) | 0.280 |
| 161 | 13.42 | 1.13 | 0.414 | 0.133 | 0.157) | 0.281 |
| 162 | 13.50 | 1.13 | 0.414 | 0.133 | $0.157)$ | 0.282 |
| 163 | 13.58 | 0.77 | 0.280 | 0.132) | 0.106 | 0.174 |
| 164 | 13.67 | 0.77 | 0.280 | 0.131) | 0.106 | 0.174 |
| 165 | 13.75 | 0.77 | 0.280 | 0.130) | 0.106 | 0.174 |
| 166 | 13.83 | 0.77 | 0.280 | 0.130) | 0.106 | 0.174 |
| 167 | 13.92 | 0.77 | 0.280 | 0.129) | 0.106 | 0.174 |
| 168 | 14.00 | 0.77 | 0.280 | 0.129) | 0.106 | 0.174 |
| 169 | 14.08 | 0.90 | 0.329 | 0.128) | 0.125 | 0.204 |
| 170 | 14.17 | 0.90 | 0.329 | 0.127) | 0.125 | 0.204 |
| 171 | 14.25 | 0.90 | 0.329 | 0.127) | 0.125 | 0.204 |
| 172 | 14.33 | 0.87 | 0.317 | 0.126) | 0.120 | 0.196 |
| 173 | 14.42 | 0.87 | 0.317 | 0.125) | 0.120 | 0.196 |
| 174 | 14.50 | 0.87 | 0.317 | $0.125)$ | 0.120 | 0.196 |
| 175 | 14.58 | 0.87 | 0.317 | $0.124)$ | 0.120 | 0.196 |
| 176 | 14.67 | 0.87 | 0.317 | 0.123) | 0.120 | 0.196 |
| 177 | 14.75 | 0.87 | 0.317 | 0.123) | 0.120 | 0.196 |
| 178 | 14.83 | 0.83 | 0.304 | 0.122) | 0.116 | 0.189 |
| 179 | 14.92 | 0.83 | 0.304 | 0.121) | 0.116 | 0.189 |




Peak flow rate of this hydrograph $=\quad 1.134(\mathrm{CFS})$


| 1+55 | 0.0145 | 0.12 | Q | \\| | I |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2+ 0 | 0.0153 | 0.12 | Q | \| | \| |
| 2+ 5 | 0.0162 | 0.12 | QV | 1 | \| |
| 2+10 | 0.0170 | 0.12 | QV | , | \| |
| 2+15 | 0.0178 | 0.12 | QV | 1 | \| |
| 2+20 | 0.0187 | 0.12 | QV | , | \| |
| 2+25 | 0.0195 | 0.12 | QV | 1 | 1 |
| 2+30 | 0.0204 | 0.12 | QV | \| | \| |
| 2+35 | 0.0213 | 0.14 | QV | 1 | 1 |
| 2+40 | 0.0224 | 0.15 | QV | I | \| |
| 2+45 | 0.0234 | 0.15 | QV | 1 | \| |
| 2+50 | 0.0245 | 0.15 | QV | 1 | \| |
| 2+55 | 0.0255 | 0.15 | QV | 1 | \| |
| $3+0$ | 0.0266 | 0.15 | QV | 1 | \| |
| $3+5$ | 0.0276 | 0.15 | QV | 1 | I |
| 3+10 | 0.0287 | 0.15 | QV | 1 | \| |
| 3+15 | 0.0297 | 0.15 | QV | 1 | I |
| $3+20$ | 0.0307 | 0.15 | QV | 1 | 1 |
| $3+25$ | 0.0318 | 0.15 | Q V | 1 | I |
| 3+30 | 0.0328 | 0.15 | Q V | 1 | \| |
| 3+35 | 0.0339 | 0.15 | Q V | 1 | I |
| 3+40 | 0.0349 | 0.15 | Q V | 1 | 1 |
| $3+45$ | 0.0360 | 0.15 | Q V | 1 | 1 |
| 3+50 | 0.0372 | 0.17 | Q V | 1 | \| |
| 3+55 | 0.0384 | 0.18 | Q V | 1 | 1 |
| 4+ 0 | 0.0397 | 0.18 | Q V | 1 | 1 |
| 4+ 5 | 0.0409 | 0.18 | Q V | 1 | I |
| 4+10 | 0.0422 | 0.18 | Q V | 1 | \| |
| 4+15 | 0.0434 | 0.18 | Q V | 1 | \| |
| 4+20 | 0.0448 | 0.20 | Q V | , | \| |


| $4+25$ | 0.0463 | 0.21 | $Q$ | $V$ |
| :--- | :--- | :--- | :--- | :--- |
| $4+30$ | 0.0477 | 0.21 | $Q$ | $V$ |
| $4+35$ | 0.0492 | 0.21 | $Q$ | $V$ |
| $4+40$ | 0.0507 | 0.21 | $Q$ | $V$ |
| $4+45$ | 0.0522 | 0.21 | $Q$ | $V$ |
| $4+50$ | 0.0537 | 0.23 | $Q$ | $V$ |
| $4+55$ | 0.0554 | 0.24 | $Q$ | $V$ |


| 6+55 | 0.0969 | 0.30 | IQ | v | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 7+ 0 | 0.0990 | 0.30 | IQ | V I | \| |
| 7+ 5 | 0.1011 | 0.30 | IQ | v l | \| |
| 7+10 | 0.1032 | 0.30 | IQ | v | \| |
| 7+15 | 0.1053 | 0.30 | IQ | v | \| |
| 7+20 | 0.1075 | 0.32 | IQ | v | \| |
| 7+25 | 0.1098 | 0.33 | IQ | V I | \| |
| 7+30 | 0.1122 | 0.34 | IQ | $\checkmark$ I | \| |
| 7+35 | 0.1146 | 0.35 | IQ | $\vee$ I | \| |
| 7+40 | 0.1171 | 0.36 | IQ | $\vee$ I | 1 |
| 7+45 | 0.1196 | 0.37 | IQ | $\vee$ I | \| |
| 7+50 | 0.1222 | 0.38 | IQ | $\vee$ I | \| |
| 7+55 | 0.1250 | 0.40 | IQ | $\vee$ I | \| |
| $8+0$ | 0.1277 | 0.40 | IQ | v I | 1 |
| 8+ 5 | 0.1306 | 0.43 | IQ | V I | \| |
| 8+10 | 0.1338 | 0.46 | IQ | V I | \| |
| 8+15 | 0.1369 | 0.46 | IQ | v I | \| |
| $8+20$ | 0.1401 | 0.46 | IQ | v I | 1 |
| 8+25 | 0.1432 | 0.46 | IQ | VI | 1 |
| 8+30 | 0.1464 | 0.46 | IQ | VI | I |
| 8+35 | 0.1496 | 0.47 | IQ | v 1 | \| |
| $8+40$ | 0.1530 | 0.49 | IQ | vI | 1 |
| $8+45$ | 0.1563 | 0.49 | IQ | VI | \| |
| 8+50 | 0.1598 | 0.50 | \| Q | V | 1 |
| $8+55$ | 0.1634 | 0.52 | \\| Q | V | 1 |
| 9+ 0 | 0.1669 | 0.52 | \\| Q | v | \| |
| 9+ 5 | 0.1707 | 0.55 | \\| Q | V | 1 |
| 9+10 | 0.1747 | 0.58 | \\| Q | IV | 1 |
| 9+15 | 0.1787 | 0.58 | \\| Q | IV | 1 |
| $9+20$ | 0.1828 | 0.60 | \\| Q | IV | \| |


| 9+25 | 0.1870 | 0.61 | \| Q | IV |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+30 | 0.1912 | 0.61 | \| Q | \| | v |  |  |
| 9+35 | 0.1955 | 0.63 | \| Q | \| | v |  |  |
| 9+40 | 0.1999 | 0.64 | \| Q | \| | v |  | \| |
| 9+45 | 0.2043 | 0.64 | \| Q | \| | v |  | \| |
| 9+50 | 0.2088 | 0.66 | \| Q | \| | v |  | \| |
| 9+55 | 0.2134 | 0.67 | \| Q | \| | v |  | \| |
| 10+ 0 | 0.2180 | 0.67 | \| Q | \\| | v |  | \| |
| 10+ 5 | 0.2218 | 0.55 | \| Q | \| | v |  | \| |
| 10+10 | 0.2250 | 0.46 | IQ | \| | V |  | \| |
| 10+15 | 0.2282 | 0.46 | IQ | \| | V |  | \| |
| 10+20 | 0.2313 | 0.46 | IQ | \| | v |  | \| |
| 10+25 | 0.2345 | 0.46 | IQ | \| | V |  | \| |
| 10+30 | 0.2376 | 0.46 | IQ | \| | $v$ |  |  |
| 10+35 | 0.2413 | 0.54 | \| Q | \| | V |  | \| |
| 10+40 | 0.2455 | 0.60 | \| Q | \| | V |  | \| |
| 10+45 | 0.2497 | 0.61 | \| Q | I | V |  | \| |
| 10+50 | 0.2539 | 0.61 | \\| Q | \| |  |  |  |
| 10+55 | 0.2581 | 0.61 | \| Q | \| |  |  |  |
| 11+ 0 | 0.2623 | 0.61 | \\| Q | 1 |  |  | \| |
| 11+ 5 | 0.2664 | 0.59 | \| Q | \| |  |  | \| |
| 11+10 | 0.2703 | 0.58 | \| Q | I |  | V |  |
| 11+15 | 0.2743 | 0.58 | \| Q | \| |  | V |  |
| 11+20 | 0.2783 | 0.58 | \| Q | 1 |  | V |  |
| 11+25 | 0.2823 | 0.58 | \| Q | I |  | V |  |
| 11+30 | 0.2863 | 0.58 | \| Q | 1 |  | V |  |
| 11+35 | 0. 2900 | 0.55 | \| Q | 1 |  | V |  |
| $11+40$ | 0.2936 | 0.52 | \\| Q | 1 |  | V |  |
| 11+45 | 0.2972 | 0.52 | \| Q | 1 |  | V |  |
| 11+50 | 0.3009 | 0.53 | \| Q | 1 |  |  |  |


| $11+55$ | 0.3046 | 0.55 | Q |  |
| :--- | :--- | :--- | :--- | :--- |
| $12+0$ | 0.3084 | 0.55 | Q |  |
| $12+5$ | 0.3130 | 0.66 | Q |  |
| $12+10$ | 0.3182 | 0.76 | Q | Q |
| $12+15$ | 0.3234 | 0.76 | I | Q |
| $12+20$ | 0.3288 | 0.78 | I | Q |
| $12+25$ | 0.3342 | 0.79 | Q |  |

I
$12+30$
|
\|
$12+40$
$12+45$
|
$12+50$
$12+55$
|
।
$13+0$ $13+5$
$13+10$ |

| $13+15$ | 0.3977 |
| :--- | :--- |
| $13+20$ | 0.4055 |

|
13+25
$13+30$
|
$13+35$
$13+40$
$13+45$
| 13+50 | 13+55 $14+0$
$14+5$ | 14+10 | 14+15 $14+20$

| 14+25 | 0.4791 | 0.79 | 1 | Q | \| | 1 | v |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 14+30 | 0.4845 | 0.79 | \| | Q | \| | \| | V |
| 14+35 | 0.4900 | 0.79 | \| | Q | \| | \| | v |
| $14+40$ | 0.4954 | 0.79 | 1 | Q | \| | \| | IV |
| $14+45$ | 0.5009 | 0.79 | 1 | Q | \| | 1 | IV |
| 14+50 | 0.5062 | 0.78 | 1 | Q | 1 | I | IV |
| 14+55 | 0.5115 | 0.76 | 1 | Q | 1 | I | 1 V |
| $15+0$ | 0.5167 | 0.76 | 1 | Q | \| | \| | \| V |

0.74 | Q
0.73 | Q
$\begin{array}{lll}1 & I & V \\ 1 & I & v\end{array}$
15+20
| $15+25$
$15+30$
$15+35$
0.5465
0.5508
0.73 | Q
0.71 | Q
$15+40$
|
$15+45$
0.5549
0.5588
0.70 | Q
0.70 | Q
$15+50$
|
15+55
0.5628
0.63 | Q
0.58 | Q
|
16+ 0 $16+5$
|
$16+10$
$16+15$
16+15
$16+20$
16+25
0.5668
0.58 | Q
0.58 | Q
0.58 | Q
0.58 | Q
0.33 IQ
0.13 Q
$16+30$
0.5765
0.5774
0.12 Q
0.12 Q
0.12 Q
$16+35$
|
$16+40$
0.5781
0.12 Q
$16+45$
0.5787
0.5793
$\begin{array}{ll}0.11 & Q \\ 0.09 & Q \\ 0.09 & Q \\ 0.09 & Q\end{array}$
$16+50$
0.5800

| $16+55$ | 0.5806 | 0.09 | Q |
| :--- | :--- | :--- | :--- |
| $17+0$ | 0.5812 | 0.09 | Q |
| $17+5$ | 0.5821 | 0.12 | Q |
| $17+10$ | 0.5831 | 0.15 | Q |
| $17+15$ | 0.5842 | 0.15 | Q |
| $17+20$ | 0.5852 | 0.15 | Q |
| $17+25$ | 0.5863 | 0.15 | Q |

$17+30$
0.5863
0.5873
0.15 Q
$17+35$
|
$17+40$
0.5884
0.15 Q
|
$17+45$
|
$17+50$
|
$17+55$
$18+0$
I
$18+5$
$18+10$
|
$18+15$
$18+20$
|
$18+25$
0.5973
0.15 Q
0.5894
0.15 Q
0.5905
0.15 Q
0.5914
0.14 Q
0.5922
0.12 Q
$18+30$
0.5981
0.12 Q
0.12 Q
0.12 Q
$18+35$
|
$18+40$
0.5988
$18+45$
0.5995
$18+45$
$18+50$
0.6001
$18+50$
0.6006

$18+55$
0.6010

0.12 Q
0.12 Q
0.12 Q
0.12 Q
0.11 Q
0.09 Q
0.09 Q
0.07 Q
,
19+ 0
0.6015
0.06 Q
|
$19+5$
0.6020
0.06 Q
|
19+10
0.6026
0.08 Q
|
$19+15$
$19+20$
0.6033
0.6040
0.09 Q
0.09 Q
0.11 Q

| 19+25 | 0.6048 | 0.12 | Q | \| | \| | \| | V |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19+30 | 0.6057 | 0.12 | Q | \| | \| | \| | v |
| 19+35 | 0.6064 | 0.11 | Q | \| | \| | \| | V |
| 19+40 | 0.6070 | 0.09 | Q | \| | \| | \| | V |
| 19+45 | 0.6077 | 0.09 | Q | \| | \| | \| | v |
| 19+50 | 0.6082 | 0.07 | Q | \| | \| | \| | v |
| 19+55 | 0.6086 | 0.06 | Q | \| | \| | \| | V |
| 20+ 0 | 0.6090 | 0.06 | Q | \| | \| | \| | V |
| 20+ 5 | 0.6096 | 0.08 | Q | \| | \| | \| | V |
| 20+10 | 0.6102 | 0.09 | Q | \| | \| | \| | v |
| 20+15 | 0.6108 | 0.09 | Q | \| | \| | 1 | V |
| 20+20 | 0.6114 | 0.09 | Q | \| | \| | I | V |
| 20+25 | 0.6121 | 0.09 | Q | \| | \| | , | V |
| 20+30 | 0.6127 | 0.09 | Q | \| | \| | I | V |
| 20+35 | 0.6133 | 0.09 | Q | \| | \| | I | V |
| 20+40 | 0.6140 | 0.09 | Q | \| | \| | I | V |
| 20+45 | 0.6146 | 0.09 | Q | \| | \| | 1 | V |
| 20+50 | 0.6151 | 0.07 | Q | \| | \| | , | V |
| 20+55 | 0.6155 | 0.06 | Q | \| | \| | I | V |
| 21+ 0 | 0.6159 | 0.06 | Q | \| | \| | 1 | V |
| 21+ 5 | 0.6165 | 0.08 | Q | \| | \| | , | V |
| 21+10 | 0.6171 | 0.09 | Q | \| | \| | , | V |
| 21+15 | 0.6177 | 0.09 | Q | \| | \| | 1 |  |
| 21+20 | 0.6182 | 0.07 | Q | \| | । | 1 |  |
|  |  |  |  |  |  |  |  |
| 21+25 | 0.6187 | 0.06 | Q | 1 | 1 | \| |  |
| 21+30 | 0.6191 | 0.06 | Q | \| | \| | \\| |  |
| 21+35 | 0.6196 | 0.08 | Q | 1 | \| | 1 |  |
| 21+40 | 0.6202 | 0.09 | Q | I | \| | 1 |  |
| 21+45 | 0.6209 | 0.09 | Q | \| | \| | 1 |  |
| 21+50 | 0.6214 | 0.07 | Q | \| | \| | \| |  |



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post24100.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.93
7.72

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.07 | 0.037 | ( 0.143) | 0.014 | 0.023 |
| 2 | 0.17 | 0.07 | 0.037 | (0.142) | 0.014 | 0.023 |
| 3 | 0.25 | 0.07 | 0.037 | ( 0.142) | 0.014 | 0.023 |
| 4 | 0.33 | 0.10 | 0.056 | ( 0.141) | 0.021 | 0.035 |
| 5 | 0.42 | 0.10 | 0.056 | ( 0.140) | 0.021 | 0.035 |
| 6 | 0.50 | 0.10 | 0.056 | ( 0.140) | 0.021 | 0.035 |
| 7 | 0.58 | 0.10 | 0.056 | ( 0.139) | 0.021 | 0.035 |
| 8 | 0.67 | 0.10 | 0.056 | ( 0.139) | 0.021 | 0.035 |
| 9 | 0.75 | 0.10 | 0.056 | ( 0.138) | 0.021 | 0.035 |
| 10 | 0.83 | 0.13 | 0.074 | ( 0.138) | 0.028 | 0.046 |
| 11 | 0.92 | 0.13 | 0.074 | ( 0.137) | 0.028 | 0.046 |
| 12 | 1.00 | 0.13 | 0.074 | ( 0.137) | 0.028 | 0.046 |
| 13 | 1.08 | 0.10 | 0.056 | ( 0.136) | 0.021 | 0.035 |
| 14 | 1.17 | 0.10 | 0.056 | ( 0.136) | 0.021 | 0.035 |
| 15 | 1.25 | 0.10 | 0.056 | ( 0.135) | 0.021 | 0.035 |
| 16 | 1.33 | 0.10 | 0.056 | ( 0.134) | 0.021 | 0.035 |
| 17 | 1.42 | 0.10 | 0.056 | ( 0.134) | 0.021 | 0.035 |
| 18 | 1.50 | 0.10 | 0.056 | ( 0.133) | 0.021 | 0.035 |
| 19 | 1.58 | 0.10 | 0.056 | ( 0.133) | 0.021 | 0.035 |
| 20 | 1.67 | 0.10 | 0.056 | ( 0.132) | 0.021 | 0.035 |
| 21 | 1.75 | 0.10 | 0.056 | ( 0.132) | 0.021 | 0.035 |
| 22 | 1.83 | 0.13 | 0.074 | ( 0.131) | 0.028 | 0.046 |
| 23 | 1.92 | 0.13 | 0.074 | ( 0.131) | 0.028 | 0.046 |
| 24 | 2.00 | 0.13 | 0.074 | ( 0.130) | 0.028 | 0.046 |
| 25 | 2.08 | 0.13 | 0.074 | ( 0.130) | 0.028 | 0.046 |
| 26 | 2.17 | 0.13 | 0.074 | ( 0.129) | 0.028 | 0.046 |
| 27 | 2.25 | 0.13 | 0.074 | ( 0.129) | 0.028 | 0.046 |
| 28 | 2.33 | 0.13 | 0.074 | ( 0.128) | 0.028 | 0.046 |
| 29 | 2.42 | 0.13 | 0.074 | ( 0.128) | 0.028 | 0.046 |
| 30 | 2.50 | 0.13 | 0.074 | ( 0.127) | 0.028 | 0.046 |
| 31 | 2.58 | 0.17 | 0.093 | ( 0.127) | 0.035 | 0.058 |
| 32 | 2.67 | 0.17 | 0.093 | ( 0.126) | 0.035 | 0.058 |
| 33 | 2.75 | 0.17 | 0.093 | ( 0.125) | 0.035 | 0.058 |
| 34 | 2.83 | 0.17 | 0.093 | ( 0.125) | 0.035 | 0.058 |
| 35 | 2.92 | 0.17 | 0.093 | ( 0.124) | 0.035 | 0.058 |
| 36 | 3.00 | 0.17 | 0.093 | ( 0.124) | 0.035 | 0.058 |
| 37 | 3.08 | 0.17 | 0.093 | ( 0.123) | 0.035 | 0.058 |
| 38 | 3.17 | 0.17 | 0.093 | ( 0.123) | 0.035 | 0.058 |
| 39 | 3.25 | 0.17 | 0.093 | ( 0.122) | 0.035 | 0.058 |
| 40 | 3.33 | 0.17 | 0.093 | ( 0.122) | 0.035 | 0.058 |
| 41 | 3.42 | 0.17 | 0.093 | ( 0.121) | 0.035 | 0.058 |
| 42 | 3.50 | 0.17 | 0.093 | ( 0.121) | 0.035 | 0.058 |
| 43 | 3.58 | 0.17 | 0.093 | ( 0.120) | 0.035 | 0.058 |
| 44 | 3.67 | 0.17 | 0.093 | ( 0.120) | 0.035 | 0.058 |
| 45 | 3.75 | 0.17 | 0.093 | ( 0.119) | 0.035 | 0.058 |
| 46 | 3.83 | 0.20 | 0.111 | ( 0.119) | 0.042 | 0.069 |
| 47 | 3.92 | 0.20 | 0.111 | ( 0.118) | 0.042 | 0.069 |
| 48 | 4.00 | 0.20 | 0.111 | ( 0.118) | 0.042 | 0.069 |
| 49 | 4.08 | 0.20 | 0.111 | ( 0.117) | 0.042 | 0.069 |
| 50 | 4.17 | 0.20 | 0.111 | ( 0.117) | 0.042 | 0.069 |
| 51 | 4.25 | 0.20 | 0.111 | ( 0.116) | 0.042 | 0.069 |
| 52 | 4.33 | 0.23 | 0.130 | ( 0.116) | 0.049 | 0.081 |
| 53 | 4.42 | 0.23 | 0.130 | ( 0.115) | 0.049 | 0.081 |
| 54 | 4.50 | 0.23 | 0.130 | ( 0.115) | 0.049 | 0.081 |
| 55 | 4.58 | 0.23 | 0.130 | ( 0.114) | 0.049 | 0.081 |
| 56 | 4.67 | 0.23 | 0.130 | ( 0.114) | 0.049 | 0.081 |
| 57 | 4.75 | 0.23 | 0.130 | ( 0.113) | 0.049 | 0.081 |
| 58 | 4.83 | 0.27 | 0.148 | ( 0.113) | 0.056 | 0.092 |
| 59 | 4.92 | 0.27 | 0.148 | ( 0.112) | 0.056 | 0.092 |


| 60 | 5.00 | 0.27 | 0.148 | $0.112)$ | 0.056 | 0.092 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 61 | 5.08 | 0.20 | 0.111 | 0.111) | 0.042 | 0.069 |
| 62 | 5.17 | 0.20 | 0.111 | 0.111) | 0.042 | 0.069 |
| 63 | 5.25 | 0.20 | 0.111 | 0.110) | 0.042 | 0.069 |
| 64 | 5.33 | 0.23 | 0.130 | 0.110) | 0.049 | 0.081 |
| 65 | 5.42 | 0.23 | 0.130 | 0.110) | 0.049 | 0.081 |
| 66 | 5.50 | 0.23 | 0.130 | $0.109)$ | 0.049 | 0.081 |
| 67 | 5.58 | 0.27 | 0.148 | $0.109)$ | 0.056 | 0.092 |
| 68 | 5.67 | 0.27 | 0.148 | 0.108) | 0.056 | 0.092 |
| 69 | 5.75 | 0.27 | 0.148 | $0.108)$ | 0.056 | 0.092 |
| 70 | 5.83 | 0.27 | 0.148 | 0.107) | 0.056 | 0.092 |
| 71 | 5.92 | 0.27 | 0.148 | $0.107)$ | 0.056 | 0.092 |
| 72 | 6.00 | 0.27 | 0.148 | $0.106)$ | 0.056 | 0.092 |
| 73 | 6.08 | 0.30 | 0.167 | $0.106)$ | 0.063 | 0.104 |
| 74 | 6.17 | 0.30 | 0.167 | $0.105)$ | 0.063 | 0.104 |
| 75 | 6.25 | 0.30 | 0.167 | $0.105)$ | 0.063 | 0.104 |
| 76 | 6.33 | 0.30 | 0.167 | $0.104)$ | 0.063 | 0.104 |
| 77 | 6.42 | 0.30 | 0.167 | $0.104)$ | 0.063 | 0.104 |
| 78 | 6.50 | 0.30 | 0.167 | $0.103)$ | 0.063 | 0.104 |
| 79 | 6.58 | 0.33 | 0.186 | $0.103)$ | 0.071 | 0.115 |
| 80 | 6.67 | 0.33 | 0.186 | $0.102)$ | 0.071 | 0.115 |
| 81 | 6.75 | 0.33 | 0.186 | $0.102)$ | 0.071 | 0.115 |
| 82 | 6.83 | 0.33 | 0.186 | $0.102)$ | 0.071 | 0.115 |
| 83 | 6.92 | 0.33 | 0.186 | $0.101)$ | 0.071 | 0.115 |
| 84 | 7.00 | 0.33 | 0.186 | 0.101) | 0.071 | 0.115 |
| 85 | 7.08 | 0.33 | 0.186 | 0.100) | 0.071 | 0.115 |
| 86 | 7.17 | 0.33 | 0.186 | 0.100) | 0.071 | 0.115 |
| 87 | 7.25 | 0.33 | 0.186 | $0.099)$ | 0.071 | 0.115 |
| 88 | 7.33 | 0.37 | 0.204 | $0.099)$ | 0.078 | 0.127 |
| 89 | 7.42 | 0.37 | 0.204 | 0.098) | 0.078 | 0.127 |
| 90 | 7.50 | 0.37 | 0.204 | 0.098) | 0.078 | 0.127 |
| 91 | 7.58 | 0.40 | 0.223 | $0.097)$ | 0.085 | 0.138 |
| 92 | 7.67 | 0.40 | 0.223 | $0.097)$ | 0.085 | 0.138 |
| 93 | 7.75 | 0.40 | 0.223 | $0.097)$ | 0.085 | 0.138 |
| 94 | 7.83 | 0.43 | 0.241 | $0.096)$ | 0.092 | 0.150 |
| 95 | 7.92 | 0.43 | 0.241 | $0.096)$ | 0.092 | 0.150 |
| 96 | 8.00 | 0.43 | 0.241 | $0.095)$ | 0.092 | 0.150 |
| 97 | 8.08 | 0.50 | 0.278 | 0.095 | $0.106)$ | 0.184 |
| 98 | 8.17 | 0.50 | 0.278 | 0.094 | $0.106)$ | 0.184 |
| 99 | 8.25 | 0.50 | 0.278 | 0.094 | $0.106)$ | 0.185 |
| 100 | 8.33 | 0.50 | 0.278 | 0.093 | $0.106)$ | 0.185 |
| 101 | 8.42 | 0.50 | 0.278 | 0.093 | $0.106)$ | 0.185 |
| 102 | 8.50 | 0.50 | 0.278 | 0.093 | $0.106)$ | 0.186 |
| 103 | 8.58 | 0.53 | 0.297 | 0.092 | $0.113)$ | 0.205 |
| 104 | 8.67 | 0.53 | 0.297 | 0.092 | $0.113)$ | 0.205 |
| 105 | 8.75 | 0.53 | 0.297 | 0.091 | $0.113)$ | 0.206 |
| 106 | 8.83 | 0.57 | 0.316 | 0.091 | 0.120) | 0.225 |
| 107 | 8.92 | 0.57 | 0.316 | 0.090 | 0.120) | 0.225 |
| 108 | 9.00 | 0.57 | 0.316 | 0.090 | 0.120) | 0.226 |
| 109 | 9.08 | 0.63 | 0.353 | 0.090 | $0.134)$ | 0.263 |
| 110 | 9.17 | 0.63 | 0.353 | 0.089 | $0.134)$ | 0.264 |
| 111 | 9.25 | 0.63 | 0.353 | 0.089 | $0.134)$ | 0.264 |
| 112 | 9.33 | 0.67 | 0.371 | 0.088 | $0.141)$ | 0.283 |
| 113 | 9.42 | 0.67 | 0.371 | 0.088 | $0.141)$ | 0.283 |
| 114 | 9.50 | 0.67 | 0.371 | 0.087 | $0.141)$ | 0.284 |
| 115 | 9.58 | 0.70 | 0.390 | 0.087 | $0.148)$ | 0.303 |
| 116 | 9.67 | 0.70 | 0.390 | 0.087 | $0.148)$ | 0.303 |
| 117 | 9.75 | 0.70 | 0.390 | 0.086 | $0.148)$ | 0.304 |
| 118 | 9.83 | 0.73 | 0.408 | 0.086 | $0.155)$ | 0.323 |
| 119 | 9.92 | 0.73 | 0.408 | 0.085 | $0.155)$ | 0.323 |


| 120 | 10.00 | 0.73 | 0.408 | 0.085 | $0.155)$ | 0.323 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 121 | 10.08 | 0.50 | 0.278 | 0.085 | $0.106)$ | 0.194 |
| 122 | 10.17 | 0.50 | 0.278 | 0.084 | $0.106)$ | 0.194 |
| 123 | 10.25 | 0.50 | 0.278 | 0.084 | $0.106)$ | 0.195 |
| 124 | 10.33 | 0.50 | 0.278 | 0.083 | $0.106)$ | 0.195 |
| 125 | 10.42 | 0.50 | 0.278 | 0.083 | $0.106)$ | 0.195 |
| 126 | 10.50 | 0.50 | 0.278 | 0.083 | $0.106)$ | 0.196 |
| 127 | 10.58 | 0.67 | 0.371 | 0.082 | $0.141)$ | 0.289 |
| 128 | 10.67 | 0.67 | 0.371 | 0.082 | $0.141)$ | 0.289 |
| 129 | 10.75 | 0.67 | 0.371 | 0.081 | $0.141)$ | 0.290 |
| 130 | 10.83 | 0.67 | 0.371 | 0.081 | $0.141)$ | 0.290 |
| 131 | 10.92 | 0.67 | 0.371 | 0.081 | $0.141)$ | 0.291 |
| 132 | 11.00 | 0.67 | 0.371 | 0.080 | $0.141)$ | 0.291 |
| 133 | 11.08 | 0.63 | 0.353 | 0.080 | $0.134)$ | 0.273 |
| 134 | 11.17 | 0.63 | 0.353 | 0.079 | $0.134)$ | 0.273 |
| 135 | 11.25 | 0.63 | 0.353 | 0.079 | $0.134)$ | 0.274 |
| 136 | 11.33 | 0.63 | 0.353 | 0.079 | $0.134)$ | 0.274 |
| 137 | 11.42 | 0.63 | 0.353 | 0.078 | $0.134)$ | 0.274 |
| 138 | 11.50 | 0.63 | 0.353 | 0.078 | $0.134)$ | 0.275 |
| 139 | 11.58 | 0.57 | 0.316 | 0.077 | 0.120) | 0.238 |
| 140 | 11.67 | 0.57 | 0.316 | 0.077 | 0.120) | 0.239 |
| 141 | 11.75 | 0.57 | 0.316 | 0.077 | 0.120) | 0.239 |
| 142 | 11.83 | 0.60 | 0.334 | 0.076 | 0.127) | 0.258 |
| 143 | 11.92 | 0.60 | 0.334 | 0.076 | 0.127) | 0.258 |
| 144 | 12.00 | 0.60 | 0.334 | 0.075 | 0.127) | 0.259 |
| 145 | 12.08 | 0.83 | 0.464 | 0.075 | $0.176)$ | 0.389 |
| 146 | 12.17 | 0.83 | 0.464 | 0.075 | $0.176)$ | 0.389 |
| 147 | 12.25 | 0.83 | 0.464 | 0.074 | $0.176)$ | 0.390 |
| 148 | 12.33 | 0.87 | 0.483 | 0.074 | $0.183)$ | 0.409 |
| 149 | 12.42 | 0.87 | 0.483 | 0.074 | $0.183)$ | 0.409 |
| 150 | 12.50 | 0.87 | 0.483 | 0.073 | $0.183)$ | 0.409 |
| 151 | 12.58 | 0.93 | 0.520 | 0.073 | 0.197) | 0.447 |
| 152 | 12.67 | 0.93 | 0.520 | 0.072 | $0.197)$ | 0.447 |
| 153 | 12.75 | 0.93 | 0.520 | 0.072 | $0.197)$ | 0.448 |
| 154 | 12.83 | 0.97 | 0.538 | 0.072 | 0.205) | 0.466 |
| 155 | 12.92 | 0.97 | 0.538 | 0.071 | $0.205)$ | 0.467 |
| 156 | 13.00 | 0.97 | 0.538 | 0.071 | $0.205)$ | 0.467 |
| 157 | 13.08 | 1.13 | 0.631 | 0.071 | $0.240)$ | 0.560 |
| 158 | 13.17 | 1.13 | 0.631 | 0.070 | $0.240)$ | 0.561 |
| 159 | 13.25 | 1.13 | 0.631 | 0.070 | 0.240) | 0.561 |
| 160 | 13.33 | 1.13 | 0.631 | 0.070 | $0.240)$ | 0.561 |
| 161 | 13.42 | 1.13 | 0.631 | 0.069 | 0.240) | 0.562 |
| 162 | 13.50 | 1.13 | 0.631 | 0.069 | 0.240) | 0.562 |
| 163 | 13.58 | 0.77 | 0.427 | 0.069 | $0.162)$ | 0.358 |
| 164 | 13.67 | 0.77 | 0.427 | 0.068 | $0.162)$ | 0.359 |
| 165 | 13.75 | 0.77 | 0.427 | 0.068 | $0.162)$ | 0.359 |
| 166 | 13.83 | 0.77 | 0.427 | 0.068 | $0.162)$ | 0.359 |
| 167 | 13.92 | 0.77 | 0.427 | 0.067 | $0.162)$ | 0.360 |
| 168 | 14.00 | 0.77 | 0.427 | 0.067 | $0.162)$ | 0.360 |
| 169 | 14.08 | 0.90 | 0.501 | 0.066 | 0.190) | 0.435 |
| 170 | 14.17 | 0.90 | 0.501 | 0.066 | 0.190) | 0.435 |
| 171 | 14.25 | 0.90 | 0.501 | 0.066 | 0.190) | 0.435 |
| 172 | 14.33 | 0.87 | 0.483 | 0.065 | $0.183)$ | 0.417 |
| 173 | 14.42 | 0.87 | 0.483 | 0.065 | $0.183)$ | 0.417 |
| 174 | 14.50 | 0.87 | 0.483 | 0.065 | $0.183)$ | 0.418 |
| 175 | 14.58 | 0.87 | 0.483 | 0.064 | $0.183)$ | 0.418 |
| 176 | 14.67 | 0.87 | 0.483 | 0.064 | $0.183)$ | 0.418 |
| 177 | 14.75 | 0.87 | 0.483 | 0.064 | $0.183)$ | 0.419 |
| 178 | 14.83 | 0.83 | 0.464 | 0.063 | $0.176)$ | 0.401 |
| 179 | 14.92 | 0.83 | 0.464 | 0.063 | $0.176)$ | 0.401 |


| 180 | 15.00 | 0.83 | 0.464 | 0.063 | 0.176) | 0.401 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 181 | 15.08 | 0.80 | 0.445 | 0.063 | 0.169) | 0.383 |
| 182 | 15.17 | 0.80 | 0.445 | 0.062 | 0.169) | 0.383 |
| 183 | 15.25 | 0.80 | 0.445 | 0.062 | 0.169) | 0.384 |
| 184 | 15.33 | 0.77 | 0.427 | 0.062 | 0.162) | 0.365 |
| 185 | 15.42 | 0.77 | 0.427 | 0.061 | 0.162) | 0.366 |
| 186 | 15.50 | 0.77 | 0.427 | 0.061 | 0.162) | 0.366 |
| 187 | 15.58 | 0.63 | 0.353 | 0.061 | $0.134)$ | 0.292 |
| 188 | 15.67 | 0.63 | 0.353 | 0.060 | 0.134) | 0.292 |
| 189 | 15.75 | 0.63 | 0.353 | 0.060 | $0.134)$ | 0.293 |
| 190 | 15.83 | 0.63 | 0.353 | 0.060 | $0.134)$ | 0.293 |
| 191 | 15.92 | 0.63 | 0.353 | 0.059 | $0.134)$ | 0.293 |
| 192 | 16.00 | 0.63 | 0.353 | 0.059 | $0.134)$ | 0.294 |
| 193 | 16.08 | 0.13 | 0.074 | 0.059) | 0.028 | 0.046 |
| 194 | 16.17 | 0.13 | 0.074 | $0.058)$ | 0.028 | 0.046 |
| 195 | 16.25 | 0.13 | 0.074 | 0.058) | 0.028 | 0.046 |
| 196 | 16.33 | 0.13 | 0.074 | 0.058) | 0.028 | 0.046 |
| 197 | 16.42 | 0.13 | 0.074 | $0.058)$ | 0.028 | 0.046 |
| 198 | 16.50 | 0.13 | 0.074 | $0.057)$ | 0.028 | 0.046 |
| 199 | 16.58 | 0.10 | 0.056 | 0.057) | 0.021 | 0.035 |
| 200 | 16.67 | 0.10 | 0.056 | $0.057)$ | 0.021 | 0.035 |
| 201 | 16.75 | 0.10 | 0.056 | $0.056)$ | 0.021 | 0.035 |
| 202 | 16.83 | 0.10 | 0.056 | 0.056) | 0.021 | 0.035 |
| 203 | 16.92 | 0.10 | 0.056 | $0.056)$ | 0.021 | 0.035 |
| 204 | 17.00 | 0.10 | 0.056 | $0.056)$ | 0.021 | 0.035 |
| 205 | 17.08 | 0.17 | 0.093 | $0.055)$ | 0.035 | 0.058 |
| 206 | 17.17 | 0.17 | 0.093 | 0.055) | 0.035 | 0.058 |
| 207 | 17.25 | 0.17 | 0.093 | $0.055)$ | 0.035 | 0.058 |
| 208 | 17.33 | 0.17 | 0.093 | $0.054)$ | 0.035 | 0.058 |
| 209 | 17.42 | 0.17 | 0.093 | 0.054) | 0.035 | 0.058 |
| 210 | 17.50 | 0.17 | 0.093 | $0.054)$ | 0.035 | 0.058 |
| 211 | 17.58 | 0.17 | 0.093 | $0.054)$ | 0.035 | 0.058 |
| 212 | 17.67 | 0.17 | 0.093 | $0.053)$ | 0.035 | 0.058 |
| 213 | 17.75 | 0.17 | 0.093 | $0.053)$ | 0.035 | 0.058 |
| 214 | 17.83 | 0.13 | 0.074 | $0.053)$ | 0.028 | 0.046 |
| 215 | 17.92 | 0.13 | 0.074 | $0.053)$ | 0.028 | 0.046 |
| 216 | 18.00 | 0.13 | 0.074 | 0.052) | 0.028 | 0.046 |
| 217 | 18.08 | 0.13 | 0.074 | $0.052)$ | 0.028 | 0.046 |
| 218 | 18.17 | 0.13 | 0.074 | 0.052) | 0.028 | 0.046 |
| 219 | 18.25 | 0.13 | 0.074 | $0.052)$ | 0.028 | 0.046 |
| 220 | 18.33 | 0.13 | 0.074 | 0.051) | 0.028 | 0.046 |
| 221 | 18.42 | 0.13 | 0.074 | 0.051) | 0.028 | 0.046 |
| 222 | 18.50 | 0.13 | 0.074 | 0.051) | 0.028 | 0.046 |
| 223 | 18.58 | 0.10 | 0.056 | 0.051) | 0.021 | 0.035 |
| 224 | 18.67 | 0.10 | 0.056 | 0.050) | 0.021 | 0.035 |
| 225 | 18.75 | 0.10 | 0.056 | 0.050) | 0.021 | 0.035 |
| 226 | 18.83 | 0.07 | 0.037 | 0.050) | 0.014 | 0.023 |
| 227 | 18.92 | 0.07 | 0.037 | 0.050) | 0.014 | 0.023 |
| 228 | 19.00 | 0.07 | 0.037 | $0.049)$ | 0.014 | 0.023 |
| 229 | 19.08 | 0.10 | 0.056 | $0.049)$ | 0.021 | 0.035 |
| 230 | 19.17 | 0.10 | 0.056 | 0.049) | 0.021 | 0.035 |
| 231 | 19.25 | 0.10 | 0.056 | $0.049)$ | 0.021 | 0.035 |
| 232 | 19.33 | 0.13 | 0.074 | $0.048)$ | 0.028 | 0.046 |
| 233 | 19.42 | 0.13 | 0.074 | $0.048)$ | 0.028 | 0.046 |
| 234 | 19.50 | 0.13 | 0.074 | $0.048)$ | 0.028 | 0.046 |
| 235 | 19.58 | 0.10 | 0.056 | 0.048) | 0.021 | 0.035 |
| 236 | 19.67 | 0.10 | 0.056 | $0.048)$ | 0.021 | 0.035 |
| 237 | 19.75 | 0.10 | 0.056 | 0.047) | 0.021 | 0.035 |
| 238 | 19.83 | 0.07 | 0.037 | 0.047) | 0.014 | 0.023 |
| 239 | 19.92 | 0.07 | 0.037 | 0.047) | 0.014 | 0.023 |



Peak flow rate of this hydrograph =
2.267(CFS)

$1+55 \quad 0.0221 \quad 0.18 \quad$ Q
2+ 0
0.0234
0.19 Q

2+ 5
0.0246
0.19 Q

2+10
0.0259
0.19 Q

2+15
$2+20$
$2+25$
2+30
0.0310
0.19 Q
0.19 Q
0.19 QV
$2+35$
$2+40$
0.0325
0.21 QV
$2+45$
0.0341
0.23 QV

2
0.0357
0.23 QV

2+55
0.0373
0.23 QV

2
0.0389
0.23 QV

3+ 0
0.0405
0.23 QV

3+ 5
0.0421
0.23 QV

3+10
3+15
$3+20$
$3+25$
$3+30$
3+35
$3+40$
$3+45$
$3+50$
3+55
0585
0.28 IQV

4+ 0
0.0604
0.28 IQV

4+ 5
0.0624
0.28 IQV
$4+10$
0.0643
0.28 IQV

4+15
0.0662
0.28 IQV
$4+20$
0.0683
0.30 IQV

| $4+25$ | 0.0705 | 0.32 | IQV |
| :--- | :--- | :--- | :--- |
| $4+30$ | 0.0728 | 0.32 | IQV |
| $4+35$ | 0.0750 | 0.32 | IQV |
| $4+40$ | 0.0772 | 0.32 | IQV |
| $4+45$ | 0.0795 | 0.32 | IQV |
| $4+50$ | 0.0819 | 0.35 | IQV |
| $4+55$ | 0.0844 | 0.37 | IQV |
| $5+0$ | 0.0870 | 0.37 | IQV |


| 6+55 | 0.1477 | 0.46 | IQ | v | । | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 7+ 0 | 0.1509 | 0.46 | IQ | V | I | \| |
| 7+ 5 | 0.1541 | 0.46 | IQ | v | I | 1 |
| 7+10 | 0.1573 | 0.46 | IQ | v | I | \| |
| 7+15 | 0.1605 | 0.46 | IQ | v | I | 1 |
| 7+20 | 0.1639 | 0.49 | IQ | v | I | , |
| 7+25 | 0.1674 | 0.51 | \\| Q | v | I | \| |
| 7+30 | 0.1709 | 0.51 | \\| Q | v | I | \| |
| 7+35 | 0.1746 | 0.54 | \\| Q | $v$ | I | \| |
| 7+40 | 0.1784 | 0.56 | \\| Q | v | I | \| |
| 7+45 | 0.1823 | 0.56 | \\| Q | V | I | \| |
| 7+50 | 0.1863 | 0.58 | \\| Q | v | I | \| |
| 7+55 | 0.1904 | 0.60 | 1 Q | v | I | 1 |
| $8+0$ | 0.1946 | 0.60 | \\| Q | v | \| | \| |
| $8+5$ | 0.1992 | 0.68 | \| Q | V | I | \| |
| 8+10 | 0.2043 | 0.74 | \\| Q |  | $\checkmark$ I | 1 |
| $8+15$ | 0.2094 | 0.74 | \\| Q |  | $\vee$ I | I |
| $8+20$ | 0.2146 | 0.75 | \\| Q |  | $\checkmark$ I | I |
| $8+25$ | 0.2197 | 0.75 | \| Q |  | $\vee 1$ | 1 |
| 8+30 | 0.2249 | 0.75 | \\| Q |  | $\checkmark$ I | I |
| $8+35$ | 0.2303 | 0.79 | \\| Q |  | $\vee 1$ | \| |
| 8+40 | 0.2360 | 0.82 | $1 \quad Q$ |  | V I | 1 |
| $8+45$ | 0.2417 | 0.83 | \\| Q |  | V I | 1 |
| $8+50$ | 0.2477 | 0.87 |  |  | V I | I |
| 8+55 | 0.2539 | 0.90 | \\| Q |  | V I | \| |
| 9+ 0 | 0.2602 | 0.91 | $1 \quad Q$ |  | V I | I |
| $9+5$ | 0.2670 | 0.99 | \\| Q |  | VI | I |
| 9+10 | 0.2743 | 1.06 |  | Q | v 1 | I |
| 9+15 | 0.2817 | 1.06 |  | Q | VI | \| |
| 9+20 | 0.2893 | 1.11 |  | Q | v | \| |


| 9+25 | 0.2971 | 1.14 | \| | Q | v | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+30 | 0.3050 | 1.14 | \| | Q | v | \| |
| 9+35 | 0.3132 | 1.19 | \| | Q | v | \| |
| $9+40$ | 0.3216 | 1.22 | \| | Q | IV | \| |
| $9+45$ | 0.3300 | 1.22 | 1 | Q | IV | I |
| $9+50$ | 0.3387 | 1.27 | 1 | Q | IV | \| |
| 9+55 | 0.3477 | 1.30 | \| | Q | IV | \| |
| 10+ 0 | 0.3566 | 1.30 | 1 | Q | \\| V | \| |
| 10+ 5 | 0.3637 | 1.02 | 1 | Q | \\| V | 1 |
| 10+10 | 0.3692 | 0.80 | 1 | Q | \\| V | \| |
| 10+15 | 0.3746 | 0.78 | 1 | Q | \\| V | \| |
| 10+20 | 0.3800 | 0.79 | \| | Q | I V | \| |


| $11+55$ | 0.5182 | 1.04 | \| | Q | \| |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $12+0$ | 0.5254 | 1.04 | \| | Q | \| |
| $12+5$ | 0.5345 | 1.33 | \| | Q | \| |
| $12+10$ | 0.5452 | 1.55 | \| | Q | \| |
| $12+15$ | 0.5561 | 1.57 | \| | Q | । |
| $12+20$ | 0.5672 | 1.61 | \| | Q | \| |
| $12+25$ | 0.5785 | 1.65 | \| | Q | । |


| $12+30$ | 0.5899 |
| :--- | :--- |
| $12+35$ | 0.6018 |

1.65 | Q
|
$12+40$
0.6142
1.7
,
$12+45$
|
12+50
12+55
|
$13+0$ $13+5$
$13+10$
|
13+15
$13+20$
|
13+25
0.7419
1.80 |
$\begin{array}{ll}\text { Q } & 1 \\ Q & 1\end{array}$
$13+30$
|
13+35 0.7701
$13+40$
$13+45$
| $13+50$
$13+55$
|
$14+0$
|
$14+5$
|
$14+10$

14+15
$14+20$
$14+45$
$14+50$
$14+55$
|
15+ 0
|
\|
$15+5$
$15+10$
15+15
|
$15+20$
15+25
15+30
15+35
$15+40$
|
$15+45$
|
$15+50$
|
$15+55$
16+ 0
|
16+ 5
$16+10$
| $16+15$
$16+20$
|
$16+25$
|
16+30
$16+35$
|
$16+40$
$16+45$
|

| $14+25$ | 0.8788 | 1.69 | \| | Q | \| |
| :--- | :--- | :--- | :--- | :--- | :--- |
| \| |  |  |  |  |  |
| $14+30$ | 0.8904 | 1.68 | \| | $Q$ | \| |
| \| | $14+35$ | 0.9020 | 1.69 | \| | Q |
| \| |  |  |  |  |  |
| $14+40$ | 0.9136 | 1.69 | \| | Q | \| |

0.8788

| 1.69 | I | Q |
| :--- | :--- | :--- |
| 1.65 | I | $Q$ |

1.62 |
1.62 | Q ।
1.58 | Q
1.55 | Q |
1.55 | Q
1.51 | Q
1.48 | Q
1.48 | Q |
1.31 |
1.19 | Q
1.18 |
1.18 | Q
1.18 |
1.18 | Q
0.64 | Q
0.21
0.19
0.19 Q
0.19 Q
0.19 Q
0.16 Q
0.14 Q
0.14 Q
0.14 Q

|  |
| :---: |


| $16+55$ | 1.0875 | 0.14 | Q |
| :--- | :--- | :--- | :--- |
| $17+0$ | 1.0884 | 0.14 | Q |
| $17+5$ | 1.0897 | 0.19 | Q |
| $17+10$ | 1.0913 | 0.23 | Q |
| $17+15$ | 1.0929 | 0.23 | Q |
| $17+20$ | 1.0945 | 0.23 | Q |
| $17+25$ | 1.0961 | 0.23 | Q |


| 19+25 | 1.1244 | 0.18 | Q | \\| | \\| | \| | v |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19+30 | 1.1257 | 0.19 | Q | \| | \\| | \| | v |
| 19+35 | 1.1268 | 0.16 | Q | 1 | \| | \| | v |
| 19+40 | 1.1277 | 0.14 | Q | \| | \| | \| | v |
| 19+45 | 1.1287 | 0.14 | Q | \| | \| | \| | V |
| 19+50 | 1.1295 | 0.11 | Q | \| | 1 | I | v |
| 19+55 | 1.1301 | 0.09 | Q | \| | I | \| | v |
| 20+ 0 | 1.1308 | 0.09 | Q | 1 | I | \| | v |
| 20+ 5 | 1.1316 | 0.12 | Q | \| | \| | 1 | v |
| 20+10 | 1.1325 | 0.14 | Q | \| | \| | I | v |
| 20+15 | 1.1335 | 0.14 | Q | \| | \| | \| | v |
| 20+20 | 1.1345 | 0.14 | Q | 1 | I | \| | V |
| 20+25 | 1.1354 | 0.14 | Q | 1 | \| | \| | v |
| 20+30 | 1.1364 | 0.14 | Q | \| | I | I | v |
| 20+35 | 1.1373 | 0.14 | Q | \| | I | I | v |
| 20+40 | 1.1383 | 0.14 | Q | \| | \| | \| | V |
| 20+45 | 1.1392 | 0.14 | Q | \| | I | \| |  |
| 20+50 | 1.1400 | 0.11 | Q | \| | I | \| |  |
| 20+55 | 1.1407 | 0.09 | Q | \| | \| | \| |  |
| 21+ 0 | 1.1413 | 0.09 | Q | \| | \| | । |  |
| 21+5 | 1.1421 | 0.12 | Q | I | , | । |  |
|  |  |  |  |  |  |  |  |
| 21+10 | 1.1431 | 0.14 | Q | 1 | I | \| |  |
| 21+15 | 1.1440 | 0.14 | Q | \| | , | \| |  |
| 21+20 | 1.1448 | 0.11 | Q | \| | । | । |  |
| 21+25 | 1.1455 | 0.09 | Q | । | , | । |  |
| 21+30 | 1.1461 | 0.09 | Q | \| | \| | \| |  |
|  |  |  |  |  |  |  |  |
| 21+35 | 1.1469 | 0.12 | Q | \| | 1 | \| |  |
| 21+40 | 1.1479 | 0.14 | Q | \| | , | \| |  |
| 21+45 | 1.1488 | 0.14 | Q | \| | \| | \| |  |
| 21+50 | 1.1496 | 0.11 | Q | \| | \| | । |  |



```
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            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

10.90
0.47
5.08

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
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            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

10.90
0.47
5.08

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



```
        U n i t H y d r o g r a p h A n a l y s i s
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            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

10.90
0.47
5.08

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value



```
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            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 1 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

10.90
0.47
5.08

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value


| 0+45 | 0.4819 | 16.30 | \| | \| | Q | v | \| |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+50 | 0.7070 | 32.69 | \| | \| |  | \| | v 1 |  |
| 0+55 | 0.9105 | 29.54 | \\| | \| |  | \| | Q \| | v |
| 1+ 0 | 0.9810 | 10.25 | \| | Q |  | \| | \| |  |
| 1+ 5 | 1.0049 | 3.47 | \\| Q | \| |  | \| | \| |  |
| 1+10 | 1.0074 | 0.37 | Q | \| |  | \| | \| |  |
| 1+15 | 1.0077 | 0.04 | Q | \| |  | \| | \| |  |

```
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            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

10.90
0.80
8.71

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate(In./Hr) |  | Effective (In/Hr) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low |  |
| 1 | 0.08 | 1.30 | 0.125 | 0.155) | 0.047 | 0.077 |
| 2 | 0.17 | 1.30 | 0.125 | $0.155)$ | 0.047 | 0.077 |
| 3 | 0.25 | 1.10 | 0.105 | $0.155)$ | 0.040 | 0.065 |
| 4 | 0.33 | 1.50 | 0.144 | $0.155)$ | 0.055 | 0.089 |
| 5 | 0.42 | 1.50 | 0.144 | $0.155)$ | 0.055 | 0.089 |
| 6 | 0.50 | 1.80 | 0.173 | 0.155) | 0.066 | 0.107 |
| 7 | 0.58 | 1.50 | 0.144 | $0.155)$ | 0.055 | 0.089 |
| 8 | 0.67 | 1.80 | 0.173 | $0.155)$ | 0.066 | 0.107 |
| 9 | 0.75 | 1.80 | 0.173 | $0.155)$ | 0.066 | 0.107 |
| 10 | 0.83 | 1.50 | 0.144 | 0.155) | 0.055 | 0.089 |
| 11 | 0.92 | 1.60 | 0.153 | $0.155)$ | 0.058 | 0.095 |
| 12 | 1.00 | 1.80 | 0.173 | $0.155)$ | 0.066 | 0.107 |
| 13 | 1.08 | 2.20 | 0.211 | 0.155) | 0.080 | 0.131 |
| 14 | 1.17 | 2.20 | 0.211 | $0.155)$ | 0.080 | 0.131 |
| 15 | 1.25 | 2.20 | 0.211 | $0.155)$ | 0.080 | 0.131 |
| 16 | 1.33 | 2.00 | 0.192 | $0.155)$ | 0.073 | 0.119 |
| 17 | 1.42 | 2.60 | 0.249 | $0.155)$ | 0.095 | 0.155 |
| 18 | 1.50 | 2.70 | 0.259 | $0.155)$ | 0.098 | 0.160 |
| 19 | 1.58 | 2.40 | 0.230 | 0.155) | 0.087 | 0.143 |
| 20 | 1.67 | 2.70 | 0.259 | $0.155)$ | 0.098 | 0.160 |
| 21 | 1.75 | 3.30 | 0.316 | $0.155)$ | 0.120 | 0.196 |
| 22 | 1.83 | 3.10 | 0.297 | $0.155)$ | 0.113 | 0.184 |
| 23 | 1.92 | 2.90 | 0.278 | $0.155)$ | 0.106 | 0.172 |
| 24 | 2.00 | 3.00 | 0.288 | 0.155) | 0.109 | 0.178 |
| 25 | 2.08 | 3.10 | 0.297 | 0.155) | 0.113 | 0.184 |
| 26 | 2.17 | 4.20 | 0.403 | $0.155)$ | 0.153 | 0.250 |
| 27 | 2.25 | 5.00 | 0.479 | 0.155 | ( 0.182) | 0.325 |
| 28 | 2.33 | 3.50 | 0.336 | $0.155)$ | 0.128 | 0.208 |
| 29 | 2.42 | 6.80 | 0.652 | 0.155 | ( 0.248) | 0.497 |
| 30 | 2.50 | 7.30 | 0.700 | 0.155 | ( 0.266) | 0.545 |
| 31 | 2.58 | 8.20 | 0.786 | 0.155 | (0.299) | 0.631 |
| 32 | 2.67 | 5.90 | 0.566 | 0.155 | ( 0.215) | 0.411 |
| 33 | 2.75 | 2.00 | 0.192 | $0.155)$ | 0.073 | 0.119 |
| 34 | 2.83 | 1.80 | 0.173 | 0.155) | 0.066 | 0.107 |
| 35 | 2.92 | 1.80 | 0.173 | 0.155) | 0.066 | 0.107 |
| 36 | 3.00 | 0.60 | 0.058 | $0.155)$ | 0.022 | 0.036 |
|  |  | (Loss Rat | Not Used) |  |  |  |
|  | Sum = | 100.0 |  |  | Sum | 6.4 |
| Flood volume = Effective rainfall 0.53(In) |  |  |  |  |  |  |
| times area 10.9(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft) |  |  |  |  |  |  |
| Total soil loss $=0.27($ In $)$ |  |  |  |  |  |  |
| Total soil loss $=00.243($ Ac.Ft) |  |  |  |  |  |  |
| Total rainfall $=00.80$ (In) |  |  |  |  |  |  |
| Flood volume $=$ 21037.4 Cubic Feet |  |  |  |  |  |  |
| Total soil loss $=$ 10575.1 Cubic Feet |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Peak flow rate of this hydrograph = 6.356(CFS) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++ |  |  |  |  |  |  |
| ++ |  |  |  |  |  |  |
|  |  |  | $3-\mathrm{HOU}$ | S T O R |  |  |
| $R u n o f f$ frydrograp |  |  |  |  |  |  |
| Hydrograph in 5 Minute intervals ((CFS)) |  |  |  |  |  |  |

```
    Time(h+m) Volume Ac.Ft Q(CFS) 0 2.5 2.0
10.0
```




```
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            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

10.90
0.80
8.71

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value


```
    Time(h+m) Volume Ac.Ft Q(CFS) 0 2.5 5.0 7.5
10.0
```




```
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                Study date 11/09/21 File: moval33post310.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

10.90
0.80
8.71

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value


```
    Time(h+m) Volume Ac.Ft Q(CFS) 0 5.0 10.0
```

20.0



```
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            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 3 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

10.90
0.80
8.71

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value


```
    Time(h+m) Volume Ac.Ft Q(CFS) 0 5.0
```

20.0



```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post62.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain |
| :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| 1 | 0.08 | 0.50 | 0.065 |
| 2 | 0.17 | 0.60 | 0.078 |
| 3 | 0.25 | 0.60 | 0.078 |
| 4 | 0.33 | 0.60 | 0.078 |
| 5 | 0.42 | 0.60 | 0.078 |
| 6 | 0.50 | 0.70 | 0.092 |
| 7 | 0.58 | 0.70 | 0.092 |
| 8 | 0.67 | 0.70 | 0.092 |
| 9 | 0.75 | 0.70 | 0.092 |
| 10 | 0.83 | 0.70 | 0.092 |
| 11 | 0.92 | 0.70 | 0.092 |
| 12 | 1.00 | 0.80 | 0.105 |
| 13 | 1.08 | 0.80 | 0.105 |
| 14 | 1.17 | 0.80 | 0.105 |
| 15 | 1.25 | 0.80 | 0.105 |
| 16 | 1.33 | 0.80 | 0.105 |
| 17 | 1.42 | 0.80 | 0.105 |
| 18 | 1.50 | 0.80 | 0.105 |
| 19 | 1.58 | 0.80 | 0.105 |
| 20 | 1.67 | 0.80 | 0.105 |
| 21 | 1.75 | 0.80 | 0.105 |
| 22 | 1.83 | 0.80 | 0.105 |
| 23 | 1.92 | 0.80 | 0.105 |
| 24 | 2.00 | 0.90 | 0.118 |
| 25 | 2.08 | 0.80 | 0.105 |
| 26 | 2.17 | 0.90 | 0.118 |
| 27 | 2.25 | 0.90 | 0.118 |
| 28 | 2.33 | 0.90 | 0.118 |
| 29 | 2.42 | 0.90 | 0.118 |
| 30 | 2.50 | 0.90 | 0.118 |
| 31 | 2.58 | 0.90 | 0.118 |
| 32 | 2.67 | 0.90 | 0.118 |
| 33 | 2.75 | 1.00 | 0.131 |
| 34 | 2.83 | 1.00 | 0.131 |
| 35 | 2.92 | 1.00 | 0.131 |
| 36 | 3.00 | 1.00 | 0.131 |
| 37 | 3.08 | 1.00 | 0.131 |
| 38 | 3.17 | 1.10 | 0.144 |
| 39 | 3.25 | 1.10 | 0.144 |
| 40 | 3.33 | 1.10 | 0.144 |
| 41 | 3.42 | 1.20 | 0.157 |
| 42 | 3.50 | 1.30 | 0.170 |
| 43 | 3.58 | 1.40 | 0.183 |
| 44 | 3.67 | 1.40 | 0.183 |
| 45 | 3.75 | 1.50 | 0.196 |
| 46 | 3.83 | 1.50 | 0.196 |
| 47 | 3.92 | 1.60 | 0.209 |
| 48 | 4.00 | 1.60 | 0.209 |
| 49 | 4.08 | 1.70 | 0.222 |
| 50 | 4.17 | 1.80 | 0.235 |
| 51 | 4.25 | 1.90 | 0.249 |
| 52 | 4.33 | 2.00 | 0.262 |
| 53 | 4.42 | 2.10 | 0.275 |
| 54 | 4.50 | 2.10 | 0.275 |
| 55 | 4.58 | 2.20 | 0.288 |
| 56 | 4.67 | 2.30 | 0.301 |
| 57 | 4.75 | 2.40 | 0.314 |
| 58 | 4.83 | 2.40 | 0.314 |


| Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: |
| Max | Low | (In/Hr) |
| $0.155)$ | 0.025 | 0.041 |
| ( 0.155) | 0.030 | 0.049 |
| ( 0.155) | 0.030 | 0.049 |
| ( 0.155) | 0.030 | 0.049 |
| $0.155)$ | 0.030 | 0.049 |
| ( 0.155) | 0.035 | 0.057 |
| $0.155)$ | 0.035 | 0.057 |
| $0.155)$ | 0.035 | 0.057 |
| $0.155)$ | 0.035 | 0.057 |
| $0.155)$ | 0.035 | 0.057 |
| $0.155)$ | 0.035 | 0.057 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.040 | 0.065 |
| ( 0.155) | 0.045 | 0.073 |
| $0.155)$ | 0.040 | 0.065 |
| $0.155)$ | 0.045 | 0.073 |
| $0.155)$ | 0.045 | 0.073 |
| $0.155)$ | 0.045 | 0.073 |
| (0.155) | 0.045 | 0.073 |
| $0.155)$ | 0.045 | 0.073 |
| (0.155) | 0.045 | 0.073 |
| (0.155) | 0.045 | 0.073 |
| $0.155)$ | 0.050 | 0.081 |
| $0.155)$ | 0.050 | 0.081 |
| ( 0.155) | 0.050 | 0.081 |
| ( 0.155) | 0.050 | 0.081 |
| ( 0.155) | 0.050 | 0.081 |
| (0.155) | 0.055 | 0.089 |
| (0.155) | 0.055 | 0.089 |
| ( 0.155) | 0.055 | 0.089 |
| $0.155)$ | 0.060 | 0.097 |
| ( 0.155) | 0.065 | 0.105 |
| ( 0.155) | 0.070 | 0.114 |
| ( 0.155) | 0.070 | 0.114 |
| (0.155) | 0.075 | 0.122 |
| (0.155) | 0.075 | 0.122 |
| ( 0.155) | 0.080 | 0.130 |
| ( 0.155) | 0.080 | 0.130 |
| (0.155) | 0.084 | 0.138 |
| ( 0.155) | 0.089 | 0.146 |
| ( 0.155) | 0.094 | 0.154 |
| (0.155) | 0.099 | 0.162 |
| (0.155) | 0.104 | 0.170 |
| ( 0.155) | 0.104 | 0.170 |
| ( 0.155) | 0.109 | 0.178 |
| ( 0.155) | 0.114 | 0.187 |
| ( 0.155) | 0.119 | 0.195 |
| ( 0.155) | 0.119 | 0.195 |



| 0+50 | 0.0366 | 0.62 |  | Q |  | । | \| |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+55 | 0.0409 | 0.62 |  | Q |  | \| | \| |  |
| 1+ 0 | 0.0455 | 0.66 | \| | Q |  | \| | \| | \| |
| 1+ 5 | 0.0503 | 0.71 | \| | QV |  | \| | 1 | \| |
| 1+10 | 0.0552 | 0.71 | I | QV |  | 1 | 1 | \| |
| 1+15 | 0.0602 | 0.71 | \| | QV |  | \| | \| | \| |
| 1+20 | 0.0651 | 0.71 | \| | Q V |  | \| | \| | \| |
| 1+25 | 0.0700 | 0.71 | \| | Q V |  | \| | । | \| |
| 1+30 | 0.0749 | 0.71 | 1 | Q V |  | I | 1 | \| |
| 1+35 | 0.0798 | 0.71 | \| |  | V | 1 | \| | \| |
| 1+40 | 0.0847 | 0.71 | \| |  | V | \| | \| | \| |
| 1+45 | 0.0896 | 0.71 | \| |  | V | \| | 1 | \| |
| 1+50 | 0.0945 | 0.71 | 1 | Q | V | 1 | 1 | \| |
| 1+55 | 0.0994 | 0.71 | \| | Q | V | 1 | \| | \| |
| 2+ 0 | 0.1046 | 0.75 | \| | Q | V | \| | \| | \| |
| 2+ 5 | 0.1098 | 0.76 | 1 | Q | V | I | \| | \| |
| 2+10 | 0.1151 | 0.76 | 1 | Q | V | I | I | \| |
| 2+15 | 0.1205 | 0.80 | \| | Q | V | \| | \| | \| |
| 2+20 | 0.1261 | 0.80 | 1 | Q | V | \| | \| | \| |
| 2+25 | 0.1316 | 0.80 | 1 | Q |  | V I | \| | 1 |
| 2+30 | 0.1371 | 0.80 | 1 | Q |  | $\vee 1$ | I | 1 |
| 2+35 | 0.1426 | 0.80 | 1 | Q |  | V \| | \| | \| |
| 2+40 | 0.1482 | 0.80 | 1 | Q |  | V 1 | \| | \| |
| 2+45 | 0.1540 | 0.84 | , | Q |  | V\| | \| | \| |
| 2+50 | 0.1601 | 0.89 | 1 | Q |  | V | I | 1 |
| 2+55 | 0.1662 | 0.89 | \| | Q |  | V | \| | I |
| 3+ 0 | 0.1723 | 0.89 | 1 | Q |  | V | \| | I |
| 3+ 5 | 0.1785 | 0.89 | , | Q |  | \|V | \| | \| |
| 3+10 | 0.1849 | 0.93 | 1 | Q |  | \|V | \| | \| |
| 3+15 | 0.1916 | 0.97 | 1 | Q |  | \| V |  | \| |




```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post65.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
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            English Units used in output format
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    Proposed Condition
    Unit Hydrograph
    Area B
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    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain |
| :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) |
| 1 | 0.08 | 0.50 | 0.086 |
| 2 | 0.17 | 0.60 | 0.103 |
| 3 | 0.25 | 0.60 | 0.103 |
| 4 | 0.33 | 0.60 | 0.103 |
| 5 | 0.42 | 0.60 | 0.103 |
| 6 | 0.50 | 0.70 | 0.120 |
| 7 | 0.58 | 0.70 | 0.120 |
| 8 | 0.67 | 0.70 | 0.120 |
| 9 | 0.75 | 0.70 | 0.120 |
| 10 | 0.83 | 0.70 | 0.120 |
| 11 | 0.92 | 0.70 | 0.120 |
| 12 | 1.00 | 0.80 | 0.137 |
| 13 | 1.08 | 0.80 | 0.137 |
| 14 | 1.17 | 0.80 | 0.137 |
| 15 | 1.25 | 0.80 | 0.137 |
| 16 | 1.33 | 0.80 | 0.137 |
| 17 | 1.42 | 0.80 | 0.137 |
| 18 | 1.50 | 0.80 | 0.137 |
| 19 | 1.58 | 0.80 | 0.137 |
| 20 | 1.67 | 0.80 | 0.137 |
| 21 | 1.75 | 0.80 | 0.137 |
| 22 | 1.83 | 0.80 | 0.137 |
| 23 | 1.92 | 0.80 | 0.137 |
| 24 | 2.00 | 0.90 | 0.155 |
| 25 | 2.08 | 0.80 | 0.137 |
| 26 | 2.17 | 0.90 | 0.155 |
| 27 | 2.25 | 0.90 | 0.155 |
| 28 | 2.33 | 0.90 | 0.155 |
| 29 | 2.42 | 0.90 | 0.155 |
| 30 | 2.50 | 0.90 | 0.155 |
| 31 | 2.58 | 0.90 | 0.155 |
| 32 | 2.67 | 0.90 | 0.155 |
| 33 | 2.75 | 1.00 | 0.172 |
| 34 | 2.83 | 1.00 | 0.172 |
| 35 | 2.92 | 1.00 | 0.172 |
| 36 | 3.00 | 1.00 | 0.172 |
| 37 | 3.08 | 1.00 | 0.172 |
| 38 | 3.17 | 1.10 | 0.189 |
| 39 | 3.25 | 1.10 | 0.189 |
| 40 | 3.33 | 1.10 | 0.189 |
| 41 | 3.42 | 1.20 | 0.206 |
| 42 | 3.50 | 1.30 | 0.223 |
| 43 | 3.58 | 1.40 | 0.241 |
| 44 | 3.67 | 1.40 | 0.241 |
| 45 | 3.75 | 1.50 | 0.258 |
| 46 | 3.83 | 1.50 | 0.258 |
| 47 | 3.92 | 1.60 | 0.275 |
| 48 | 4.00 | 1.60 | 0.275 |
| 49 | 4.08 | 1.70 | 0.292 |
| 50 | 4.17 | 1.80 | 0.309 |
| 51 | 4.25 | 1.90 | 0.326 |
| 52 | 4.33 | 2.00 | 0.344 |
| 53 | 4.42 | 2.10 | 0.361 |
| 54 | 4.50 | 2.10 | 0.361 |
| 55 | 4.58 | 2.20 | 0.378 |
| 56 | 4.67 | 2.30 | 0.395 |
| 57 | 4.75 | 2.40 | 0.412 |
| 58 | 4.83 | 2.40 | 0.412 |


| Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: |
| Max | Low | (In/Hr) |
| $0.155)$ | 0.033 | 0.053 |
| $0.155)$ | 0.039 | 0.064 |
| $0.155)$ | 0.039 | 0.064 |
| (0.155) | 0.039 | 0.064 |
| $0.155)$ | 0.039 | 0.064 |
| $0.155)$ | 0.046 | 0.075 |
| $0.155)$ | 0.046 | 0.075 |
| $0.155)$ | 0.046 | 0.075 |
| $0.155)$ | 0.046 | 0.075 |
| $0.155)$ | 0.046 | 0.075 |
| $0.155)$ | 0.046 | 0.075 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| (0.155) | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.052 | 0.085 |
| $0.155)$ | 0.059 | 0.096 |
| (0.155) | 0.052 | 0.085 |
| $0.155)$ | 0.059 | 0.096 |
| $0.155)$ | 0.059 | 0.096 |
| $0.155)$ | 0.059 | 0.096 |
| $0.155)$ | 0.059 | 0.096 |
| $0.155)$ | 0.059 | 0.096 |
| (0.155) | 0.059 | 0.096 |
| (0.155) | 0.059 | 0.096 |
| $0.155)$ | 0.065 | 0.107 |
| ( 0.155) | 0.065 | 0.107 |
| $0.155)$ | 0.065 | 0.107 |
| $0.155)$ | 0.065 | 0.107 |
| ( 0.155) | 0.065 | 0.107 |
| (0.155) | 0.072 | 0.117 |
| (0.155) | 0.072 | 0.117 |
| (0.155) | 0.072 | 0.117 |
| ( 0.155) | 0.078 | 0.128 |
| ( 0.155) | 0.085 | 0.138 |
| (0.155) | 0.091 | 0.149 |
| ( 0.155) | 0.091 | 0.149 |
| (0.155) | 0.098 | 0.160 |
| (0.155) | 0.098 | 0.160 |
| (0.155) | 0.104 | 0.170 |
| ( 0.155) | 0.104 | 0.170 |
| (0.155) | 0.111 | 0.181 |
| ( 0.155) | 0.118 | 0.192 |
| ( 0.155) | 0.124 | 0.202 |
| (0.155) | 0.131 | 0.213 |
| (0.155) | 0.137 | 0.224 |
| (0.155) | 0.137 | 0.224 |
| ( 0.155) | 0.144 | 0.234 |
| ( 0.155) | 0.150 | 0.245 |
| 0.155 | ( 0.157) | 0.258 |
| 0.155 | ( 0.157) | 0.258 |



| 0+50 | 0.0481 | 0.82 | \| | VQ |  | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+55 | 0.0537 | 0.82 | \| | VQ |  | \| | \| |
| 1+ 0 | 0.0597 | 0.87 | \| | VQ |  | \| | \| |
| 1+ 5 | 0.0661 | 0.93 | \| | Q |  | \| | \| |
| 1+10 | 0.0726 | 0.94 | \| | Q |  | \| | \| |
| 1+15 | 0.0790 | 0.94 | \| | Q |  | \| | \| |
| 1+20 | 0.0855 | 0.94 | \| | Q |  | \| | \| |
| 1+25 | 0.0919 | 0.94 | \| | QV |  | \| | \| |
| 1+30 | 0.0984 | 0.94 | \| | QV |  | \| | \| |
| 1+35 | 0.1048 | 0.94 | \| | QV |  | \| | \| |
| 1+40 | 0.1113 | 0.94 | \| | Q V |  | \| | \| |
| 1+45 | 0.1177 | 0.94 | 1 | Q V |  | \| | \| |
| 1+50 | 0.1242 | 0.94 | \| | Q V |  | \| | \| |
| 1+55 | 0.1306 | 0.94 | \| | Q | V | \| | \| |
| 2+ 0 | 0.1375 | 0.99 | \| |  | V | \| | \| |
| 2+ 5 | 0.1443 | 0.99 | \| |  | V | 1 | \| |
| 2+10 | 0.1512 | 1.00 | 1 | Q | V | । | \| |
| 2+15 | 0.1584 | 1.05 | \| | Q | V |  | \| |
| 2+20 | 0.1656 | 1.05 | \| | Q | V |  | \| |
| 2+25 | 0.1729 | 1.05 | I | Q | V |  | \| |
| 2+30 | 0.1801 | 1.05 | \| | Q | V |  | \| |
| 2+35 | 0.1874 | 1.05 | \| | Q | V |  | \| |
| 2+40 | 0.1946 | 1.05 | \| | Q |  | \| |  |
| 2+45 | 0.2023 | 1.11 | \| | Q |  | I |  |
| 2+50 | 0.2103 | 1.16 | \| | Q |  | \| | \| |
| 2+55 | 0.2183 | 1.17 | \| | Q |  | V | \| |
| 3+ 0 | 0.2264 | 1.17 | \| | Q |  | V | \| |
| 3+ 5 | 0.2345 | 1.17 | \| | Q |  | V | \| |
| 3+10 | 0.2429 | 1.22 | \| | Q |  | IV | \| |
| 3+15 | 0.2517 | 1.28 | \| | Q |  | IV | \| |



| 5+50 | 0.8557 | 0.68 | \\| Q | \| | I | \\| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5+55 | 0.8590 | 0.49 | IQ | \| | \| | \| |
| $6+0$ | 0.8612 | 0.31 | IQ | \| | \| | \| |
| 6+ 5 | 0.8622 | 0.14 | Q |  | \| | \| |
| 6+10 | 0.8623 | 0.02 | Q |  | \| | \| |
| 6+15 | 0.8623 | 0.00 | Q | \| | \| | \| |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post610.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
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    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
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$10.90 \quad 1.09 \quad 11.88$
100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain |
| :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) |
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| 2 | 0.17 | 0.60 | 0.122 |
| 3 | 0.25 | 0.60 | 0.122 |
| 4 | 0.33 | 0.60 | 0.122 |
| 5 | 0.42 | 0.60 | 0.122 |
| 6 | 0.50 | 0.70 | 0.142 |
| 7 | 0.58 | 0.70 | 0.142 |
| 8 | 0.67 | 0.70 | 0.142 |
| 9 | 0.75 | 0.70 | 0.142 |
| 10 | 0.83 | 0.70 | 0.142 |
| 11 | 0.92 | 0.70 | 0.142 |
| 12 | 1.00 | 0.80 | 0.162 |
| 13 | 1.08 | 0.80 | 0.162 |
| 14 | 1.17 | 0.80 | 0.162 |
| 15 | 1.25 | 0.80 | 0.162 |
| 16 | 1.33 | 0.80 | 0.162 |
| 17 | 1.42 | 0.80 | 0.162 |
| 18 | 1.50 | 0.80 | 0.162 |
| 19 | 1.58 | 0.80 | 0.162 |
| 20 | 1.67 | 0.80 | 0.162 |
| 21 | 1.75 | 0.80 | 0.162 |
| 22 | 1.83 | 0.80 | 0.162 |
| 23 | 1.92 | 0.80 | 0.162 |
| 24 | 2.00 | 0.90 | 0.183 |
| 25 | 2.08 | 0.80 | 0.162 |
| 26 | 2.17 | 0.90 | 0.183 |
| 27 | 2.25 | 0.90 | 0.183 |
| 28 | 2.33 | 0.90 | 0.183 |
| 29 | 2.42 | 0.90 | 0.183 |
| 30 | 2.50 | 0.90 | 0.183 |
| 31 | 2.58 | 0.90 | 0.183 |
| 32 | 2.67 | 0.90 | 0.183 |
| 33 | 2.75 | 1.00 | 0.203 |
| 34 | 2.83 | 1.00 | 0.203 |
| 35 | 2.92 | 1.00 | 0.203 |
| 36 | 3.00 | 1.00 | 0.203 |
| 37 | 3.08 | 1.00 | 0.203 |
| 38 | 3.17 | 1.10 | 0.223 |
| 39 | 3.25 | 1.10 | 0.223 |
| 40 | 3.33 | 1.10 | 0.223 |
| 41 | 3.42 | 1.20 | 0.243 |
| 42 | 3.50 | 1.30 | 0.264 |
| 43 | 3.58 | 1.40 | 0.284 |
| 44 | 3.67 | 1.40 | 0.284 |
| 45 | 3.75 | 1.50 | 0.304 |
| 46 | 3.83 | 1.50 | 0.304 |
| 47 | 3.92 | 1.60 | 0.325 |
| 48 | 4.00 | 1.60 | 0.325 |
| 49 | 4.08 | 1.70 | 0.345 |
| 50 | 4.17 | 1.80 | 0.365 |
| 51 | 4.25 | 1.90 | 0.385 |
| 52 | 4.33 | 2.00 | 0.406 |
| 53 | 4.42 | 2.10 | 0.426 |
| 54 | 4.50 | 2.10 | 0.426 |
| 55 | 4.58 | 2.20 | 0.446 |
| 56 | 4.67 | 2.30 | 0.467 |
| 57 | 4.75 | 2.40 | 0.487 |
| 58 | 4.83 | 2.40 | 0.487 |


| Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: |
| Max | Low | (In/Hr) |
| ( 0.155) | 0.039 | 0.063 |
| ( 0.155) | 0.046 | 0.075 |
| $0.155)$ | 0.046 | 0.075 |
| ( 0.155) | 0.046 | 0.075 |
| ( 0.155) | 0.046 | 0.075 |
| ( 0.155) | 0.054 | 0.088 |
| ( 0.155) | 0.054 | 0.088 |
| $0.155)$ | 0.054 | 0.088 |
| ( 0.155) | 0.054 | 0.088 |
| ( 0.155) | 0.054 | 0.088 |
| $0.155)$ | 0.054 | 0.088 |
| ( 0.155) | 0.062 | 0.101 |
| $0.155)$ | 0.062 | 0.101 |
| ( 0.155) | 0.062 | 0.101 |
| ( 0.155) | 0.062 | 0.101 |
| ( 0.155) | 0.062 | 0.101 |
| ( 0.155) | 0.062 | 0.101 |
| $0.155)$ | 0.062 | 0.101 |
| $0.155)$ | 0.062 | 0.101 |
| $0.155)$ | 0.062 | 0.101 |
| ( 0.155) | 0.062 | 0.101 |
| $0.155)$ | 0.062 | 0.101 |
| ( 0.155) | 0.062 | 0.101 |
| $0.155)$ | 0.069 | 0.113 |
| $0.155)$ | 0.062 | 0.101 |
| $0.155)$ | 0.069 | 0.113 |
| $0.155)$ | 0.069 | 0.113 |
| ( 0.155) | 0.069 | 0.113 |
| (0.155) | 0.069 | 0.113 |
| ( 0.155) | 0.069 | 0.113 |
| ( 0.155) | 0.069 | 0.113 |
| $0.155)$ | 0.069 | 0.113 |
| ( 0.155) | 0.077 | 0.126 |
| ( 0.155) | 0.077 | 0.126 |
| (0.155) | 0.077 | 0.126 |
| (0.155) | 0.077 | 0.126 |
| $0.155)$ | 0.077 | 0.126 |
| ( 0.155) | 0.085 | 0.138 |
| $0.155)$ | 0.085 | 0.138 |
| ( 0.155) | 0.085 | 0.138 |
| (0.155) | 0.093 | 0.151 |
| (0.155) | 0.100 | 0.164 |
| $0.155)$ | 0.108 | 0.176 |
| $0.155)$ | 0.108 | 0.176 |
| $0.155)$ | 0.116 | 0.189 |
| $0.155)$ | 0.116 | 0.189 |
| ( 0.155) | 0.123 | 0.201 |
| (0.155) | 0.123 | 0.201 |
| (0.155) | 0.131 | 0.214 |
| (0.155) | 0.139 | 0.226 |
| ( 0.155) | 0.146 | 0.239 |
| ( 0.155) | 0.154 | 0.252 |
| 0.155 | ( 0.162) | 0.271 |
| 0.155 | ( 0.162) | 0.271 |
| 0.155 | ( 0.170) | 0.292 |
| 0.155 | (0.177) | 0.312 |
| 0.155 | (0.185) | 0.332 |
| 0.155 | ( 0.185) | 0.332 |





| $5+50$ | 1.0353 | 0.81 | \\| Q | \| | I | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5+55 | 1.0393 | 0.58 | \| Q | \| | \| | \| |
| 6+ 0 | 1.0419 | 0.37 | IQ | \| | \| | \| |
| 6+ 5 | 1.0430 | 0.16 | Q | \| | \| | \| |
| 6+10 | 1.0431 | 0.02 | Q | \| | \| | \| |
| 6+15 | 1.0431 | 0.00 | Q | \| | \| | 1 |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post6100.out
                    _+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 6 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rat | n./Hr ) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| 1 | 0.08 | 0.50 | 0.153 | ( 0.080) | 0.058 | 0.095 |
| 2 | 0.17 | 0.60 | 0.184 | ( 0.080) | 0.070 | 0.114 |
| 3 | 0.25 | 0.60 | 0.184 | ( 0.080) | 0.070 | 0.114 |
| 4 | 0.33 | 0.60 | 0.184 | ( 0.080) | 0.070 | 0.114 |
| 5 | 0.42 | 0.60 | 0.184 | ( 0.080) | 0.070 | 0.114 |
| 6 | 0.50 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 7 | 0.58 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 8 | 0.67 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 9 | 0.75 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 10 | 0.83 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 11 | 0.92 | 0.70 | 0.214 | 0.080 | ( 0.081) | 0.134 |
| 12 | 1.00 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 13 | 1.08 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 14 | 1.17 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 15 | 1.25 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 16 | 1.33 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 17 | 1.42 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 18 | 1.50 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 19 | 1.58 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 20 | 1.67 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 21 | 1.75 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 22 | 1.83 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 23 | 1.92 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 24 | 2.00 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 25 | 2.08 | 0.80 | 0.245 | 0.080 | ( 0.093) | 0.164 |
| 26 | 2.17 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 27 | 2.25 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 28 | 2.33 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 29 | 2.42 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 30 | 2.50 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 31 | 2.58 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 32 | 2.67 | 0.90 | 0.275 | 0.080 | ( 0.105) | 0.195 |
| 33 | 2.75 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 34 | 2.83 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 35 | 2.92 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 36 | 3.00 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 37 | 3.08 | 1.00 | 0.306 | 0.080 | ( 0.116) | 0.226 |
| 38 | 3.17 | 1.10 | 0.337 | 0.080 | ( 0.128) | 0.256 |
| 39 | 3.25 | 1.10 | 0.337 | 0.080 | ( 0.128) | 0.256 |
| 40 | 3.33 | 1.10 | 0.337 | 0.080 | ( 0.128) | 0.256 |
| 41 | 3.42 | 1.20 | 0.367 | 0.080 | ( 0.140) | 0.287 |
| 42 | 3.50 | 1.30 | 0.398 | 0.080 | ( 0.151) | 0.317 |
| 43 | 3.58 | 1.40 | 0.428 | 0.080 | ( 0.163) | 0.348 |
| 44 | 3.67 | 1.40 | 0.428 | 0.080 | ( 0.163) | 0.348 |
| 45 | 3.75 | 1.50 | 0.459 | 0.080 | ( 0.174) | 0.379 |
| 46 | 3.83 | 1.50 | 0.459 | 0.080 | ( 0.174) | 0.379 |
| 47 | 3.92 | 1.60 | 0.490 | 0.080 | ( 0.186) | 0.409 |
| 48 | 4.00 | 1.60 | 0.490 | 0.080 | ( 0.186) | 0.409 |
| 49 | 4.08 | 1.70 | 0.520 | 0.080 | ( 0.198) | 0.440 |
| 50 | 4.17 | 1.80 | 0.551 | 0.080 | ( 0.209) | 0.470 |
| 51 | 4.25 | 1.90 | 0.581 | 0.080 | ( 0.221) | 0.501 |
| 52 | 4.33 | 2.00 | 0.612 | 0.080 | ( 0.233) | 0.532 |
| 53 | 4.42 | 2.10 | 0.643 | 0.080 | ( 0.244) | 0.562 |
| 54 | 4.50 | 2.10 | 0.643 | 0.080 | ( 0.244) | 0.562 |
| 55 | 4.58 | 2.20 | 0.673 | 0.080 | ( 0.256) | 0.593 |
| 56 | 4.67 | 2.30 | 0.704 | 0.080 | (0.267) | 0.623 |
| 57 | 4.75 | 2.40 | 0.734 | 0.080 | ( 0.279) | 0.654 |
| 58 | 4.83 | 2.40 | 0.734 | 0.080 | ( 0.279) | 0.654 |



| 0+50 | 0.0859 | 1.47 | IVQ |  |  | I | \| |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0+55 | 0.0961 | 1.47 | \\| Q |  |  |  | \| |  |
| 1+ 0 | 0.1072 | 1.62 | \\| V | v |  |  | \| |  |
| 1+ 5 | 0.1195 | 1.78 | \\| VQ | Q |  |  | \| |  |
| 1+10 | 0.1319 | 1.80 | \| VQ | VQ |  |  | \| |  |
| 1+15 | 0.1444 | 1.81 | \| | Q |  |  | \| |  |
| 1+20 | 0.1568 | 1.81 |  | Q |  |  | \| |  |
| 1+25 | 0.1693 | 1.81 |  | Q |  |  | \| |  |
| 1+30 | 0.1817 | 1.81 |  | Q |  |  | \| |  |
| 1+35 | 0.1941 | 1.81 |  | QV |  | 1 | \| |  |
| 1+40 | 0.2066 | 1.81 |  | QV |  | \| | \| |  |
| 1+45 | 0.2190 | 1.81 |  | QV |  |  | \| |  |
| 1+50 | 0.2315 | 1.81 | \| | QV |  |  | \| |  |
| 1+55 | 0.2439 | 1.81 |  | Q V |  | , | \| |  |
| 2+ 0 | 0.2574 | 1.96 |  | Q V |  |  | \| |  |
| 2+ 5 | 0.2709 | 1.97 |  | Q V |  |  | \| |  |
| 2+10 | 0.2846 | 1.98 |  | Q V | V |  | \| |  |
| 2+15 | 0.2992 | 2.12 | I | Q |  |  | \| |  |
| 2+20 | 0.3139 | 2.14 | \\| | Q |  |  | \| |  |
| 2+25 | 0.3287 | 2.14 |  | Q |  |  | \| |  |
| 2+30 | 0.3434 | 2.14 | \| | Q | V |  | \| |  |
| 2+35 | 0.3582 | 2.14 | \| | Q | V |  | \| |  |
| 2+40 | 0.3729 | 2.14 |  | Q |  |  | \| |  |
| 2+45 | 0.3887 | 2.29 | 1 | Q | V |  | \| |  |
| 2+50 | 0.4057 | 2.46 | \| | Q | V |  | \| |  |
| 2+55 | 0.4227 | 2.48 | \| | Q | V |  | \| | 1 |
| 3+ 0 | 0.4398 | 2.48 | \| | Q |  |  | \| | 1 |
| 3+ 5 | 0.4569 | 2.48 | 1 | Q |  |  | \| |  |
| 3+10 | 0.4750 | 2.63 | 1 | Q |  | V | \| |  |
| 3+15 | 0.4942 | 2.79 | \| | Q |  | V |  | \| |



| 5+50 | 1.8811 | 1.24 | \| Q | \| | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $5+55$ | 1.8872 | 0.88 | IQ |  | \| | \| |
| 6+ 0 | 1.8910 | 0.56 | IQ |  | \| | \| |
| $6+5$ | 1.8927 | 0.25 | Q |  | \| | \| |
| 6+10 | 1.8929 | 0.03 | Q |  | \| | \| |
| 6+15 | 1.8929 | 0.00 | Q | \| | 1 | 1 |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post242.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| 1 | 0.08 | 0.07 | 0.015 | ( 0.274) | 0.006 | 0.010 |
| 2 | 0.17 | 0.07 | 0.015 | ( 0.273) | 0.006 | 0.010 |
| 3 | 0.25 | 0.07 | 0.015 | ( 0.272) | 0.006 | 0.010 |
| 4 | 0.33 | 0.10 | 0.023 | ( 0.271) | 0.009 | 0.014 |
| 5 | 0.42 | 0.10 | 0.023 | ( 0.270) | 0.009 | 0.014 |
| 6 | 0.50 | 0.10 | 0.023 | ( 0.269) | 0.009 | 0.014 |
| 7 | 0.58 | 0.10 | 0.023 | ( 0.268) | 0.009 | 0.014 |
| 8 | 0.67 | 0.10 | 0.023 | ( 0.267) | 0.009 | 0.014 |
| 9 | 0.75 | 0.10 | 0.023 | ( 0.266) | 0.009 | 0.014 |
| 10 | 0.83 | 0.13 | 0.031 | ( 0.265) | 0.012 | 0.019 |
| 11 | 0.92 | 0.13 | 0.031 | ( 0.264) | 0.012 | 0.019 |
| 12 | 1.00 | 0.13 | 0.031 | ( 0.263) | 0.012 | 0.019 |
| 13 | 1.08 | 0.10 | 0.023 | ( 0.262) | 0.009 | 0.014 |
| 14 | 1.17 | 0.10 | 0.023 | ( 0.261) | 0.009 | 0.014 |
| 15 | 1.25 | 0.10 | 0.023 | ( 0.260) | 0.009 | 0.014 |
| 16 | 1.33 | 0.10 | 0.023 | ( 0.259) | 0.009 | 0.014 |
| 17 | 1.42 | 0.10 | 0.023 | (0.258) | 0.009 | 0.014 |
| 18 | 1.50 | 0.10 | 0.023 | ( 0.257) | 0.009 | 0.014 |
| 19 | 1.58 | 0.10 | 0.023 | ( 0.255) | 0.009 | 0.014 |
| 20 | 1.67 | 0.10 | 0.023 | ( 0.254) | 0.009 | 0.014 |
| 21 | 1.75 | 0.10 | 0.023 | ( 0.253) | 0.009 | 0.014 |
| 22 | 1.83 | 0.13 | 0.031 | ( 0.252) | 0.012 | 0.019 |
| 23 | 1.92 | 0.13 | 0.031 | ( 0.251) | 0.012 | 0.019 |
| 24 | 2.00 | 0.13 | 0.031 | ( 0.250) | 0.012 | 0.019 |
| 25 | 2.08 | 0.13 | 0.031 | ( 0.249) | 0.012 | 0.019 |
| 26 | 2.17 | 0.13 | 0.031 | ( 0.248) | 0.012 | 0.019 |
| 27 | 2.25 | 0.13 | 0.031 | ( 0.247) | 0.012 | 0.019 |
| 28 | 2.33 | 0.13 | 0.031 | ( 0.246) | 0.012 | 0.019 |
| 29 | 2.42 | 0.13 | 0.031 | ( 0.245) | 0.012 | 0.019 |
| 30 | 2.50 | 0.13 | 0.031 | ( 0.244) | 0.012 | 0.019 |
| 31 | 2.58 | 0.17 | 0.039 | ( 0.243) | 0.015 | 0.024 |
| 32 | 2.67 | 0.17 | 0.039 | ( 0.242) | 0.015 | 0.024 |
| 33 | 2.75 | 0.17 | 0.039 | ( 0.241) | 0.015 | 0.024 |
| 34 | 2.83 | 0.17 | 0.039 | ( 0.240) | 0.015 | 0.024 |
| 35 | 2.92 | 0.17 | 0.039 | ( 0.239) | 0.015 | 0.024 |
| 36 | 3.00 | 0.17 | 0.039 | ( 0.238) | 0.015 | 0.024 |
| 37 | 3.08 | 0.17 | 0.039 | ( 0.237) | 0.015 | 0.024 |
| 38 | 3.17 | 0.17 | 0.039 | ( 0.236) | 0.015 | 0.024 |
| 39 | 3.25 | 0.17 | 0.039 | ( 0.235) | 0.015 | 0.024 |
| 40 | 3.33 | 0.17 | 0.039 | ( 0.234) | 0.015 | 0.024 |
| 41 | 3.42 | 0.17 | 0.039 | ( 0.233) | 0.015 | 0.024 |
| 42 | 3.50 | 0.17 | 0.039 | ( 0.232) | 0.015 | 0.024 |
| 43 | 3.58 | 0.17 | 0.039 | ( 0.232) | 0.015 | 0.024 |
| 44 | 3.67 | 0.17 | 0.039 | ( 0.231) | 0.015 | 0.024 |
| 45 | 3.75 | 0.17 | 0.039 | ( 0.230) | 0.015 | 0.024 |
| 46 | 3.83 | 0.20 | 0.046 | ( 0.229) | 0.018 | 0.029 |
| 47 | 3.92 | 0.20 | 0.046 | ( 0.228) | 0.018 | 0.029 |
| 48 | 4.00 | 0.20 | 0.046 | ( 0.227) | 0.018 | 0.029 |
| 49 | 4.08 | 0.20 | 0.046 | ( 0.226) | 0.018 | 0.029 |
| 50 | 4.17 | 0.20 | 0.046 | ( 0.225) | 0.018 | 0.029 |
| 51 | 4.25 | 0.20 | 0.046 | ( 0.224) | 0.018 | 0.029 |
| 52 | 4.33 | 0.23 | 0.054 | ( 0.223) | 0.021 | 0.034 |
| 53 | 4.42 | 0.23 | 0.054 | ( 0.222) | 0.021 | 0.034 |
| 54 | 4.50 | 0.23 | 0.054 | ( 0.221) | 0.021 | 0.034 |
| 55 | 4.58 | 0.23 | 0.054 | ( 0.220) | 0.021 | 0.034 |
| 56 | 4.67 | 0.23 | 0.054 | ( 0.219) | 0.021 | 0.034 |
| 57 | 4.75 | 0.23 | 0.054 | ( 0.218) | 0.021 | 0.034 |
| 58 | 4.83 | 0.27 | 0.062 | ( 0.217) | 0.023 | 0.038 |


| 59 | 4.92 | 0.27 | 0.062 | 0.216) | 0.023 | 0.038 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 60 | 5.00 | 0.27 | 0.062 | $0.215)$ | 0.023 | 0.038 |
| 61 | 5.08 | 0.20 | 0.046 | $0.214)$ | 0.018 | 0.029 |
| 62 | 5.17 | 0.20 | 0.046 | 0.213) | 0.018 | 0.029 |
| 63 | 5.25 | 0.20 | 0.046 | 0.212) | 0.018 | 0.029 |
| 64 | 5.33 | 0.23 | 0.054 | $0.212)$ | 0.021 | 0.034 |
| 65 | 5.42 | 0.23 | 0.054 | 0.211) | 0.021 | 0.034 |
| 66 | 5.50 | 0.23 | 0.054 | 0.210) | 0.021 | 0.034 |
| 67 | 5.58 | 0.27 | 0.062 | $0.209)$ | 0.023 | 0.038 |
| 68 | 5.67 | 0.27 | 0.062 | $0.208)$ | 0.023 | 0.038 |
| 69 | 5.75 | 0.27 | 0.062 | 0.207) | 0.023 | 0.038 |
| 70 | 5.83 | 0.27 | 0.062 | 0.206) | 0.023 | 0.038 |
| 71 | 5.92 | 0.27 | 0.062 | $0.205)$ | 0.023 | 0.038 |
| 72 | 6.00 | 0.27 | 0.062 | $0.204)$ | 0.023 | 0.038 |
| 73 | 6.08 | 0.30 | 0.069 | $0.203)$ | 0.026 | 0.043 |
| 74 | 6.17 | 0.30 | 0.069 | 0.202) | 0.026 | 0.043 |
| 75 | 6.25 | 0.30 | 0.069 | $0.202)$ | 0.026 | 0.043 |
| 76 | 6.33 | 0.30 | 0.069 | 0.201) | 0.026 | 0.043 |
| 77 | 6.42 | 0.30 | 0.069 | 0.200) | 0.026 | 0.043 |
| 78 | 6.50 | 0.30 | 0.069 | $0.199)$ | 0.026 | 0.043 |
| 79 | 6.58 | 0.33 | 0.077 | 0.198) | 0.029 | 0.048 |
| 80 | 6.67 | 0.33 | 0.077 | $0.197)$ | 0.029 | 0.048 |
| 81 | 6.75 | 0.33 | 0.077 | 0.196) | 0.029 | 0.048 |
| 82 | 6.83 | 0.33 | 0.077 | $0.195)$ | 0.029 | 0.048 |
| 83 | 6.92 | 0.33 | 0.077 | $0.194)$ | 0.029 | 0.048 |
| 84 | 7.00 | 0.33 | 0.077 | 0.193) | 0.029 | 0.048 |
| 85 | 7.08 | 0.33 | 0.077 | $0.193)$ | 0.029 | 0.048 |
| 86 | 7.17 | 0.33 | 0.077 | $0.192)$ | 0.029 | 0.048 |
| 87 | 7.25 | 0.33 | 0.077 | 0.191) | 0.029 | 0.048 |
| 88 | 7.33 | 0.37 | 0.085 | 0.190) | 0.032 | 0.053 |
| 89 | 7.42 | 0.37 | 0.085 | $0.189)$ | 0.032 | 0.053 |
| 90 | 7.50 | 0.37 | 0.085 | $0.188)$ | 0.032 | 0.053 |
| 91 | 7.58 | 0.40 | 0.093 | 0.187) | 0.035 | 0.057 |
| 92 | 7.67 | 0.40 | 0.093 | 0.187) | 0.035 | 0.057 |
| 93 | 7.75 | 0.40 | 0.093 | 0.186) | 0.035 | 0.057 |
| 94 | 7.83 | 0.43 | 0.100 | $0.185)$ | 0.038 | 0.062 |
| 95 | 7.92 | 0.43 | 0.100 | $0.184)$ | 0.038 | 0.062 |
| 96 | 8.00 | 0.43 | 0.100 | $0.183)$ | 0.038 | 0.062 |
| 97 | 8.08 | 0.50 | 0.116 | $0.182)$ | 0.044 | 0.072 |
| 98 | 8.17 | 0.50 | 0.116 | 0.181) | 0.044 | 0.072 |
| 99 | 8.25 | 0.50 | 0.116 | 0.181) | 0.044 | 0.072 |
| 100 | 8.33 | 0.50 | 0.116 | 0.180) | 0.044 | 0.072 |
| 101 | 8.42 | 0.50 | 0.116 | 0.179) | 0.044 | 0.072 |
| 102 | 8.50 | 0.50 | 0.116 | 0.178) | 0.044 | 0.072 |
| 103 | 8.58 | 0.53 | 0.124 | 0.177) | 0.047 | 0.077 |
| 104 | 8.67 | 0.53 | 0.124 | 0.176) | 0.047 | 0.077 |
| 105 | 8.75 | 0.53 | 0.124 | 0.176) | 0.047 | 0.077 |
| 106 | 8.83 | 0.57 | 0.131 | $0.175)$ | 0.050 | 0.081 |
| 107 | 8.92 | 0.57 | 0.131 | $0.174)$ | 0.050 | 0.081 |
| 108 | 9.00 | 0.57 | 0.131 | $0.173)$ | 0.050 | 0.081 |
| 109 | 9.08 | 0.63 | 0.147 | 0.172) | 0.056 | 0.091 |
| 110 | 9.17 | 0.63 | 0.147 | 0.171) | 0.056 | 0.091 |
| 111 | 9.25 | 0.63 | 0.147 | 0.171) | 0.056 | 0.091 |
| 112 | 9.33 | 0.67 | 0.154 | 0.170) | 0.059 | 0.096 |
| 113 | 9.42 | 0.67 | 0.154 | 0.169) | 0.059 | 0.096 |
| 114 | 9.50 | 0.67 | 0.154 | 0.168) | 0.059 | 0.096 |
| 115 | 9.58 | 0.70 | 0.162 | 0.167) | 0.062 | 0.101 |
| 116 | 9.67 | 0.70 | 0.162 | 0.167) | 0.062 | 0.101 |
| 117 | 9.75 | 0.70 | 0.162 | 0.166) | 0.062 | 0.101 |
| 118 | 9.83 | 0.73 | 0.170 | $0.165)$ | 0.065 | 0.105 |


| 119 | 9.92 | 0.73 | 0.170 | $0.164)$ | 0.065 | 0.105 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 120 | 10.00 | 0.73 | 0.170 | 0.163) | 0.065 | 0.105 |
| 121 | 10.08 | 0.50 | 0.116 | $0.163)$ | 0.044 | 0.072 |
| 122 | 10.17 | 0.50 | 0.116 | $0.162)$ | 0.044 | 0.072 |
| 123 | 10.25 | 0.50 | 0.116 | 0.161) | 0.044 | 0.072 |
| 124 | 10.33 | 0.50 | 0.116 | 0.160) | 0.044 | 0.072 |
| 125 | 10.42 | 0.50 | 0.116 | $0.159)$ | 0.044 | 0.072 |
| 126 | 10.50 | 0.50 | 0.116 | $0.159)$ | 0.044 | 0.072 |
| 127 | 10.58 | 0.67 | 0.154 | 0.158) | 0.059 | 0.096 |
| 128 | 10.67 | 0.67 | 0.154 | 0.157) | 0.059 | 0.096 |
| 129 | 10.75 | 0.67 | 0.154 | $0.156)$ | 0.059 | 0.096 |
| 130 | 10.83 | 0.67 | 0.154 | $0.156)$ | 0.059 | 0.096 |
| 131 | 10.92 | 0.67 | 0.154 | $0.155)$ | 0.059 | 0.096 |
| 132 | 11.00 | 0.67 | 0.154 | $0.154)$ | 0.059 | 0.096 |
| 133 | 11.08 | 0.63 | 0.147 | $0.153)$ | 0.056 | 0.091 |
| 134 | 11.17 | 0.63 | 0.147 | $0.153)$ | 0.056 | 0.091 |
| 135 | 11.25 | 0.63 | 0.147 | $0.152)$ | 0.056 | 0.091 |
| 136 | 11.33 | 0.63 | 0.147 | 0.151) | 0.056 | 0.091 |
| 137 | 11.42 | 0.63 | 0.147 | 0.150) | 0.056 | 0.091 |
| 138 | 11.50 | 0.63 | 0.147 | 0.150) | 0.056 | 0.091 |
| 139 | 11.58 | 0.57 | 0.131 | $0.149)$ | 0.050 | 0.081 |
| 140 | 11.67 | 0.57 | 0.131 | $0.148)$ | 0.050 | 0.081 |
| 141 | 11.75 | 0.57 | 0.131 | 0.147) | 0.050 | 0.081 |
| 142 | 11.83 | 0.60 | 0.139 | 0.147) | 0.053 | 0.086 |
| 143 | 11.92 | 0.60 | 0.139 | $0.146)$ | 0.053 | 0.086 |
| 144 | 12.00 | 0.60 | 0.139 | $0.145)$ | 0.053 | 0.086 |
| 145 | 12.08 | 0.83 | 0.193 | $0.144)$ | 0.073 | 0.120 |
| 146 | 12.17 | 0.83 | 0.193 | $0.144)$ | 0.073 | 0.120 |
| 147 | 12.25 | 0.83 | 0.193 | $0.143)$ | 0.073 | 0.120 |
| 148 | 12.33 | 0.87 | 0.201 | $0.142)$ | 0.076 | 0.124 |
| 149 | 12.42 | 0.87 | 0.201 | $0.142)$ | 0.076 | 0.124 |
| 150 | 12.50 | 0.87 | 0.201 | 0.141) | 0.076 | 0.124 |
| 151 | 12.58 | 0.93 | 0.216 | 0.140) | 0.082 | 0.134 |
| 152 | 12.67 | 0.93 | 0.216 | 0.139) | 0.082 | 0.134 |
| 153 | 12.75 | 0.93 | 0.216 | 0.139) | 0.082 | 0.134 |
| 154 | 12.83 | 0.97 | 0.224 | $0.138)$ | 0.085 | 0.139 |
| 155 | 12.92 | 0.97 | 0.224 | 0.137) | 0.085 | 0.139 |
| 156 | 13.00 | 0.97 | 0.224 | 0.137) | 0.085 | 0.139 |
| 157 | 13.08 | 1.13 | 0.262 | $0.136)$ | 0.100 | 0.163 |
| 158 | 13.17 | 1.13 | 0.262 | $0.135)$ | 0.100 | 0.163 |
| 159 | 13.25 | 1.13 | 0.262 | $0.135)$ | 0.100 | 0.163 |
| 160 | 13.33 | 1.13 | 0.262 | $0.134)$ | 0.100 | 0.163 |
| 161 | 13.42 | 1.13 | 0.262 | $0.133)$ | 0.100 | 0.163 |
| 162 | 13.50 | 1.13 | 0.262 | $0.133)$ | 0.100 | 0.163 |
| 163 | 13.58 | 0.77 | 0.178 | 0.132) | 0.067 | 0.110 |
| 164 | 13.67 | 0.77 | 0.178 | 0.131) | 0.067 | 0.110 |
| 165 | 13.75 | 0.77 | 0.178 | 0.130) | 0.067 | 0.110 |
| 166 | 13.83 | 0.77 | 0.178 | 0.130) | 0.067 | 0.110 |
| 167 | 13.92 | 0.77 | 0.178 | $0.129)$ | 0.067 | 0.110 |
| 168 | 14.00 | 0.77 | 0.178 | $0.129)$ | 0.067 | 0.110 |
| 169 | 14.08 | 0.90 | 0.208 | $0.128)$ | 0.079 | 0.129 |
| 170 | 14.17 | 0.90 | 0.208 | 0.127) | 0.079 | 0.129 |
| 171 | 14.25 | 0.90 | 0.208 | 0.127) | 0.079 | 0.129 |
| 172 | 14.33 | 0.87 | 0.201 | $0.126)$ | 0.076 | 0.124 |
| 173 | 14.42 | 0.87 | 0.201 | $0.125)$ | 0.076 | 0.124 |
| 174 | 14.50 | 0.87 | 0.201 | $0.125)$ | 0.076 | 0.124 |
| 175 | 14.58 | 0.87 | 0.201 | $0.124)$ | 0.076 | 0.124 |
| 176 | 14.67 | 0.87 | 0.201 | 0.123) | 0.076 | 0.124 |
| 177 | 14.75 | 0.87 | 0.201 | $0.123)$ | 0.076 | 0.124 |
| 178 | 14.83 | 0.83 | 0.193 | $0.122)$ | 0.073 | 0.120 |


| 179 | 14.92 | 0.83 | 0.193 | 0.121) | 0.073 | 0.120 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 180 | 15.00 | 0.83 | 0.193 | 0.121) | 0.073 | 0.120 |
| 181 | 15.08 | 0.80 | 0.185 | 0.120) | 0.070 | 0.115 |
| 182 | 15.17 | 0.80 | 0.185 | 0.120) | 0.070 | 0.115 |
| 183 | 15.25 | 0.80 | 0.185 | $0.119)$ | 0.070 | 0.115 |
| 184 | 15.33 | 0.77 | 0.178 | $0.118)$ | 0.067 | 0.110 |
| 185 | 15.42 | 0.77 | 0.178 | $0.118)$ | 0.067 | 0.110 |
| 186 | 15.50 | 0.77 | 0.178 | 0.117) | 0.067 | 0.110 |
| 187 | 15.58 | 0.63 | 0.147 | 0.117) | 0.056 | 0.091 |
| 188 | 15.67 | 0.63 | 0.147 | $0.116)$ | 0.056 | 0.091 |
| 189 | 15.75 | 0.63 | 0.147 | $0.115)$ | 0.056 | 0.091 |
| 190 | 15.83 | 0.63 | 0.147 | $0.115)$ | 0.056 | 0.091 |
| 191 | 15.92 | 0.63 | 0.147 | $0.114)$ | 0.056 | 0.091 |
| 192 | 16.00 | 0.63 | 0.147 | $0.114)$ | 0.056 | 0.091 |
| 193 | 16.08 | 0.13 | 0.031 | $0.113)$ | 0.012 | 0.019 |
| 194 | 16.17 | 0.13 | 0.031 | $0.112)$ | 0.012 | 0.019 |
| 195 | 16.25 | 0.13 | 0.031 | $0.112)$ | 0.012 | 0.019 |
| 196 | 16.33 | 0.13 | 0.031 | 0.111) | 0.012 | 0.019 |
| 197 | 16.42 | 0.13 | 0.031 | 0.111) | 0.012 | 0.019 |
| 198 | 16.50 | 0.13 | 0.031 | 0.110) | 0.012 | 0.019 |
| 199 | 16.58 | 0.10 | 0.023 | 0.110) | 0.009 | 0.014 |
| 200 | 16.67 | 0.10 | 0.023 | $0.109)$ | 0.009 | 0.014 |
| 201 | 16.75 | 0.10 | 0.023 | $0.109)$ | 0.009 | 0.014 |
| 202 | 16.83 | 0.10 | 0.023 | $0.108)$ | 0.009 | 0.014 |
| 203 | 16.92 | 0.10 | 0.023 | $0.107)$ | 0.009 | 0.014 |
| 204 | 17.00 | 0.10 | 0.023 | $0.107)$ | 0.009 | 0.014 |
| 205 | 17.08 | 0.17 | 0.039 | $0.106)$ | 0.015 | 0.024 |
| 206 | 17.17 | 0.17 | 0.039 | $0.106)$ | 0.015 | 0.024 |
| 207 | 17.25 | 0.17 | 0.039 | $0.105)$ | 0.015 | 0.024 |
| 208 | 17.33 | 0.17 | 0.039 | $0.105)$ | 0.015 | 0.024 |
| 209 | 17.42 | 0.17 | 0.039 | $0.104)$ | 0.015 | 0.024 |
| 210 | 17.50 | 0.17 | 0.039 | $0.104)$ | 0.015 | 0.024 |
| 211 | 17.58 | 0.17 | 0.039 | $0.103)$ | 0.015 | 0.024 |
| 212 | 17.67 | 0.17 | 0.039 | $0.103)$ | 0.015 | 0.024 |
| 213 | 17.75 | 0.17 | 0.039 | $0.102)$ | 0.015 | 0.024 |
| 214 | 17.83 | 0.13 | 0.031 | $0.102)$ | 0.012 | 0.019 |
| 215 | 17.92 | 0.13 | 0.031 | $0.101)$ | 0.012 | 0.019 |
| 216 | 18.00 | 0.13 | 0.031 | $0.101)$ | 0.012 | 0.019 |
| 217 | 18.08 | 0.13 | 0.031 | 0.100) | 0.012 | 0.019 |
| 218 | 18.17 | 0.13 | 0.031 | $0.100)$ | 0.012 | 0.019 |
| 219 | 18.25 | 0.13 | 0.031 | $0.099)$ | 0.012 | 0.019 |
| 220 | 18.33 | 0.13 | 0.031 | $0.099)$ | 0.012 | 0.019 |
| 221 | 18.42 | 0.13 | 0.031 | $0.098)$ | 0.012 | 0.019 |
| 222 | 18.50 | 0.13 | 0.031 | 0.098) | 0.012 | 0.019 |
| 223 | 18.58 | 0.10 | 0.023 | $0.097)$ | 0.009 | 0.014 |
| 224 | 18.67 | 0.10 | 0.023 | $0.097)$ | 0.009 | 0.014 |
| 225 | 18.75 | 0.10 | 0.023 | $0.096)$ | 0.009 | 0.014 |
| 226 | 18.83 | 0.07 | 0.015 | $0.096)$ | 0.006 | 0.010 |
| 227 | 18.92 | 0.07 | 0.015 | $0.095)$ | 0.006 | 0.010 |
| 228 | 19.00 | 0.07 | 0.015 | $0.095)$ | 0.006 | 0.010 |
| 229 | 19.08 | 0.10 | 0.023 | $0.094)$ | 0.009 | 0.014 |
| 230 | 19.17 | 0.10 | 0.023 | $0.094)$ | 0.009 | 0.014 |
| 231 | 19.25 | 0.10 | 0.023 | $0.094)$ | 0.009 | 0.014 |
| 232 | 19.33 | 0.13 | 0.031 | $0.093)$ | 0.012 | 0.019 |
| 233 | 19.42 | 0.13 | 0.031 | $0.093)$ | 0.012 | 0.019 |
| 234 | 19.50 | 0.13 | 0.031 | $0.092)$ | 0.012 | 0.019 |
| 235 | 19.58 | 0.10 | 0.023 | $0.092)$ | 0.009 | 0.014 |
| 236 | 19.67 | 0.10 | 0.023 | 0.091) | 0.009 | 0.014 |
| 237 | 19.75 | 0.10 | 0.023 | $0.091)$ | 0.009 | 0.014 |
| 238 | 19.83 | 0.07 | 0.015 | 0.091) | 0.006 | 0.010 |


| 239 | 19.92 | 0.07 | 0.015 | 0.090) | 0.006 | 0.010 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 240 | 20.00 | 0.07 | 0.015 | 0.090) | 0.006 | 0.010 |
| 241 | 20.08 | 0.10 | 0.023 | $0.089)$ | 0.009 | 0.014 |
| 242 | 20.17 | 0.10 | 0.023 | $0.089)$ | 0.009 | 0.014 |
| 243 | 20.25 | 0.10 | 0.023 | $0.089)$ | 0.009 | 0.014 |
| 244 | 20.33 | 0.10 | 0.023 | $0.088)$ | 0.009 | 0.014 |
| 245 | 20.42 | 0.10 | 0.023 | $0.088)$ | 0.009 | 0.014 |
| 246 | 20.50 | 0.10 | 0.023 | $0.088)$ | 0.009 | 0.014 |
| 247 | 20.58 | 0.10 | 0.023 | $0.087)$ | 0.009 | 0.014 |
| 248 | 20.67 | 0.10 | 0.023 | $0.087)$ | 0.009 | 0.014 |
| 249 | 20.75 | 0.10 | 0.023 | $0.086)$ | 0.009 | 0.014 |
| 250 | 20.83 | 0.07 | 0.015 | $0.086)$ | 0.006 | 0.010 |
| 251 | 20.92 | 0.07 | 0.015 | $0.086)$ | 0.006 | 0.010 |
| 252 | 21.00 | 0.07 | 0.015 | $0.085)$ | 0.006 | 0.010 |
| 253 | 21.08 | 0.10 | 0.023 | $0.085)$ | 0.009 | 0.014 |
| 254 | 21.17 | 0.10 | 0.023 | $0.085)$ | 0.009 | 0.014 |
| 255 | 21.25 | 0.10 | 0.023 | $0.084)$ | 0.009 | 0.014 |
| 256 | 21.33 | 0.07 | 0.015 | $0.084)$ | 0.006 | 0.010 |
| 257 | 21.42 | 0.07 | 0.015 | $0.084)$ | 0.006 | 0.010 |
| 258 | 21.50 | 0.07 | 0.015 | $0.083)$ | 0.006 | 0.010 |
| 259 | 21.58 | 0.10 | 0.023 | $0.083)$ | 0.009 | 0.014 |
| 260 | 21.67 | 0.10 | 0.023 | $0.083)$ | 0.009 | 0.014 |
| 261 | 21.75 | 0.10 | 0.023 | $0.083)$ | 0.009 | 0.014 |
| 262 | 21.83 | 0.07 | 0.015 | $0.082)$ | 0.006 | 0.010 |
| 263 | 21.92 | 0.07 | 0.015 | $0.082)$ | 0.006 | 0.010 |
| 264 | 22.00 | 0.07 | 0.015 | $0.082)$ | 0.006 | 0.010 |
| 265 | 22.08 | 0.10 | 0.023 | 0.081) | 0.009 | 0.014 |
| 266 | 22.17 | 0.10 | 0.023 | 0.081) | 0.009 | 0.014 |
| 267 | 22.25 | 0.10 | 0.023 | 0.081) | 0.009 | 0.014 |
| 268 | 22.33 | 0.07 | 0.015 | 0.081) | 0.006 | 0.010 |
| 269 | 22.42 | 0.07 | 0.015 | 0.080) | 0.006 | 0.010 |
| 270 | 22.50 | 0.07 | 0.015 | 0.080) | 0.006 | 0.010 |
| 271 | 22.58 | 0.07 | 0.015 | 0.080) | 0.006 | 0.010 |
| 272 | 22.67 | 0.07 | 0.015 | 0.080) | 0.006 | 0.010 |
| 273 | 22.75 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 274 | 22.83 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 275 | 22.92 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 276 | 23.00 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 277 | 23.08 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 278 | 23.17 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 279 | 23.25 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 280 | 23.33 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 281 | 23.42 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 282 | 23.50 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 283 | 23.58 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 284 | 23.67 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 285 | 23.75 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 286 | 23.83 | 0.07 | 0.015 | $0.077)$ | 0.006 | 0.010 |
| 287 | 23.92 | 0.07 | 0.015 | $0.077)$ | 0.006 | 0.010 |
| 288 | 24.00 | 0.07 | 0.015 | $0.077)$ | 0.006 | 0.010 |
|  | Sum = | $\begin{aligned} & \text { oss Ra } \\ & 100.0 \end{aligned}$ | ot Us |  | Sum $=$ | 14.4 |
| Flood volume = Effective rainfall 1.20(In) |  |  |  |  |  |  |
|  | times area 10.9(Ac.)/[(In)/(Ft.)] = 1.1(Ac.Ft) |  |  |  |  |  |
| Total soil loss $=\quad 0.73$ (In) |  |  |  |  |  |  |
| Total soil loss $=00.666($ Ac.Ft) |  |  |  |  |  |  |
| Total rainfall = 1.93(In) |  |  |  |  |  |  |
| Flood volume $=$ 47344.9 Cubic Feet |  |  |  |  |  |  |
| Total soil loss $=$ 29017.8 Cubic Feet |  |  |  |  |  |  |



| 1+50 | 0.0234 | 0.18 | Q | \| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+55 | 0.0248 | 0.21 | Q | \| | 1 |
| 2+ 0 | 0.0263 | 0.21 | Q | \| | \\| |
| 2+ 5 | 0.0277 | 0.21 | QV | \| | \\| |
| 2+10 | 0.0292 | 0.21 | QV | \| | \| |
| 2+15 | 0.0306 | 0.21 | QV | \| | \| |
| 2+20 | 0.0321 | 0.21 | QV | \| | \| |
| 2+25 | 0.0335 | 0.21 | QV | \| | \\| |
| 2+30 | 0.0350 | 0.21 | QV | \| | । |
| 2+35 | 0.0366 | 0.23 | QV | \| | \| |
| 2+40 | 0.0384 | 0.26 | IQ | \| | । |
| 2+45 | 0.0402 | 0.26 | IQ | \| | \\| |
| 2+50 | 0.0420 | 0.26 | IQ | \| | । |
| 2+55 | 0.0438 | 0.26 | IQ | \| | I |
| 3+ 0 | 0.0456 | 0.26 | IQ | \| | I |
| 3+ 5 | 0.0474 | 0.26 | IQ | \| | \| |
| 3+10 | 0.0492 | 0.26 | IQ | \| | । |
| 3+15 | 0.0510 | 0.26 | IQ | \| | \| |
| 3+20 | 0.0529 | 0.26 | IQ | \| | \| |
| 3+25 | 0.0547 | 0.26 | IQV | \| | \| |
| 3+30 | 0.0565 | 0.26 | IQV | \| | । |
| 3+35 | 0.0583 | 0.26 | IQV | \| | \| |
| 3+40 | 0.0601 | 0.26 | IQV | \| | \| |
| 3+45 | 0.0619 | 0.26 | IQV | \| | \| |
| 3+50 | 0.0639 | 0.29 | IQV | \| | \| |
| 3+55 | 0.0660 | 0.31 | IQV | \| | \| |
| 4+ 0 | 0.0682 | 0.32 | IQV | \| | I |
| 4+ 5 | 0.0704 | 0.32 | IQV | \| | \| |
| 4+10 | 0.0725 | 0.32 | IQV | \| | \| |
| 4+15 | 0.0747 | 0.32 | IQV | \| | \| |


| 4+20 | 0.0771 | 0.34 | IQV |  |  | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4+25 | 0.0796 | 0.36 | IQV |  |  | 1 |
| 4+30 | 0.0821 | 0.37 | IQ V |  |  | 1 |
| 4+35 | 0.0846 | 0.37 | IQ V |  |  | \| |
| 4+40 | 0.0872 | 0.37 | IQ V |  |  | \| |
| 4+45 | 0.0897 | 0.37 | IQ V |  |  | \| |
| 4+50 | 0.0924 | 0.39 | IQ V |  |  | \| |
| 4+55 | 0.0953 | 0.42 | IQ V |  |  | 1 |
| 5+ 0 | 0.0982 | 0.42 | IQ V |  |  | \| |
| 5+5 | 0.1008 | 0.37 | IQ V |  |  | I |
| 5+10 | 0.1030 | 0.32 | IQ V |  | \| | \| |
| 5+15 | 0.1052 | 0.32 | IQ V |  |  | \| |
| 5+20 | 0.1075 | 0.34 | IQ V |  |  | \| |
| 5+25 | 0.1100 | 0.36 | IQ | V |  | \| |
| 5+30 | 0.1125 | 0.37 | IQ | V |  | \| |
| 5+35 | 0.1152 | 0.39 | IQ | V |  | \| |
| 5+40 | 0.1181 | 0.42 | IQ | V |  | \| |
| 5+45 | 0.1210 | 0.42 | IQ | V |  | \| |
| 5+50 | 0.1239 | 0.42 | IQ | V |  | \| |
| 5+55 | 0.1268 | 0.42 | IQ | V |  | \| |
| 6+ 0 | 0.1297 | 0.42 | IQ | V |  | \| |
| 6+ 5 | 0.1328 | 0.44 | IQ | V |  | \| |
| 6+10 | 0.1360 | 0.47 | IQ | V |  | \| |
| 6+15 | 0.1393 | 0.47 | IQ | V |  | \| |
| 6+20 | 0.1425 | 0.47 | IQ | v |  | \| |
| 6+25 | 0.1458 | 0.47 | IQ | v |  | \| |
| 6+30 | 0.1490 | 0.47 | IQ | V |  | \| |
| 6+35 | 0.1525 | 0.50 | IQ | V |  | \| |
| 6+40 | 0.1561 | 0.52 | \| Q | V |  | 1 |
| 6+45 | 0.1597 | 0.53 | \| Q | V |  | \| |


| 6+50 | 0.1633 | 0.53 | \| 0 |  |  | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+55 | 0.1669 | 0.53 | \| Q |  |  | \| | \| |
| 7+ 0 | 0.1706 | 0.53 | Q | Q |  | \| | 1 |
| 7+ 5 | 0.1742 | 0.53 | 18 | Q |  | \| | 1 |
| 7+10 | 0.1778 | 0.53 | Q | Q |  | \| | 1 |
| 7+15 | 0.1814 | 0.53 | Q | Q |  | \| | \| |
| 7+20 | 0.1852 | 0.55 | \| Q | Q |  | \| | \| |
| 7+25 | 0.1892 | 0.58 | 18 | Q |  | \| | \| |
| 7+30 | 0.1931 | 0.58 | Q | Q | V | I | I |
| 7+35 | 0.1973 | 0.60 | Q | Q | V | \| | \| |
| 7+40 | 0. 2016 | 0.63 | Q | Q | V | 1 | 1 |
| 7+45 | 0.2060 | 0.63 | 18 | Q | V | 1 | 1 |
| 7+50 | 0.2105 | 0.65 | Q |  | V | 1 | 1 |
| 7+55 | 0.2152 | 0.68 | Q | Q | V | \| | \| |
| 8+ 0 | 0.2199 | 0.68 | Q | Q | V |  | \| |
| 8+ 5 | 0.2249 | 0.73 | Q | Q | V |  | \| |
| 8+10 | 0.2303 | 0.78 | 1 | Q | V |  | 1 |
| 8+15 | 0.2357 | 0.79 | 1 | Q | V |  | \| |
| 8+20 | 0.2412 | 0.79 | 1 | Q | V |  | \| |
| $8+25$ | 0.2466 | 0.79 | \| | Q |  | \| | \| |
| 8+30 | 0.2520 | 0.79 | 1 | Q |  | I | 1 |
| 8+35 | 0.2576 | 0.81 | 1 | Q |  | I | \| |
| 8+40 | 0.2634 | 0.84 | 1 | Q |  | \| | \| |
| $8+45$ | 0.2692 | 0.84 | 1 | Q |  | \| | \| |
| 8+50 | 0.2751 | 0.87 | 1 | Q |  | V | \| |
| 8+55 | 0.2813 | 0.89 | 1 | Q |  | V | \| |
| 9+ 0 | 0.2874 | 0.89 | । | Q |  | V | \| |
| 9+ 5 | 0.2939 | 0.94 | । | Q |  | V | \| |
| 9+10 | 0.3008 | 0.99 | 1 | Q |  | IV | । |
| 9+15 | 0.3076 | 1.00 | 1 | Q |  | IV | \| |


| 9+20 | 0.3147 | 1.02 | \| | Q | IV |  |  | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+25 | 0.3219 | 1.05 | \| | Q | IV |  |  | \| |
| 9+30 | 0.3291 | 1.05 | I | Q |  |  |  | \| |
| 9+35 | 0.3366 | 1.08 | \| | Q |  |  |  | 1 |
| $9+40$ | 0.3441 | 1.10 | \| | Q |  |  |  | 1 |
| 9+45 | 0.3517 | 1.10 | \| | Q |  |  |  | 1 |
| 9+50 | 0.3595 | 1.13 | \| | Q | \| | $v$ |  | 1 |
| 9+55 | 0.3675 | 1.15 | \| | Q | \| | V |  | 1 |
| 10+ 0 | 0.3754 | 1.16 | \| | Q | \| | $v$ |  | \| |
| 10+ 5 | 0.3823 | 0.99 | \| | Q | \| | V |  | 1 |
| 10+10 | 0.3879 | 0.81 | \| | Q | \| | v |  | \| |
| 10+15 | 0.3933 | 0.79 | \| | Q | \| | v |  | I |
| 10+20 | 0.3988 | 0.79 | \| | Q | \| | v |  | \| |
| 10+25 | 0.4042 | 0.79 | \| | Q | \| | v |  | 1 |
| 10+30 | 0.4096 | 0.79 | \| | Q | \| | v |  | 1 |
| 10+35 | 0.4159 | 0.91 | \| | Q | \| | v |  | I |
| 10+40 | 0.4230 | 1.04 | \| | Q | \| | V |  | \| |
| 10+45 | 0.4302 | 1.05 | \| | Q | \| | V |  | 1 |
| 10+50 | 0.4375 | 1.05 | \| | Q | \| |  |  | \| |
| 10+55 | 0.4447 | 1.05 | \| | Q | I |  |  | \| |
| 11+ 0 | 0.4520 | 1.05 | 1 | Q | 1 |  |  | I |
| $11+5$ | 0.4590 | 1.03 | \| | Q | \| |  |  | 1 |
| 11+10 | 0.4660 | 1.00 | \| | Q | I |  | V | \| |
| 11+15 | 0.4728 | 1.00 | 1 | Q | I |  | v | \| |
| 11+20 | 0.4797 | 1.00 | \| | Q | I |  | $v$ | 1 |
| 11+25 | 0.4866 | 1.00 | \| | Q | \| |  | V | 1 |
| 11+30 | 0.4935 | 1.00 | \| | Q | I |  |  |  |
| 11+35 | 0.5001 | 0.95 | 1 | Q | \| |  |  |  |
| 11+40 | 0.5063 | 0.90 | 1 | Q | \| |  |  |  |
| 11+45 | 0.5124 | 0.90 | \| | Q | \| |  |  |  |


| 11+50 | 0.5187 | 0.92 | \| | Q | \| | VI | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11+55 | 0.5252 | 0.94 | \| | Q | \| | V\| | \| |
| 12+ 0 | 0.5318 | 0.95 | \| | Q | \| | V\| | \| |
| 12+ 5 | 0.5394 | 1.11 | \| | Q | \| | V1 | \| |
| 12+10 | 0.5483 | 1.29 | I | Q |  | $v$ | \| |
| 12+15 | 0.5573 | 1.31 | \| | Q | \| | V | \| |
| 12+20 | 0.5666 | 1.34 | \| | Q | \| | V | \| |
| 12+25 | 0.5760 | 1.36 | \| | Q | \| | IV | \| |
| 12+30 | 0.5854 | 1.37 | \| | Q | \| | \| | \| |
| 12+35 | 0.5951 | 1.41 | \| | Q |  | IV | \| |
| 12+40 | 0.6052 | 1.47 | \| | Q | \| |  | V |
| 12+45 | 0.6154 | 1.47 | \| | Q | \| |  | V |
| 12+50 | 0.6257 | 1.50 | \| | Q | \| | I | v |
| 12+55 | 0.6362 | 1.52 | \| | Q | \| | \| | V |
| 13+ 0 | 0.6467 | 1.53 | \\| | Q | \| | \| | V |
| 13+ 5 | 0.6580 | 1.64 | \\| | Q | \| | \| | v |
| 13+10 | 0.6702 | 1.77 | \| | Q | \| | \| | v |
| 13+15 | 0.6825 | 1.79 | \| | Q | \| | \| | V \| |
| 13+20 | 0.6948 | 1.79 | \| | Q | \| | \| | v |
| 13+25 | 0.7071 | 1.79 | \| | Q | \| | \| | v |
| 13+30 | 0.7194 | 1.79 | \| | Q |  | \| | V I |
| 13+35 | 0.7300 | 1.53 | \| | Q |  | \| | V \| |
| 13+40 | 0.7386 | 1.25 | \| | Q |  | \| | v \| |
| 13+45 | 0.7469 | 1.21 | \| | Q |  | \| | v \\| |
| 13+50 | 0.7553 | 1.21 | I | Q |  | \| | $\vee$ I |
| 13+55 | 0.7636 | 1.21 | \| | Q |  | \| | v \| |
| 14+ 0 | 0.7719 | 1.21 | I | Q | \| | \| | V \| |
| 14+ 5 | 0.7809 | 1.30 | \| | Q |  | \| | V \| |
| 14+10 | 0.7906 | 1.41 | I | Q |  | \| | v 1 |
| 14+15 | 0.8004 | 1.42 | \| | Q |  | \| | v\| |


| 14+20 | 0.8100 | 1.40 | 1 | Q | \| | 1 | V\| |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 14+25 | 0.8194 | 1.37 | \| | Q | \| | 1 | V |  |  |
| 14+30 | 0.8288 | 1.37 | \| | Q | \| | \| | V |  |  |
| 14+35 | 0.8383 | 1.37 | \| | Q | \| | 1 | V |  |  |
| $14+40$ | 0.8477 | 1.37 | \| | Q | , | 1 | IV |  |  |
| 14+45 | 0.8571 | 1.37 | \| | Q | \| | \| | IV |  |  |
| 14+50 | 0.8664 | 1.34 | \| | Q | \| | \| | IV |  |  |
| 14+55 | 0.8754 | 1.32 | \| | Q | \| | \| | 1 V | V |  |
| 15+ 0 | 0.8845 | 1.32 | \| | Q | 1 | 1 | 1 V | V | $\stackrel{\square}{7}$ |
| $15+5$ | 0.8934 | 1.29 | 1 | Q | 1 | 1 | 1 V | V | $\stackrel{\sim}{¢}$ |
| 15+10 | 0.9021 | 1.27 | \| | Q | \| | 1 |  | V | $\stackrel{\text { ® }}{ }$ |
| 15+15 | 0.9108 | 1.26 | \\| | Q | I | I |  | V | $\xrightarrow{8}$ |
| 15+20 | 0.9193 | 1.24 | I | Q | I | 1 |  | V | - |
| 15+25 | 0.9277 | 1.21 | I | Q | \| | 1 | 1 | V | 3 |
| 15+30 | 0.9360 | 1.21 | \| | Q | , | \| | 1 | V | © |
| 15+35 | 0.9437 | 1.12 | 1 | Q | \| | 1 | \| | V | - |
| 15+40 | 0.9507 | 1.01 | 1 | Q | 1 | \| | 1 | V | - |
| $15+45$ | 0.9576 | 1.00 | 1 | Q | \| | \| | \| | V | ¢ |
| 15+50 | 0.9645 | 1.00 | \\| Q | Q | 1 | 1 | \| | V | - |
| 15+55 | 0.9714 | 1.00 | \\| Q | Q | I | 1 | \| | V | $\stackrel{1}{\circ}$ |
| $16+0$ | 0.9782 | 1.00 | \\| Q | Q | \| | 1 | \| | V | ¢ |
| $16+5$ | 0.9827 | 0.65 | \| Q |  | \| | 1 | \| | V | E |
| 16+10 | 0.9845 | 0.26 | IQ |  | \| | \| | \| | V | \# |
| 16+15 | 0.9860 | 0.22 | Q |  | 1 | \| | \| | V |  |
| 16+20 | 0.9874 | 0.21 | Q |  | \| | \| | \| | V |  |
| 16+25 | 0.9889 | 0.21 | Q |  | 1 | \| | \| | V |  |
| 16+30 | 0.9903 | 0.21 | Q |  | \| | \| | \| | V |  |
| 16+35 | 0.9916 | 0.19 | Q |  | \| | \| | \| | V |  |
| 16+40 | 0.9927 | 0.16 | Q |  | I | \| | \| | V |  |
| 16+45 | 0.9938 | 0.16 | Q |  | 1 | 1 | \| | V |  |




|  | 21+50 | 1.0665 | 0.13 | Q | 1 |  | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V | 21+55 | 1.0672 | 0. 11 | Q | , | I | । |
| VI |  |  |  |  |  |  |  |
|  | 22+ 0 | 1.0680 | 0.11 | Q | \| | \| | I |
| V1 | 22+ 5 | 1.0688 | 0.13 | Q | \| | \| | 1 |
| VI |  |  |  |  |  |  |  |
|  | 22+10 | 1.0699 | 0.15 | Q | 1 | \| | I |
| V1 | 22+15 | 1.0710 | 0.16 | Q | \| | \| | 1 |
| V\| | 22+20 | 1.0719 | 0.13 | Q | \| | \| | \| |
| V1 | 22+25 | 1.0727 | 0.11 | Q | \| | \| | 1 |
| VI | 22+30 | 1.0734 | 0.11 | O | , | , | \| |
| VI |  |  |  |  |  |  |  |
|  | 22+35 | 1.0741 | 0.11 | Q | \| | \| | 1 |
| V\| | 22+40 | 1.0748 | 0.11 | Q | । | \| | 1 |
| VI |  |  |  |  |  |  |  |
|  | 22+45 | 1.0756 | 0.11 | Q | \| | \| | \| |
| V\| | 22+50 | 1.0763 | 0.11 | Q | \| | \| | \| |
| VI | 22+55 | 1.0770 | 0.11 | 0 | , | \| | I |
| VI |  |  |  |  |  |  |  |
|  | 23+ 0 | 1.0777 | 0.11 | Q | \| | \| | \| |
| V\| | 23+ 5 | 1.0785 | 0.11 | Q | । | \| | । |
| V1 | 23+10 | 1.0792 | 0.11 | Q |  |  |  |
| VI |  | 1.0792 |  |  | 1 | I | \| |
|  | 23+15 | 1.0799 | 0.11 | Q | \| | \| | \| |
| V\| | 23+20 | 1.0806 | 0.11 | Q | 1 | \| | \| |
| VI |  |  |  |  |  |  |  |
|  | 23+25 | 1.0814 | 0.11 | Q | \| | \| | \| |
| V\| | 23+30 | 1.0821 | 0.11 | Q | 1 | \| | \| |
| VI | $23+35$ | 1.0828 | 0.11 | Q | , |  |  |
| VI |  | 1.0828 |  | Q | 1 |  |  |
|  | 23+40 | 1.0835 | 0.11 | Q | \| | \| | \| |
| V\| | 23+45 | 1.0843 | 0.11 | Q | । | \| | \| |
| VI |  |  |  | O |  |  |  |
| VI | 23+50 | 1.0850 | 0.11 | Q | 1 | \| | 1 |
|  | 23+55 | 1.0857 | 0.11 | Q | \| | \| | \| |
| V\| | 24+ 0 | 1.0864 | 0.11 | 0 | । | \| | \| |
| VI |  |  |  |  |  |  |  |
|  | 24+ 5 | 1.0868 | 0.06 | Q | \| | \| | \| |
| V\| | 24+10 | 1.0869 | 0.01 | Q | । | \| | \| |
| VI | 24+15 | 1.0869 | 0. 00 | Q | , | , | , |
| v |  |  |  |  |  | 1 |  |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post245.out
                    lol
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate(In./Hr) |  | Effective(In/Hr) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | ( In/Hr) | Max | Low |  |
| 1 | 0.08 | 0.07 | 0.021 | ( 0.274) | 0.008 | 0.013 |
| 2 | 0.17 | 0.07 | 0.021 | ( 0.273) | 0.008 | 0.013 |
| 3 | 0.25 | 0.07 | 0.021 | ( 0.272) | 0.008 | 0.013 |
| 4 | 0.33 | 0.10 | 0.031 | ( 0.271) | 0.012 | 0.019 |
| 5 | 0.42 | 0.10 | 0.031 | ( 0.270) | 0.012 | 0.019 |
| 6 | 0.50 | 0.10 | 0.031 | ( 0.269) | 0.012 | 0.019 |
| 7 | 0.58 | 0.10 | 0.031 | ( 0.268) | 0.012 | 0.019 |
| 8 | 0.67 | 0.10 | 0.031 | (0.267) | 0.012 | 0.019 |
| 9 | 0.75 | 0.10 | 0.031 | ( 0.266) | 0.012 | 0.019 |
| 10 | 0.83 | 0.13 | 0.041 | ( 0.265) | 0.016 | 0.025 |
| 11 | 0.92 | 0.13 | 0.041 | ( 0.264) | 0.016 | 0.025 |
| 12 | 1.00 | 0.13 | 0.041 | ( 0.263) | 0.016 | 0.025 |
| 13 | 1.08 | 0.10 | 0.031 | ( 0.262) | 0.012 | 0.019 |
| 14 | 1.17 | 0.10 | 0.031 | ( 0.261) | 0.012 | 0.019 |
| 15 | 1.25 | 0.10 | 0.031 | (0.260) | 0.012 | 0.019 |
| 16 | 1.33 | 0.10 | 0.031 | ( 0.259) | 0.012 | 0.019 |
| 17 | 1.42 | 0.10 | 0.031 | ( 0.258) | 0.012 | 0.019 |
| 18 | 1.50 | 0.10 | 0.031 | ( 0.257) | 0.012 | 0.019 |
| 19 | 1.58 | 0.10 | 0.031 | ( 0.255) | 0.012 | 0.019 |
| 20 | 1.67 | 0.10 | 0.031 | ( 0.254) | 0.012 | 0.019 |
| 21 | 1.75 | 0.10 | 0.031 | ( 0.253) | 0.012 | 0.019 |
| 22 | 1.83 | 0.13 | 0.041 | (0.252) | 0.016 | 0.025 |
| 23 | 1.92 | 0.13 | 0.041 | ( 0.251) | 0.016 | 0.025 |
| 24 | 2.00 | 0.13 | 0.041 | ( 0.250) | 0.016 | 0.025 |
| 25 | 2.08 | 0.13 | 0.041 | ( 0.249) | 0.016 | 0.025 |
| 26 | 2.17 | 0.13 | 0.041 | ( 0.248) | 0.016 | 0.025 |
| 27 | 2.25 | 0.13 | 0.041 | ( 0.247) | 0.016 | 0.025 |
| 28 | 2.33 | 0.13 | 0.041 | ( 0.246) | 0.016 | 0.025 |
| 29 | 2.42 | 0.13 | 0.041 | (0.245) | 0.016 | 0.025 |
| 30 | 2.50 | 0.13 | 0.041 | ( 0.244) | 0.016 | 0.025 |
| 31 | 2.58 | 0.17 | 0.051 | (0.243) | 0.019 | 0.032 |
| 32 | 2.67 | 0.17 | 0.051 | ( 0.242) | 0.019 | 0.032 |
| 33 | 2.75 | 0.17 | 0.051 | ( 0.241) | 0.019 | 0.032 |
| 34 | 2.83 | 0.17 | 0.051 | ( 0.240) | 0.019 | 0.032 |
| 35 | 2.92 | 0.17 | 0.051 | ( 0.239) | 0.019 | 0.032 |
| 36 | 3.00 | 0.17 | 0.051 | ( 0.238) | 0.019 | 0.032 |
| 37 | 3.08 | 0.17 | 0.051 | ( 0.237) | 0.019 | 0.032 |
| 38 | 3.17 | 0.17 | 0.051 | (0.236) | 0.019 | 0.032 |
| 39 | 3.25 | 0.17 | 0.051 | ( 0.235) | 0.019 | 0.032 |
| 40 | 3.33 | 0.17 | 0.051 | ( 0.234) | 0.019 | 0.032 |
| 41 | 3.42 | 0.17 | 0.051 | ( 0.233) | 0.019 | 0.032 |
| 42 | 3.50 | 0.17 | 0.051 | ( 0.232) | 0.019 | 0.032 |
| 43 | 3.58 | 0.17 | 0.051 | (0.232) | 0.019 | 0.032 |
| 44 | 3.67 | 0.17 | 0.051 | ( 0.231) | 0.019 | 0.032 |
| 45 | 3.75 | 0.17 | 0.051 | ( 0.230) | 0.019 | 0.032 |
| 46 | 3.83 | 0.20 | 0.062 | ( 0.229) | 0.023 | 0.038 |
| 47 | 3.92 | 0.20 | 0.062 | ( 0.228) | 0.023 | 0.038 |
| 48 | 4.00 | 0.20 | 0.062 | ( 0.227) | 0.023 | 0.038 |
| 49 | 4.08 | 0.20 | 0.062 | ( 0.226) | 0.023 | 0.038 |
| 50 | 4.17 | 0.20 | 0.062 | (0.225) | 0.023 | 0.038 |
| 51 | 4.25 | 0.20 | 0.062 | ( 0.224) | 0.023 | 0.038 |
| 52 | 4.33 | 0.23 | 0.072 | (0.223) | 0.027 | 0.045 |
| 53 | 4.42 | 0.23 | 0.072 | (0.222) | 0.027 | 0.045 |
| 54 | 4.50 | 0.23 | 0.072 | ( 0.221) | 0.027 | 0.045 |
| 55 | 4.58 | 0.23 | 0.072 | ( 0.220) | 0.027 | 0.045 |
| 56 | 4.67 | 0.23 | 0.072 | ( 0.219) | 0.027 | 0.045 |
| 57 | 4.75 | 0.23 | 0.072 | ( 0.218) | 0.027 | 0.045 |
| 58 | 4.83 | 0.27 | 0.082 | ( 0.217) | 0.031 | 0.051 |


| 59 | 4.92 | 0.27 | 0.082 | 0.216) | 0.031 | 0.051 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 60 | 5.00 | 0.27 | 0.082 | $0.215)$ | 0.031 | 0.051 |
| 61 | 5.08 | 0.20 | 0.062 | $0.214)$ | 0.023 | 0.038 |
| 62 | 5.17 | 0.20 | 0.062 | 0.213) | 0.023 | 0.038 |
| 63 | 5.25 | 0.20 | 0.062 | 0.212) | 0.023 | 0.038 |
| 64 | 5.33 | 0.23 | 0.072 | $0.212)$ | 0.027 | 0.045 |
| 65 | 5.42 | 0.23 | 0.072 | 0.211) | 0.027 | 0.045 |
| 66 | 5.50 | 0.23 | 0.072 | 0.210) | 0.027 | 0.045 |
| 67 | 5.58 | 0.27 | 0.082 | $0.209)$ | 0.031 | 0.051 |
| 68 | 5.67 | 0.27 | 0.082 | $0.208)$ | 0.031 | 0.051 |
| 69 | 5.75 | 0.27 | 0.082 | 0.207) | 0.031 | 0.051 |
| 70 | 5.83 | 0.27 | 0.082 | 0.206) | 0.031 | 0.051 |
| 71 | 5.92 | 0.27 | 0.082 | $0.205)$ | 0.031 | 0.051 |
| 72 | 6.00 | 0.27 | 0.082 | $0.204)$ | 0.031 | 0.051 |
| 73 | 6.08 | 0.30 | 0.092 | $0.203)$ | 0.035 | 0.057 |
| 74 | 6.17 | 0.30 | 0.092 | 0.202) | 0.035 | 0.057 |
| 75 | 6.25 | 0.30 | 0.092 | $0.202)$ | 0.035 | 0.057 |
| 76 | 6.33 | 0.30 | 0.092 | 0.201) | 0.035 | 0.057 |
| 77 | 6.42 | 0.30 | 0.092 | 0.200) | 0.035 | 0.057 |
| 78 | 6.50 | 0.30 | 0.092 | $0.199)$ | 0.035 | 0.057 |
| 79 | 6.58 | 0.33 | 0.103 | 0.198) | 0.039 | 0.064 |
| 80 | 6.67 | 0.33 | 0.103 | $0.197)$ | 0.039 | 0.064 |
| 81 | 6.75 | 0.33 | 0.103 | 0.196) | 0.039 | 0.064 |
| 82 | 6.83 | 0.33 | 0.103 | $0.195)$ | 0.039 | 0.064 |
| 83 | 6.92 | 0.33 | 0.103 | $0.194)$ | 0.039 | 0.064 |
| 84 | 7.00 | 0.33 | 0.103 | 0.193) | 0.039 | 0.064 |
| 85 | 7.08 | 0.33 | 0.103 | $0.193)$ | 0.039 | 0.064 |
| 86 | 7.17 | 0.33 | 0.103 | $0.192)$ | 0.039 | 0.064 |
| 87 | 7.25 | 0.33 | 0.103 | 0.191) | 0.039 | 0.064 |
| 88 | 7.33 | 0.37 | 0.113 | 0.190) | 0.043 | 0.070 |
| 89 | 7.42 | 0.37 | 0.113 | $0.189)$ | 0.043 | 0.070 |
| 90 | 7.50 | 0.37 | 0.113 | $0.188)$ | 0.043 | 0.070 |
| 91 | 7.58 | 0.40 | 0.123 | 0.187) | 0.047 | 0.076 |
| 92 | 7.67 | 0.40 | 0.123 | 0.187) | 0.047 | 0.076 |
| 93 | 7.75 | 0.40 | 0.123 | 0.186) | 0.047 | 0.076 |
| 94 | 7.83 | 0.43 | 0.133 | $0.185)$ | 0.051 | 0.083 |
| 95 | 7.92 | 0.43 | 0.133 | $0.184)$ | 0.051 | 0.083 |
| 96 | 8.00 | 0.43 | 0.133 | $0.183)$ | 0.051 | 0.083 |
| 97 | 8.08 | 0.50 | 0.154 | $0.182)$ | 0.058 | 0.095 |
| 98 | 8.17 | 0.50 | 0.154 | 0.181) | 0.058 | 0.095 |
| 99 | 8.25 | 0.50 | 0.154 | 0.181) | 0.058 | 0.095 |
| 100 | 8.33 | 0.50 | 0.154 | 0.180) | 0.058 | 0.095 |
| 101 | 8.42 | 0.50 | 0.154 | 0.179) | 0.058 | 0.095 |
| 102 | 8.50 | 0.50 | 0.154 | 0.178) | 0.058 | 0.095 |
| 103 | 8.58 | 0.53 | 0.164 | 0.177) | 0.062 | 0.102 |
| 104 | 8.67 | 0.53 | 0.164 | $0.176)$ | 0.062 | 0.102 |
| 105 | 8.75 | 0.53 | 0.164 | 0.176) | 0.062 | 0.102 |
| 106 | 8.83 | 0.57 | 0.174 | $0.175)$ | 0.066 | 0.108 |
| 107 | 8.92 | 0.57 | 0.174 | $0.174)$ | 0.066 | 0.108 |
| 108 | 9.00 | 0.57 | 0.174 | $0.173)$ | 0.066 | 0.108 |
| 109 | 9.08 | 0.63 | 0.195 | 0.172) | 0.074 | 0.121 |
| 110 | 9.17 | 0.63 | 0.195 | 0.171) | 0.074 | 0.121 |
| 111 | 9.25 | 0.63 | 0.195 | 0.171) | 0.074 | 0.121 |
| 112 | 9.33 | 0.67 | 0.205 | 0.170) | 0.078 | 0.127 |
| 113 | 9.42 | 0.67 | 0.205 | 0.169) | 0.078 | 0.127 |
| 114 | 9.50 | 0.67 | 0.205 | 0.168) | 0.078 | 0.127 |
| 115 | 9.58 | 0.70 | 0.215 | 0.167) | 0.082 | 0.134 |
| 116 | 9.67 | 0.70 | 0.215 | 0.167) | 0.082 | 0.134 |
| 117 | 9.75 | 0.70 | 0.215 | 0.166) | 0.082 | 0.134 |
| 118 | 9.83 | 0.73 | 0.226 | $0.165)$ | 0.086 | 0.140 |



| 179 | 14.92 | 0.83 | 0.256 | $0.121)$ | 0.097 | 0.159 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 180 | 15.00 | 0.83 | 0.256 | $0.121)$ | 0.097 | 0.159 |
| 181 | 15.08 | 0.80 | 0.246 | 0.120) | 0.094 | 0.153 |
| 182 | 15.17 | 0.80 | 0.246 | 0.120) | 0.094 | 0.153 |
| 183 | 15.25 | 0.80 | 0.246 | $0.119)$ | 0.094 | 0.153 |
| 184 | 15.33 | 0.77 | 0.236 | $0.118)$ | 0.090 | 0.146 |
| 185 | 15.42 | 0.77 | 0.236 | $0.118)$ | 0.090 | 0.146 |
| 186 | 15.50 | 0.77 | 0.236 | 0.117) | 0.090 | 0.146 |
| 187 | 15.58 | 0.63 | 0.195 | 0.117) | 0.074 | 0.121 |
| 188 | 15.67 | 0.63 | 0.195 | $0.116)$ | 0.074 | 0.121 |
| 189 | 15.75 | 0.63 | 0.195 | 0.115) | 0.074 | 0.121 |
| 190 | 15.83 | 0.63 | 0.195 | $0.115)$ | 0.074 | 0.121 |
| 191 | 15.92 | 0.63 | 0.195 | $0.114)$ | 0.074 | 0.121 |
| 192 | 16.00 | 0.63 | 0.195 | $0.114)$ | 0.074 | 0.121 |
| 193 | 16.08 | 0.13 | 0.041 | $0.113)$ | 0.016 | 0.025 |
| 194 | 16.17 | 0.13 | 0.041 | $0.112)$ | 0.016 | 0.025 |
| 195 | 16.25 | 0.13 | 0.041 | $0.112)$ | 0.016 | 0.025 |
| 196 | 16.33 | 0.13 | 0.041 | 0.111) | 0.016 | 0.025 |
| 197 | 16.42 | 0.13 | 0.041 | 0.111) | 0.016 | 0.025 |
| 198 | 16.50 | 0.13 | 0.041 | 0.110) | 0.016 | 0.025 |
| 199 | 16.58 | 0.10 | 0.031 | 0.110) | 0.012 | 0.019 |
| 200 | 16.67 | 0.10 | 0.031 | $0.109)$ | 0.012 | 0.019 |
| 201 | 16.75 | 0.10 | 0.031 | $0.109)$ | 0.012 | 0.019 |
| 202 | 16.83 | 0.10 | 0.031 | $0.108)$ | 0.012 | 0.019 |
| 203 | 16.92 | 0.10 | 0.031 | $0.107)$ | 0.012 | 0.019 |
| 204 | 17.00 | 0.10 | 0.031 | $0.107)$ | 0.012 | 0.019 |
| 205 | 17.08 | 0.17 | 0.051 | $0.106)$ | 0.019 | 0.032 |
| 206 | 17.17 | 0.17 | 0.051 | $0.106)$ | 0.019 | 0.032 |
| 207 | 17.25 | 0.17 | 0.051 | $0.105)$ | 0.019 | 0.032 |
| 208 | 17.33 | 0.17 | 0.051 | $0.105)$ | 0.019 | 0.032 |
| 209 | 17.42 | 0.17 | 0.051 | $0.104)$ | 0.019 | 0.032 |
| 210 | 17.50 | 0.17 | 0.051 | $0.104)$ | 0.019 | 0.032 |
| 211 | 17.58 | 0.17 | 0.051 | $0.103)$ | 0.019 | 0.032 |
| 212 | 17.67 | 0.17 | 0.051 | $0.103)$ | 0.019 | 0.032 |
| 213 | 17.75 | 0.17 | 0.051 | $0.102)$ | 0.019 | 0.032 |
| 214 | 17.83 | 0.13 | 0.041 | $0.102)$ | 0.016 | 0.025 |
| 215 | 17.92 | 0.13 | 0.041 | $0.101)$ | 0.016 | 0.025 |
| 216 | 18.00 | 0.13 | 0.041 | $0.101)$ | 0.016 | 0.025 |
| 217 | 18.08 | 0.13 | 0.041 | $0.100)$ | 0.016 | 0.025 |
| 218 | 18.17 | 0.13 | 0.041 | $0.100)$ | 0.016 | 0.025 |
| 219 | 18.25 | 0.13 | 0.041 | $0.099)$ | 0.016 | 0.025 |
| 220 | 18.33 | 0.13 | 0.041 | $0.099)$ | 0.016 | 0.025 |
| 221 | 18.42 | 0.13 | 0.041 | $0.098)$ | 0.016 | 0.025 |
| 222 | 18.50 | 0.13 | 0.041 | 0.098) | 0.016 | 0.025 |
| 223 | 18.58 | 0.10 | 0.031 | $0.097)$ | 0.012 | 0.019 |
| 224 | 18.67 | 0.10 | 0.031 | $0.097)$ | 0.012 | 0.019 |
| 225 | 18.75 | 0.10 | 0.031 | $0.096)$ | 0.012 | 0.019 |
| 226 | 18.83 | 0.07 | 0.021 | $0.096)$ | 0.008 | 0.013 |
| 227 | 18.92 | 0.07 | 0.021 | $0.095)$ | 0.008 | 0.013 |
| 228 | 19.00 | 0.07 | 0.021 | $0.095)$ | 0.008 | 0.013 |
| 229 | 19.08 | 0.10 | 0.031 | $0.094)$ | 0.012 | 0.019 |
| 230 | 19.17 | 0.10 | 0.031 | $0.094)$ | 0.012 | 0.019 |
| 231 | 19.25 | 0.10 | 0.031 | $0.094)$ | 0.012 | 0.019 |
| 232 | 19.33 | 0.13 | 0.041 | $0.093)$ | 0.016 | 0.025 |
| 233 | 19.42 | 0.13 | 0.041 | $0.093)$ | 0.016 | 0.025 |
| 234 | 19.50 | 0.13 | 0.041 | $0.092)$ | 0.016 | 0.025 |
| 235 | 19.58 | 0.10 | 0.031 | $0.092)$ | 0.012 | 0.019 |
| 236 | 19.67 | 0.10 | 0.031 | $0.091)$ | 0.012 | 0.019 |
| 237 | 19.75 | 0.10 | 0.031 | 0.091) | 0.012 | 0.019 |
| 238 | 19.83 | 0.07 | 0.021 | 0.091) | 0.008 | 0.013 |


| 239 | 19.92 | 0.07 | 0.021 | $0.090)$ | 0.008 | 0.013 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 240 | 20.00 | 0.07 | 0.021 | $0.090)$ | 0.008 | 0.013 |
| 241 | 20.08 | 0.10 | 0.031 | $0.089)$ | 0.012 | 0.019 |
| 242 | 20.17 | 0.10 | 0.031 | $0.089)$ | 0.012 | 0.019 |
| 243 | 20.25 | 0.10 | 0.031 | $0.089)$ | 0.012 | 0.019 |
| 244 | 20.33 | 0.10 | 0.031 | $0.088)$ | 0.012 | 0.019 |
| 245 | 20.42 | 0.10 | 0.031 | $0.088)$ | 0.012 | 0.019 |
| 246 | 20.50 | 0.10 | 0.031 | $0.088)$ | 0.012 | 0.019 |
| 247 | 20.58 | 0.10 | 0.031 | $0.087)$ | 0.012 | 0.019 |
| 248 | 20.67 | 0.10 | 0.031 | $0.087)$ | 0.012 | 0.019 |
| 249 | 20.75 | 0.10 | 0.031 | $0.086)$ | 0.012 | 0.019 |
| 250 | 20.83 | 0.07 | 0.021 | $0.086)$ | 0.008 | 0.013 |
| 251 | 20.92 | 0.07 | 0.021 | $0.086)$ | 0.008 | 0.013 |
| 252 | 21.00 | 0.07 | 0.021 | $0.085)$ | 0.008 | 0.013 |
| 253 | 21.08 | 0.10 | 0.031 | $0.085)$ | 0.012 | 0.019 |
| 254 | 21.17 | 0.10 | 0.031 | $0.085)$ | 0.012 | 0.019 |
| 255 | 21.25 | 0.10 | 0.031 | $0.084)$ | 0.012 | 0.019 |
| 256 | 21.33 | 0.07 | 0.021 | $0.084)$ | 0.008 | 0.013 |
| 257 | 21.42 | 0.07 | 0.021 | $0.084)$ | 0.008 | 0.013 |
| 258 | 21.50 | 0.07 | 0.021 | $0.083)$ | 0.008 | 0.013 |
| 259 | 21.58 | 0.10 | 0.031 | $0.083)$ | 0.012 | 0.019 |
| 260 | 21.67 | 0.10 | 0.031 | $0.083)$ | 0.012 | 0.019 |
| 261 | 21.75 | 0.10 | 0.031 | $0.083)$ | 0.012 | 0.019 |
| 262 | 21.83 | 0.07 | 0.021 | $0.082)$ | 0.008 | 0.013 |
| 263 | 21.92 | 0.07 | 0.021 | $0.082)$ | 0.008 | 0.013 |
| 264 | 22.00 | 0.07 | 0.021 | $0.082)$ | 0.008 | 0.013 |
| 265 | 22.08 | 0.10 | 0.031 | $0.081)$ | 0.012 | 0.019 |
| 266 | 22.17 | 0.10 | 0.031 | $0.081)$ | 0.012 | 0.019 |
| 267 | 22.25 | 0.10 | 0.031 | $0.081)$ | 0.012 | 0.019 |
| 268 | 22.33 | 0.07 | 0.021 | $0.081)$ | 0.008 | 0.013 |
| 269 | 22.42 | 0.07 | 0.021 | $0.080)$ | 0.008 | 0.013 |
| 270 | 22.50 | 0.07 | 0.021 | $0.080)$ | 0.008 | 0.013 |
| 271 | 22.58 | 0.07 | 0.021 | $0.080)$ | 0.008 | 0.013 |
| 272 | 22.67 | 0.07 | 0.021 | $0.080)$ | 0.008 | 0.013 |
| 273 | 22.75 | 0.07 | 0.021 | $0.079)$ | 0.008 | 0.013 |
| 274 | 22.83 | 0.07 | 0.021 | $0.079)$ | 0.008 | 0.013 |
| 275 | 22.92 | 0.07 | 0.021 | $0.079)$ | 0.008 | 0.013 |
| 276 | 23.00 | 0.07 | 0.021 | $0.079)$ | 0.008 | 0.013 |
| 277 | 23.08 | 0.07 | 0.021 | $0.079)$ | 0.008 | 0.013 |
| 278 | 23.17 | 0.07 | 0.021 | $0.079)$ | 0.008 | 0.013 |
| 279 | 23.25 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 280 | 23.33 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 281 | 23.42 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 282 | 23.50 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 283 | 23.58 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 284 | 23.67 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 285 | 23.75 | 0.07 | 0.021 | $0.078)$ | 0.008 | 0.013 |
| 286 | 23.83 | 0.07 | 0.021 | $0.077)$ | 0.008 | 0.013 |
| 287 | 23.92 | 0.07 | 0.021 | $0.077)$ | 0.008 | 0.013 |
| 288 | 24.00 | 0.07 | 0.021 | $0.077)$ | 0.008 | 0.013 |
| Sum = (coss Rate Not Used) $\begin{gathered}\text { (100.0 }\end{gathered}$ |  |  |  |  |  |  |
| Flood volume = Effective rainfall 1.59(In) |  |  |  |  |  |  |
|  | times area 10.9(Ac.)/[(In)/(Ft.)] = 1.4(Ac.Ft) |  |  |  |  |  |
| Total soil loss $=\quad 0.97($ In $)$ |  |  |  |  |  |  |
| Total soil loss $=00.885($ Ac.Ft) |  |  |  |  |  |  |
| Total rainfall = 2.56(In) |  |  |  |  |  |  |
| Flood volume $=$ 62916.0 Cubic Feet |  |  |  |  |  |  |
| Total soil loss $=38561.2$ Cubic Feet |  |  |  |  |  |  |



| 1+50 | 0.0311 | 0.24 | Q | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+55 | 0.0330 | 0.28 | VQ | \| | 1 |
| 2+ 0 | 0.0349 | 0.28 | VQ | \| | \| |
| 2+ 5 | 0.0368 | 0.28 | IQ | \| | \| |
| 2+10 | 0.0388 | 0.28 | IQ | \| | \| |
| 2+15 | 0.0407 | 0.28 | IQ | \| | \| |
| 2+20 | 0.0426 | 0.28 | IQ | \| | \| |
| 2+25 | 0.0445 | 0.28 | IQ | \| | \| |
| 2+30 | 0.0465 | 0.28 | IQ | \| | \| |
| 2+35 | 0.0486 | 0.31 | IQ | \| | \| |
| 2+40 | 0.0510 | 0.35 | IQ | \| | \| |
| 2+45 | 0.0534 | 0.35 | IQ | \| | \| |
| 2+50 | 0.0558 | 0.35 | IQ | \| | I |
| 2+55 | 0.0582 | 0.35 | IQ | \| | \| |
| 3+ 0 | 0.0606 | 0.35 | IQ | \| | \| |
| 3+ 5 | 0.0630 | 0.35 | IQ | \| | \| |
| 3+10 | 0.0654 | 0.35 | IQ | \| | \| |
| 3+15 | 0.0678 | 0.35 | IQ | \| | \| |
| 3+20 | 0.0702 | 0.35 | IQ | \| | \| |
| 3+25 | 0.0726 | 0.35 | IQV | I | \| |
| 3+30 | 0.0750 | 0.35 | IQV | \| | \| |
| 3+35 | 0.0775 | 0.35 | IQV | \| | \| |
| 3+40 | 0.0799 | 0.35 | IQV | \| | I |
| $3+45$ | 0.0823 | 0.35 | IQV | \| | \| |
| 3+50 | 0.0849 | 0.38 | IQV | \| | \| |
| 3+55 | 0.0877 | 0.41 | IQV | \| | \| |
| 4+ 0 | 0.0906 | 0.42 | IQV | 1 | I |
| 4+ 5 | 0.0935 | 0.42 | IQV | I | \| |
| 4+10 | 0.0964 | 0.42 | IQV | \| | \| |
| 4+15 | 0.0993 | 0.42 | IQV | \| | \| |


| 4+20 | 0.1024 | 0.45 | IQV |  | \| | 1 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4+25 | 0.1057 | 0.48 | IQV |  | 1 | 1 |  |
| 4+30 | 0.1091 | 0.49 | IQ V |  | \| | 1 | I |
| 4+35 | 0.1125 | 0.49 | IQ V |  | \| | \| | \| |
| 4+40 | 0.1158 | 0.49 | IQ V |  | \| | 1 | I |
| 4+45 | 0.1192 | 0.49 | IQ V |  | \| | 1 | 1 |
| 4+50 | 0.1228 | 0.52 | \\| QV |  | \| | \| | \| |
| 4+55 | 0.1266 | 0.55 | \\| QV |  | 1 | । | 1 |
| 5+ 0 | 0.1305 | 0.56 | \\| QV |  | \| | \\| | I |
| 5+5 | 0.1339 | 0.50 | IQ V |  | 1 | 1 | 1 |
| 5+10 | 0.1368 | 0.43 | IQ V |  | I | \| | 1 |
| 5+15 | 0.1397 | 0.42 | IQ V |  | । | \| | \| |
| 5+20 | 0.1428 | 0.45 | IQ V |  | \| | । | । |
| $5+25$ | 0.1462 | 0.48 | IQ V |  | \| | 1 | I |
| 5+30 | 0.1496 | 0.49 | IQ V |  | \| | I | 1 |
| 5+35 | 0.1531 | 0.52 | \\| Q V |  | \| | । | । |
| 5+40 | 0.1570 | 0.55 | \\| Q V |  | । | । | । |
| 5+45 | 0.1608 | 0.56 | \\| Q V |  |  | 1 | I |
| 5+50 | 0.1647 | 0.56 | \\| Q V |  |  | 1 | 1 |
| 5+55 | 0.1685 | 0.56 | \\| Q V |  | \| | । | 1 |
| 6+ 0 | 0.1724 | 0.56 | \\| Q V |  | \| | \| | I |
| 6+ 5 | 0.1764 | 0.59 | \\| Q V |  |  |  | I |
| 6+10 | 0.1807 | 0.62 | \| Q | V |  | \| | 1 |
| 6+15 | 0.1851 | 0.63 | \| Q | V |  | \| | \| |
| 6+20 | 0.1894 | 0.63 | \| Q | V |  | 1 | I |
| 6+25 | 0.1937 | 0.63 | \| Q | V |  |  | I |
| 6+30 | 0.1981 | 0.63 | \| Q | V |  |  | \| |
| 6+35 | 0.2026 | 0.66 | \| Q | V |  | \| | । |
| 6+40 | 0.2074 | 0.69 | \| Q | V |  |  | 1 |
| 6+45 | 0.2122 | 0.70 | \| Q | V |  | \| | \| |


| 6+50 | 0.2170 | 0.70 |  |  | v | \| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+55 | 0.2218 | 0.70 |  | Q | v | \| | \| |
| 7+ 0 | 0.2266 | 0.70 | 1 | Q | v | 1 | 1 |
| 7+ 5 | 0.2315 | 0.70 | \| | Q | V | \| | \| |
| 7+10 | 0.2363 | 0.70 | 1 | Q | V | \| | \| |
| 7+15 | 0.2411 | 0.70 | \| | Q | V | । | 1 |
| 7+20 | 0. 2461 | 0.73 | 1 | Q | v | 1 | 1 |
| 7+25 | 0. 2514 | 0.76 | 1 | Q | V | I | 1 |
| 7+30 | 0.2567 | 0.77 | 1 | Q | V | 1 | 1 |
| 7+35 | 0.2622 | 0.80 | 1 | Q | V | 1 | I |
| 7+40 | 0. 2679 | 0.83 | 1 | Q | V |  | 1 |
| 7+45 | 0.2737 | 0.84 | 1 | Q | V |  | 1 |
| 7+50 | 0.2797 | 0.87 | 1 | Q | V | \| | \| |
| 7+55 | 0.2859 | 0.90 | 1 | Q | V |  | \| |
| 8+ 0 | 0.2922 | 0.91 | 1 | Q |  | V \\| | \| |
| 8+ 5 | 0. 2989 | 0.97 | I | Q |  | V I | 1 |
| 8+10 | 0.3060 | 1.04 | । | Q |  | v \| | \| |
| 8+15 | 0.3132 | 1.05 | \| | Q |  | v \\| | \| |
| 8+20 | 0.3205 | 1.05 | \| | Q |  | V \\| | 1 |
| $8+25$ | 0.3277 | 1.05 | \| | Q |  | VI | I |
| 8+30 | 0.3349 | 1.05 | \| | Q |  | V\| | \| |
| 8+35 | 0.3423 | 1.08 | \| | Q |  | V\| | \| |
| 8+40 | 0.3500 | 1.11 | 1 | Q |  | V1 | \| |
| 8+45 | 0.3577 | 1.12 | 1 | Q |  | VI | 1 |
| 8+50 | 0.3656 | 1.15 | \| | Q |  | V | \| |
| 8+55 | 0.3738 | 1.18 | । | Q |  | V | I |
| 9+ 0 | 0.3820 | 1.19 | 1 | Q |  | V | \| |
| 9+ 5 | 0.3906 | 1.25 | 1 | Q |  | V | I |
| 9+10 | 0.3997 | 1.32 | 1 | Q |  | IV | 1 |
| 9+15 | 0.4088 | 1.33 | \| | Q | Q | IV | \| |


| 9+20 | 0.4182 | 1.36 | I | Q | IV |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+25 | 0.4278 | 1.39 | \| | Q | \|V |  |  | \| |
| 9+30 | 0.4374 | 1.40 | \| | Q | \| V |  |  | \| |
| 9+35 | 0.4472 | 1.43 | \| | Q | \| V |  |  | \| |
| $9+40$ | 0.4573 | 1.46 | 1 | Q | \\| V |  |  | 1 |
| 9+45 | 0.4674 | 1.47 | \| | Q | I V |  |  | \| |
| $9+50$ | 0.4778 | 1.50 | I | Q | \| | v |  | \| |
| $9+55$ | 0.4883 | 1.53 | \| | Q | \| | v |  | \| |
| 10+ 0 | 0.4989 | 1.54 | 1 | Q | 1 | V |  | 1 |
| 10+ 5 | 0.5080 | 1.32 | 1 | Q | 1 | V |  | 1 |
| 10+10 | 0.5154 | 1.08 | \| | Q | 1 | V |  | 1 |
| 10+15 | 0.5227 | 1.05 | \| | Q | 1 | v |  | \| |
| 10+20 | 0.5299 | 1.05 | I | Q | 1 | V |  | \| |
| 10+25 | 0.5371 | 1.05 | I | Q | 1 | V |  | \| |
| 10+30 | 0.5443 | 1.05 | 1 | Q | 1 | v |  | \| |
| 10+35 | 0.5526 | 1.21 | I | Q | 1 | v |  | \| |
| 10+40 | 0.5621 | 1.38 | 1 | Q | 1 | v |  | \| |
| 10+45 | 0.5717 | 1.40 | 1 | Q | \| | v |  | \| |
| 10+50 | 0.5814 | 1.40 | 1 | Q | I |  |  | 1 |
| 10+55 | 0.5910 | 1.40 | 1 | Q | I |  |  | \| |
| 11+ 0 | 0.6006 | 1.40 | 1 | Q | 1 |  |  | \| |
| 11+ 5 | 0.6100 | 1.37 | 1 | Q | \| |  |  | I |
| 11+10 | 0.6192 | 1.33 | 1 | Q | 1 |  | v | 1 |
| 11+15 | 0.6284 | 1.33 | 1 | Q | \| |  | v | \| |
| 11+20 | 0.6375 | 1.33 | 1 | Q | 1 |  | V | \| |
| 11+25 | 0.6466 | 1.33 | 1 | Q | \| |  | V | 1 |
| 11+30 | 0.6558 | 1.33 | 1 | Q | 1 |  |  |  |
| 11+35 | 0.6645 | 1.27 | 1 | Q | 1 |  |  |  |
| 11+40 | 0.6728 | 1.20 | 1 | Q | 1 |  | $v$ |  |
| 11+45 | 0.6810 | 1.19 | I | Q | 1 |  |  |  |


| 11+50 | 0.6894 | 1.22 | । | Q | \| | v |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11+55 | 0.6980 | 1.25 | \| | Q | \| | v |  |  |
| 12+ 0 | 0.7066 | 1.26 | \| | Q | \| | v |  |  |
| $12+5$ | 0.7168 | 1.48 | \| | Q | \| | v |  |  |
| 12+10 | 0.7286 | 1.72 | \| | Q | \| | V |  |  |
| 12+15 | 0.7407 | 1.74 | \| | Q | \| | v |  |  |
| 12+20 | 0.7529 | 1.78 | \| | Q | I | v |  |  |
| 12+25 | 0.7654 | 1.81 | \| | Q | 1 |  |  |  |
| 12+30 | 0.7779 | 1.82 | \| | Q | \| |  |  |  |
| 12+35 | 0.7909 | 1.88 | \| | Q | \| |  |  |  |
| $12+40$ | 0.8043 | 1.95 | \| | Q | I |  | V |  |
| $12+45$ | 0.8177 | 1.96 | 1 | Q | 1 |  | V |  |
| 12+50 | 0.8314 | 1.99 | \| | Q | \| | 1 | V |  |
| 12+55 | 0.8454 | 2.02 | \| |  | \| | \| | V |  |
| $13+0$ | 0.8593 | 2.03 | \| |  |  | \| | $v$ |  |
| $13+5$ | 0.8744 | 2.18 | \| |  |  | \| | v |  |
| 13+10 | 0.8906 | 2.35 | I |  | Q | \| | $v$ |  |
| 13+15 | 0.9069 | 2.37 | \| |  | Q | \| |  |  |
| 13+20 | 0.9233 | 2.38 | I |  | Q | \| |  |  |
| 13+25 | 0.9397 | 2.38 | \| |  | Q | 1 |  | v |
| 13+30 | 0.9560 | 2.38 | \| |  | Q | \| |  | v |
| $13+35$ | 0.9700 | 2.03 | \| |  |  | \| |  | V |
| $13+40$ | 0.9815 | 1.66 | \| | Q | \| | \| |  | v |
| $13+45$ | 0.9926 | 1.61 | \| | Q | \| | 1 |  | v |
| 13+50 | 1.0036 | 1.61 | I | Q | \| | 1 |  | V |
| 13+55 | 1.0147 | 1.61 | \| | Q | \| | \| |  | V |
| 14+ 0 | 1.0258 | 1.61 | \| | Q | \| | \| |  | V |
| $14+5$ | 1.0377 | 1.73 | \| | Q | 1 | 1 |  | v |
| 14+10 | 1.0506 | 1.87 | 1 | Q | 1 | 1 |  |  |
| 14+15 | 1.0636 | 1.89 | \| | Q | \| | I |  |  |


| 14+20 | 1.0764 | 1.86 | 1 | Q | \\| | 1 | v1 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 14+25 | 1.0889 | 1.82 | 1 | Q | 1 | \| | v |  |  |
| 14+30 | 1.1014 | 1.82 | , | Q | I | \| | V |  |  |
| 14+35 | 1.1140 | 1.82 | \| | Q | 1 | 1 | v |  |  |
| 14+40 | 1.1265 | 1.82 | 1 | Q | I | 1 | IV |  |  |
| 14+45 | 1.1390 | 1.82 | 1 | Q | 1 | 1 | IV |  |  |
| 14+50 | 1.1513 | 1.79 | \| | Q | 1 | \| | IV |  |  |
| 14+55 | 1.1634 | 1.75 | \| | Q | I | 1 |  | V |  |
| 15+ 0 | 1.1754 | 1.75 | 1 | Q | I | 1 | \| | V | $\stackrel{8}{8}$ |
| 15+ 5 | 1.1872 | 1.72 | 1 | Q | \| | 1 |  | V | - |
| 15+10 | 1.1988 | 1.68 | I | Q | । | I | । | V | - |
| 15+15 | 1.2104 | 1.68 | \| | Q | । | I | । | V | $\stackrel{9}{5}$ |
| 15+20 | 1.2217 | 1.65 | 1 | Q | \| | 1 | 1 | v | - |
| 15+25 | 1.2328 | 1.61 | 1 | Q | \| | 1 | 1 | v |  |
| 15+30 | 1.2439 | 1.61 | \| | Q | \| | , | \| | v | ${ }_{0}$ |
| 15+35 | 1.2541 | 1.48 | \| | Q | \| | 1 | \| | v | \% |
| 15+40 | 1.2634 | 1.35 | 1 | Q | \| | 1 | \| | v |  |
| 15+45 | 1.2725 | 1.33 | 1 | Q | \| | 1 | \| | V | $\pm$ |
| 15+50 | 1.2817 | 1.33 | \| | Q | । | 1 | । | v | - |
| 15+55 | 1.2908 | 1.33 | \| | Q | \| | \| | $\dagger$ | v | ¢ |
| 16+ 0 | 1.3000 | 1.33 | \| | Q | \| | \| | 1 | v | $\stackrel{\text { I }}{ \pm}$ |
| 16+ 5 | 1.3059 | 0.86 | 1 | Q | \| | 1 | 1 | V | ${ }^{\text {E }}$ |
| 16+10 | 1.3083 | 0.35 | IQ |  | \| | \| | $\dagger$ | V | 号 |
| 16+15 | 1.3103 | 0.29 | \|Q |  | \| | \| | \| | V |  |
| 16+20 | 1.3122 | 0.28 | IQ |  | \| | \| | \| | v |  |
| 16+25 | 1.3141 | 0.28 | IQ |  | \| | I | \| | V |  |
| 16+30 | 1.3160 | 0.28 | IQ |  | \| | 1 | 1 | V |  |
| 16+35 | 1.3178 | 0.25 | Q |  | , | \| | 1 | V |  |
| 16+40 | 1.3192 | 0.21 | Q |  | , | \| | 1 | v |  |
| 16+45 | 1.3207 | 0.21 | Q |  | \| | 1 | 1 | V |  |


| 16+50 | 1.3221 | 0.21 | Q |  | \| | \| | V |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 16+55 | 1.3236 | 0.21 | Q |  | 1 |  | V |  |
| 17+ 0 | 1.3250 | 0.21 | Q |  | \| | \| | V |  |
| 17+ 5 | 1.3269 | 0.27 | \|Q | \| | \| | \| | V |  |
| 17+10 | 1.3292 | 0.34 | \|Q |  | \| | \| | V |  |
| 17+15 | 1.3316 | 0.35 | \|Q |  | \| | \| | V |  |
| 17+20 | 1.3340 | 0.35 | \|Q |  | \| | \| | V |  |
| 17+25 | 1.3364 | 0.35 | \|Q |  | \| | \| | V |  |
| 17+30 | 1.3389 | 0.35 | IQ |  | \| |  | V | 8 |
| 17+35 | 1.3413 | 0.35 | \|Q | \| | I | I | V | - |
| 17+40 | 1.3437 | 0.35 | 1Q |  | \| |  | V | $\stackrel{\text { IV }}{ }$ |
| 17+45 | 1.3461 | 0.35 | IQ |  | \| | \| | V | $\xrightarrow{\square}$ |
| 17+50 | 1.3483 | 0.32 | \|Q |  | , | \| | V | - |
| 17+55 | 1.3502 | 0.28 | 1Q |  | \| | \| | V | $\sum_{3}^{0}$ |
| 18+ 0 | 1.3522 | 0.28 | \|Q | 1 | \| | \| | V | O |
| 18+ 5 | 1.3541 | 0.28 | \|Q |  | \| | \| | V | ¢ |
| 18+10 | 1.3560 | 0.28 | 1Q |  | 1 |  | V |  |
| 18+15 | 1.3579 | 0.28 | 1Q |  | \| | \| | V | エ |
| 18+20 | 1.3599 | 0.28 | \|Q |  | 1 | \| | V | - |
| 18+25 | 1.3618 | 0.28 | IQ |  | 1 | I | V | 응 |
| 18+30 | 1.3637 | 0.28 | \|Q |  | \| | \| | V | $\stackrel{7}{\square}$ |
| 18+35 | 1.3654 | 0.25 | Q |  | 1 | \| | V | E |
| 18+40 | 1.3669 | 0.21 | Q |  | 1 | \| | V | 年 |
| $18+45$ | 1.3683 | 0.21 | Q |  | \| |  | V |  |
| 18+50 | 1.3696 | 0.18 | Q |  | \| |  | V |  |
| 18+55 | 1.3706 | 0.14 | Q |  | 1 | \| | V |  |
| 19+ 0 | 1.3715 | 0.14 | Q |  | 1 | \| | V |  |
| $19+5$ | 1.3727 | 0.17 | Q |  | 1 | 1 | V |  |
| 19+10 | 1.3741 | 0.21 | Q |  | 1 | 1 | V |  |
| 19+15 | 1.3756 | 0.21 | Q |  | I | 1 | V |  |




```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post2410.out
                    _+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit |  | Pattern | Storm Rain | Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | (In/Hr) |
| 1 | 0.08 | 0.07 | 0.024 | ( 0.274) | 0.009 | 0.015 |
| 2 | 0.17 | 0.07 | 0.024 | ( 0.273) | 0.009 | 0.015 |
| 3 | 0.25 | 0.07 | 0.024 | ( 0.272) | 0.009 | 0.015 |
| 4 | 0.33 | 0.10 | 0.037 | ( 0.271) | 0.014 | 0.023 |
| 5 | 0.42 | 0.10 | 0.037 | ( 0.270) | 0.014 | 0.023 |
| 6 | 0.50 | 0.10 | 0.037 | ( 0.269) | 0.014 | 0.023 |
| 7 | 0.58 | 0.10 | 0.037 | ( 0.268) | 0.014 | 0.023 |
| 8 | 0.67 | 0.10 | 0.037 | ( 0.267) | 0.014 | 0.023 |
| 9 | 0.75 | 0.10 | 0.037 | ( 0.266) | 0.014 | 0.023 |
| 10 | 0.83 | 0.13 | 0.049 | ( 0.265) | 0.019 | 0.030 |
| 11 | 0.92 | 0.13 | 0.049 | ( 0.264) | 0.019 | 0.030 |
| 12 | 1.00 | 0.13 | 0.049 | ( 0.263) | 0.019 | 0.030 |
| 13 | 1.08 | 0.10 | 0.037 | ( 0.262) | 0.014 | 0.023 |
| 14 | 1.17 | 0.10 | 0.037 | ( 0.261) | 0.014 | 0.023 |
| 15 | 1.25 | 0.10 | 0.037 | ( 0.260) | 0.014 | 0.023 |
| 16 | 1.33 | 0.10 | 0.037 | ( 0.259) | 0.014 | 0.023 |
| 17 | 1.42 | 0.10 | 0.037 | ( 0.258) | 0.014 | 0.023 |
| 18 | 1.50 | 0.10 | 0.037 | ( 0.257) | 0.014 | 0.023 |
| 19 | 1.58 | 0.10 | 0.037 | ( 0.255) | 0.014 | 0.023 |
| 20 | 1.67 | 0.10 | 0.037 | ( 0.254) | 0.014 | 0.023 |
| 21 | 1.75 | 0.10 | 0.037 | ( 0.253) | 0.014 | 0.023 |
| 22 | 1.83 | 0.13 | 0.049 | ( 0.252) | 0.019 | 0.030 |
| 23 | 1.92 | 0.13 | 0.049 | ( 0.251) | 0.019 | 0.030 |
| 24 | 2.00 | 0.13 | 0.049 | ( 0.250) | 0.019 | 0.030 |
| 25 | 2.08 | 0.13 | 0.049 | ( 0.249) | 0.019 | 0.030 |
| 26 | 2.17 | 0.13 | 0.049 | ( 0.248) | 0.019 | 0.030 |
| 27 | 2.25 | 0.13 | 0.049 | ( 0.247) | 0.019 | 0.030 |
| 28 | 2.33 | 0.13 | 0.049 | ( 0.246) | 0.019 | 0.030 |
| 29 | 2.42 | 0.13 | 0.049 | ( 0.245) | 0.019 | 0.030 |
| 30 | 2.50 | 0.13 | 0.049 | ( 0.244) | 0.019 | 0.030 |
| 31 | 2.58 | 0.17 | 0.061 | ( 0.243) | 0.023 | 0.038 |
| 32 | 2.67 | 0.17 | 0.061 | ( 0.242) | 0.023 | 0.038 |
| 33 | 2.75 | 0.17 | 0.061 | ( 0.241) | 0.023 | 0.038 |
| 34 | 2.83 | 0.17 | 0.061 | ( 0.240) | 0.023 | 0.038 |
| 35 | 2.92 | 0.17 | 0.061 | ( 0.239) | 0.023 | 0.038 |
| 36 | 3.00 | 0.17 | 0.061 | ( 0.238) | 0.023 | 0.038 |
| 37 | 3.08 | 0.17 | 0.061 | ( 0.237) | 0.023 | 0.038 |
| 38 | 3.17 | 0.17 | 0.061 | ( 0.236) | 0.023 | 0.038 |
| 39 | 3.25 | 0.17 | 0.061 | ( 0.235) | 0.023 | 0.038 |
| 40 | 3.33 | 0.17 | 0.061 | ( 0.234) | 0.023 | 0.038 |
| 41 | 3.42 | 0.17 | 0.061 | ( 0.233) | 0.023 | 0.038 |
| 42 | 3.50 | 0.17 | 0.061 | ( 0.232) | 0.023 | 0.038 |
| 43 | 3.58 | 0.17 | 0.061 | ( 0.232) | 0.023 | 0.038 |
| 44 | 3.67 | 0.17 | 0.061 | ( 0.231) | 0.023 | 0.038 |
| 45 | 3.75 | 0.17 | 0.061 | ( 0.230) | 0.023 | 0.038 |
| 46 | 3.83 | 0.20 | 0.073 | ( 0.229) | 0.028 | 0.045 |
| 47 | 3.92 | 0.20 | 0.073 | ( 0.228) | 0.028 | 0.045 |
| 48 | 4.00 | 0.20 | 0.073 | ( 0.227) | 0.028 | 0.045 |
| 49 | 4.08 | 0.20 | 0.073 | ( 0.226) | 0.028 | 0.045 |
| 50 | 4.17 | 0.20 | 0.073 | ( 0.225) | 0.028 | 0.045 |
| 51 | 4.25 | 0.20 | 0.073 | ( 0.224) | 0.028 | 0.045 |
| 52 | 4.33 | 0.23 | 0.085 | ( 0.223) | 0.032 | 0.053 |
| 53 | 4.42 | 0.23 | 0.085 | ( 0.222) | 0.032 | 0.053 |
| 54 | 4.50 | 0.23 | 0.085 | ( 0.221) | 0.032 | 0.053 |
| 55 | 4.58 | 0.23 | 0.085 | ( 0.220) | 0.032 | 0.053 |
| 56 | 4.67 | 0.23 | 0.085 | ( 0.219) | 0.032 | 0.053 |
| 57 | 4.75 | 0.23 | 0.085 | ( 0.218) | 0.032 | 0.053 |
| 58 | 4.83 | 0.27 | 0.097 | ( 0.217) | 0.037 | 0.060 |


| 59 | 4.92 | 0.27 | 0.097 | 0.216) | 0.037 | 0.060 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 60 | 5.00 | 0.27 | 0.097 | $0.215)$ | 0.037 | 0.060 |
| 61 | 5.08 | 0.20 | 0.073 | $0.214)$ | 0.028 | 0.045 |
| 62 | 5.17 | 0.20 | 0.073 | 0.213) | 0.028 | 0.045 |
| 63 | 5.25 | 0.20 | 0.073 | 0.212) | 0.028 | 0.045 |
| 64 | 5.33 | 0.23 | 0.085 | $0.212)$ | 0.032 | 0.053 |
| 65 | 5.42 | 0.23 | 0.085 | 0.211) | 0.032 | 0.053 |
| 66 | 5.50 | 0.23 | 0.085 | 0.210) | 0.032 | 0.053 |
| 67 | 5.58 | 0.27 | 0.097 | $0.209)$ | 0.037 | 0.060 |
| 68 | 5.67 | 0.27 | 0.097 | $0.208)$ | 0.037 | 0.060 |
| 69 | 5.75 | 0.27 | 0.097 | 0.207) | 0.037 | 0.060 |
| 70 | 5.83 | 0.27 | 0.097 | 0.206) | 0.037 | 0.060 |
| 71 | 5.92 | 0.27 | 0.097 | $0.205)$ | 0.037 | 0.060 |
| 72 | 6.00 | 0.27 | 0.097 | $0.204)$ | 0.037 | 0.060 |
| 73 | 6.08 | 0.30 | 0.110 | $0.203)$ | 0.042 | 0.068 |
| 74 | 6.17 | 0.30 | 0.110 | 0.202) | 0.042 | 0.068 |
| 75 | 6.25 | 0.30 | 0.110 | $0.202)$ | 0.042 | 0.068 |
| 76 | 6.33 | 0.30 | 0.110 | 0.201) | 0.042 | 0.068 |
| 77 | 6.42 | 0.30 | 0.110 | 0.200) | 0.042 | 0.068 |
| 78 | 6.50 | 0.30 | 0.110 | $0.199)$ | 0.042 | 0.068 |
| 79 | 6.58 | 0.33 | 0.122 | 0.198) | 0.046 | 0.076 |
| 80 | 6.67 | 0.33 | 0.122 | $0.197)$ | 0.046 | 0.076 |
| 81 | 6.75 | 0.33 | 0.122 | 0.196) | 0.046 | 0.076 |
| 82 | 6.83 | 0.33 | 0.122 | $0.195)$ | 0.046 | 0.076 |
| 83 | 6.92 | 0.33 | 0.122 | $0.194)$ | 0.046 | 0.076 |
| 84 | 7.00 | 0.33 | 0.122 | 0.193) | 0.046 | 0.076 |
| 85 | 7.08 | 0.33 | 0.122 | $0.193)$ | 0.046 | 0.076 |
| 86 | 7.17 | 0.33 | 0.122 | $0.192)$ | 0.046 | 0.076 |
| 87 | 7.25 | 0.33 | 0.122 | 0.191) | 0.046 | 0.076 |
| 88 | 7.33 | 0.37 | 0.134 | 0.190) | 0.051 | 0.083 |
| 89 | 7.42 | 0.37 | 0.134 | $0.189)$ | 0.051 | 0.083 |
| 90 | 7.50 | 0.37 | 0.134 | $0.188)$ | 0.051 | 0.083 |
| 91 | 7.58 | 0.40 | 0.146 | 0.187) | 0.056 | 0.091 |
| 92 | 7.67 | 0.40 | 0.146 | 0.187) | 0.056 | 0.091 |
| 93 | 7.75 | 0.40 | 0.146 | 0.186) | 0.056 | 0.091 |
| 94 | 7.83 | 0.43 | 0.158 | $0.185)$ | 0.060 | 0.098 |
| 95 | 7.92 | 0.43 | 0.158 | $0.184)$ | 0.060 | 0.098 |
| 96 | 8.00 | 0.43 | 0.158 | $0.183)$ | 0.060 | 0.098 |
| 97 | 8.08 | 0.50 | 0.183 | $0.182)$ | 0.069 | 0.113 |
| 98 | 8.17 | 0.50 | 0.183 | 0.181) | 0.069 | 0.113 |
| 99 | 8.25 | 0.50 | 0.183 | 0.181) | 0.069 | 0.113 |
| 100 | 8.33 | 0.50 | 0.183 | 0.180) | 0.069 | 0.113 |
| 101 | 8.42 | 0.50 | 0.183 | 0.179) | 0.069 | 0.113 |
| 102 | 8.50 | 0.50 | 0.183 | 0.178) | 0.069 | 0.113 |
| 103 | 8.58 | 0.53 | 0.195 | 0.177) | 0.074 | 0.121 |
| 104 | 8.67 | 0.53 | 0.195 | 0.176) | 0.074 | 0.121 |
| 105 | 8.75 | 0.53 | 0.195 | 0.176) | 0.074 | 0.121 |
| 106 | 8.83 | 0.57 | 0.207 | $0.175)$ | 0.079 | 0.128 |
| 107 | 8.92 | 0.57 | 0.207 | $0.174)$ | 0.079 | 0.128 |
| 108 | 9.00 | 0.57 | 0.207 | $0.173)$ | 0.079 | 0.128 |
| 109 | 9.08 | 0.63 | 0.231 | 0.172) | 0.088 | 0.143 |
| 110 | 9.17 | 0.63 | 0.231 | 0.171) | 0.088 | 0.143 |
| 111 | 9.25 | 0.63 | 0.231 | 0.171) | 0.088 | 0.143 |
| 112 | 9.33 | 0.67 | 0.244 | 0.170) | 0.093 | 0.151 |
| 113 | 9.42 | 0.67 | 0.244 | 0.169) | 0.093 | 0.151 |
| 114 | 9.50 | 0.67 | 0.244 | 0.168) | 0.093 | 0.151 |
| 115 | 9.58 | 0.70 | 0.256 | 0.167) | 0.097 | 0.159 |
| 116 | 9.67 | 0.70 | 0.256 | 0.167) | 0.097 | 0.159 |
| 117 | 9.75 | 0.70 | 0.256 | 0.166) | 0.097 | 0.159 |
| 118 | 9.83 | 0.73 | 0.268 | $0.165)$ | 0.102 | 0.166 |


| 119 | 9.92 | 0.73 | 0.268 | $0.164)$ | 0.102 | 0.166 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 120 | 10.00 | 0.73 | 0.268 | $0.163)$ | 0.102 | 0.166 |
| 121 | 10.08 | 0.50 | 0.183 | 0.163) | 0.069 | 0.113 |
| 122 | 10.17 | 0.50 | 0.183 | $0.162)$ | 0.069 | 0.113 |
| 123 | 10.25 | 0.50 | 0.183 | 0.161) | 0.069 | 0.113 |
| 124 | 10.33 | 0.50 | 0.183 | 0.160) | 0.069 | 0.113 |
| 125 | 10.42 | 0.50 | 0.183 | $0.159)$ | 0.069 | 0.113 |
| 126 | 10.50 | 0.50 | 0.183 | $0.159)$ | 0.069 | 0.113 |
| 127 | 10.58 | 0.67 | 0.244 | 0.158) | 0.093 | 0.151 |
| 128 | 10.67 | 0.67 | 0.244 | $0.157)$ | 0.093 | 0.151 |
| 129 | 10.75 | 0.67 | 0.244 | $0.156)$ | 0.093 | 0.151 |
| 130 | 10.83 | 0.67 | 0.244 | $0.156)$ | 0.093 | 0.151 |
| 131 | 10.92 | 0.67 | 0.244 | $0.155)$ | 0.093 | 0.151 |
| 132 | 11.00 | 0.67 | 0.244 | $0.154)$ | 0.093 | 0.151 |
| 133 | 11.08 | 0.63 | 0.231 | 0.153) | 0.088 | 0.143 |
| 134 | 11.17 | 0.63 | 0.231 | $0.153)$ | 0.088 | 0.143 |
| 135 | 11.25 | 0.63 | 0.231 | $0.152)$ | 0.088 | 0.143 |
| 136 | 11.33 | 0.63 | 0.231 | 0.151) | 0.088 | 0.143 |
| 137 | 11.42 | 0.63 | 0.231 | 0.150) | 0.088 | 0.143 |
| 138 | 11.50 | 0.63 | 0.231 | 0.150) | 0.088 | 0.143 |
| 139 | 11.58 | 0.57 | 0.207 | $0.149)$ | 0.079 | 0.128 |
| 140 | 11.67 | 0.57 | 0.207 | $0.148)$ | 0.079 | 0.128 |
| 141 | 11.75 | 0.57 | 0.207 | 0.147) | 0.079 | 0.128 |
| 142 | 11.83 | 0.60 | 0.219 | 0.147) | 0.083 | 0.136 |
| 143 | 11.92 | 0.60 | 0.219 | $0.146)$ | 0.083 | 0.136 |
| 144 | 12.00 | 0.60 | 0.219 | $0.145)$ | 0.083 | 0.136 |
| 145 | 12.08 | 0.83 | 0.304 | $0.144)$ | 0.116 | 0.189 |
| 146 | 12.17 | 0.83 | 0.304 | $0.144)$ | 0.116 | 0.189 |
| 147 | 12.25 | 0.83 | 0.304 | $0.143)$ | 0.116 | 0.189 |
| 148 | 12.33 | 0.87 | 0.317 | $0.142)$ | 0.120 | 0.196 |
| 149 | 12.42 | 0.87 | 0.317 | $0.142)$ | 0.120 | 0.196 |
| 150 | 12.50 | 0.87 | 0.317 | 0.141) | 0.120 | 0.196 |
| 151 | 12.58 | 0.93 | 0.341 | 0.140) | 0.130 | 0.211 |
| 152 | 12.67 | 0.93 | 0.341 | $0.139)$ | 0.130 | 0.211 |
| 153 | 12.75 | 0.93 | 0.341 | $0.139)$ | 0.130 | 0.211 |
| 154 | 12.83 | 0.97 | 0.353 | $0.138)$ | 0.134 | 0.219 |
| 155 | 12.92 | 0.97 | 0.353 | 0.137) | 0.134 | 0.219 |
| 156 | 13.00 | 0.97 | 0.353 | $0.137)$ | 0.134 | 0.219 |
| 157 | 13.08 | 1.13 | 0.414 | 0.136 | $0.157)$ | 0.278 |
| 158 | 13.17 | 1.13 | 0.414 | 0.135 | 0.157) | 0.279 |
| 159 | 13.25 | 1.13 | 0.414 | 0.135 | 0.157) | 0.280 |
| 160 | 13.33 | 1.13 | 0.414 | 0.134 | $0.157)$ | 0.280 |
| 161 | 13.42 | 1.13 | 0.414 | 0.133 | 0.157) | 0.281 |
| 162 | 13.50 | 1.13 | 0.414 | 0.133 | $0.157)$ | 0.282 |
| 163 | 13.58 | 0.77 | 0.280 | $0.132)$ | 0.106 | 0.174 |
| 164 | 13.67 | 0.77 | 0.280 | $0.131)$ | 0.106 | 0.174 |
| 165 | 13.75 | 0.77 | 0.280 | 0.130) | 0.106 | 0.174 |
| 166 | 13.83 | 0.77 | 0.280 | 0.130) | 0.106 | 0.174 |
| 167 | 13.92 | 0.77 | 0.280 | $0.129)$ | 0.106 | 0.174 |
| 168 | 14.00 | 0.77 | 0.280 | $0.129)$ | 0.106 | 0.174 |
| 169 | 14.08 | 0.90 | 0.329 | 0.128) | 0.125 | 0.204 |
| 170 | 14.17 | 0.90 | 0.329 | $0.127)$ | 0.125 | 0.204 |
| 171 | 14.25 | 0.90 | 0.329 | $0.127)$ | 0.125 | 0.204 |
| 172 | 14.33 | 0.87 | 0.317 | $0.126)$ | 0.120 | 0.196 |
| 173 | 14.42 | 0.87 | 0.317 | $0.125)$ | 0.120 | 0.196 |
| 174 | 14.50 | 0.87 | 0.317 | $0.125)$ | 0.120 | 0.196 |
| 175 | 14.58 | 0.87 | 0.317 | $0.124)$ | 0.120 | 0.196 |
| 176 | 14.67 | 0.87 | 0.317 | $0.123)$ | 0.120 | 0.196 |
| 177 | 14.75 | 0.87 | 0.317 | 0.123) | 0.120 | 0.196 |
| 178 | 14.83 | 0.83 | 0.304 | $0.122)$ | 0.116 | 0.189 |


| 179 | 14.92 | 0.83 | 0.304 | 0.121) | 0.116 | 0.189 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 180 | 15.00 | 0.83 | 0.304 | 0.121) | 0.116 | 0.189 |
| 181 | 15.08 | 0.80 | 0.292 | 0.120) | 0.111 | 0.181 |
| 182 | 15.17 | 0.80 | 0.292 | 0.120) | 0.111 | 0.181 |
| 183 | 15.25 | 0.80 | 0.292 | 0.119) | 0.111 | 0.181 |
| 184 | 15.33 | 0.77 | 0.280 | 0.118) | 0.106 | 0.174 |
| 185 | 15.42 | 0.77 | 0.280 | 0.118) | 0.106 | 0.174 |
| 186 | 15.50 | 0.77 | 0.280 | 0.117) | 0.106 | 0.174 |
| 187 | 15.58 | 0.63 | 0.231 | 0.117) | 0.088 | 0.143 |
| 188 | 15.67 | 0.63 | 0.231 | 0.116) | 0.088 | 0.143 |
| 189 | 15.75 | 0.63 | 0.231 | 0.115) | 0.088 | 0.143 |
| 190 | 15.83 | 0.63 | 0.231 | $0.115)$ | 0.088 | 0.143 |
| 191 | 15.92 | 0.63 | 0.231 | $0.114)$ | 0.088 | 0.143 |
| 192 | 16.00 | 0.63 | 0.231 | $0.114)$ | 0.088 | 0.143 |
| 193 | 16.08 | 0.13 | 0.049 | 0.113) | 0.019 | 0.030 |
| 194 | 16.17 | 0.13 | 0.049 | 0.112) | 0.019 | 0.030 |
| 195 | 16.25 | 0.13 | 0.049 | $0.112)$ | 0.019 | 0.030 |
| 196 | 16.33 | 0.13 | 0.049 | 0.111) | 0.019 | 0.030 |
| 197 | 16.42 | 0.13 | 0.049 | 0.111) | 0.019 | 0.030 |
| 198 | 16.50 | 0.13 | 0.049 | 0.110) | 0.019 | 0.030 |
| 199 | 16.58 | 0.10 | 0.037 | 0.110) | 0.014 | 0.023 |
| 200 | 16.67 | 0.10 | 0.037 | $0.109)$ | 0.014 | 0.023 |
| 201 | 16.75 | 0.10 | 0.037 | 0.109) | 0.014 | 0.023 |
| 202 | 16.83 | 0.10 | 0.037 | 0.108) | 0.014 | 0.023 |
| 203 | 16.92 | 0.10 | 0.037 | 0.107) | 0.014 | 0.023 |
| 204 | 17.00 | 0.10 | 0.037 | 0.107) | 0.014 | 0.023 |
| 205 | 17.08 | 0.17 | 0.061 | 0.106) | 0.023 | 0.038 |
| 206 | 17.17 | 0.17 | 0.061 | 0.106) | 0.023 | 0.038 |
| 207 | 17.25 | 0.17 | 0.061 | $0.105)$ | 0.023 | 0.038 |
| 208 | 17.33 | 0.17 | 0.061 | $0.105)$ | 0.023 | 0.038 |
| 209 | 17.42 | 0.17 | 0.061 | $0.104)$ | 0.023 | 0.038 |
| 210 | 17.50 | 0.17 | 0.061 | $0.104)$ | 0.023 | 0.038 |
| 211 | 17.58 | 0.17 | 0.061 | 0.103) | 0.023 | 0.038 |
| 212 | 17.67 | 0.17 | 0.061 | 0.103) | 0.023 | 0.038 |
| 213 | 17.75 | 0.17 | 0.061 | $0.102)$ | 0.023 | 0.038 |
| 214 | 17.83 | 0.13 | 0.049 | 0.102) | 0.019 | 0.030 |
| 215 | 17.92 | 0.13 | 0.049 | 0.101) | 0.019 | 0.030 |
| 216 | 18.00 | 0.13 | 0.049 | 0.101) | 0.019 | 0.030 |
| 217 | 18.08 | 0.13 | 0.049 | 0.100) | 0.019 | 0.030 |
| 218 | 18.17 | 0.13 | 0.049 | 0.100) | 0.019 | 0.030 |
| 219 | 18.25 | 0.13 | 0.049 | 0.099) | 0.019 | 0.030 |
| 220 | 18.33 | 0.13 | 0.049 | $0.099)$ | 0.019 | 0.030 |
| 221 | 18.42 | 0.13 | 0.049 | 0.098) | 0.019 | 0.030 |
| 222 | 18.50 | 0.13 | 0.049 | 0.098) | 0.019 | 0.030 |
| 223 | 18.58 | 0.10 | 0.037 | $0.097)$ | 0.014 | 0.023 |
| 224 | 18.67 | 0.10 | 0.037 | $0.097)$ | 0.014 | 0.023 |
| 225 | 18.75 | 0.10 | 0.037 | 0.096) | 0.014 | 0.023 |
| 226 | 18.83 | 0.07 | 0.024 | 0.096) | 0.009 | 0.015 |
| 227 | 18.92 | 0.07 | 0.024 | $0.095)$ | 0.009 | 0.015 |
| 228 | 19.00 | 0.07 | 0.024 | $0.095)$ | 0.009 | 0.015 |
| 229 | 19.08 | 0.10 | 0.037 | $0.094)$ | 0.014 | 0.023 |
| 230 | 19.17 | 0.10 | 0.037 | $0.094)$ | 0.014 | 0.023 |
| 231 | 19.25 | 0.10 | 0.037 | $0.094)$ | 0.014 | 0.023 |
| 232 | 19.33 | 0.13 | 0.049 | $0.093)$ | 0.019 | 0.030 |
| 233 | 19.42 | 0.13 | 0.049 | 0.093) | 0.019 | 0.030 |
| 234 | 19.50 | 0.13 | 0.049 | $0.092)$ | 0.019 | 0.030 |
| 235 | 19.58 | 0.10 | 0.037 | 0.092) | 0.014 | 0.023 |
| 236 | 19.67 | 0.10 | 0.037 | 0.091) | 0.014 | 0.023 |
| 237 | 19.75 | 0.10 | 0.037 | 0.091) | 0.014 | 0.023 |
| 238 | 19.83 | 0.07 | 0.024 | 0.091) | 0.009 | 0.015 |


| 239 | 19.92 | 0.07 | 0.024 | 0.090) | 0.009 | 0.015 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 240 | 20.00 | 0.07 | 0.024 | 0.090) | 0.009 | 0.015 |
| 241 | 20.08 | 0.10 | 0.037 | 0.089) | 0.014 | 0.023 |
| 242 | 20.17 | 0.10 | 0.037 | $0.089)$ | 0.014 | 0.023 |
| 243 | 20.25 | 0.10 | 0.037 | 0.089) | 0.014 | 0.023 |
| 244 | 20.33 | 0.10 | 0.037 | $0.088)$ | 0.014 | 0.023 |
| 245 | 20.42 | 0.10 | 0.037 | $0.088)$ | 0.014 | 0.023 |
| 246 | 20.50 | 0.10 | 0.037 | $0.088)$ | 0.014 | 0.023 |
| 247 | 20.58 | 0.10 | 0.037 | 0.087) | 0.014 | 0.023 |
| 248 | 20.67 | 0.10 | 0.037 | $0.087)$ | 0.014 | 0.023 |
| 249 | 20.75 | 0.10 | 0.037 | $0.086)$ | 0.014 | 0.023 |
| 250 | 20.83 | 0.07 | 0.024 | 0.086) | 0.009 | 0.015 |
| 251 | 20.92 | 0.07 | 0.024 | 0.086) | 0.009 | 0.015 |
| 252 | 21.00 | 0.07 | 0.024 | 0.085) | 0.009 | 0.015 |
| 253 | 21.08 | 0.10 | 0.037 | $0.085)$ | 0.014 | 0.023 |
| 254 | 21.17 | 0.10 | 0.037 | 0.085) | 0.014 | 0.023 |
| 255 | 21.25 | 0.10 | 0.037 | $0.084)$ | 0.014 | 0.023 |
| 256 | 21.33 | 0.07 | 0.024 | $0.084)$ | 0.009 | 0.015 |
| 257 | 21.42 | 0.07 | 0.024 | $0.084)$ | 0.009 | 0.015 |
| 258 | 21.50 | 0.07 | 0.024 | $0.083)$ | 0.009 | 0.015 |
| 259 | 21.58 | 0.10 | 0.037 | $0.083)$ | 0.014 | 0.023 |
| 260 | 21.67 | 0.10 | 0.037 | 0.083) | 0.014 | 0.023 |
| 261 | 21.75 | 0.10 | 0.037 | 0.083) | 0.014 | 0.023 |
| 262 | 21.83 | 0.07 | 0.024 | $0.082)$ | 0.009 | 0.015 |
| 263 | 21.92 | 0.07 | 0.024 | 0.082) | 0.009 | 0.015 |
| 264 | 22.00 | 0.07 | 0.024 | $0.082)$ | 0.009 | 0.015 |
| 265 | 22.08 | 0.10 | 0.037 | 0.081) | 0.014 | 0.023 |
| 266 | 22.17 | 0.10 | 0.037 | 0.081) | 0.014 | 0.023 |
| 267 | 22.25 | 0.10 | 0.037 | 0.081) | 0.014 | 0.023 |
| 268 | 22.33 | 0.07 | 0.024 | 0.081) | 0.009 | 0.015 |
| 269 | 22.42 | 0.07 | 0.024 | 0.080) | 0.009 | 0.015 |
| 270 | 22.50 | 0.07 | 0.024 | 0.080) | 0.009 | 0.015 |
| 271 | 22.58 | 0.07 | 0.024 | 0.080) | 0.009 | 0.015 |
| 272 | 22.67 | 0.07 | 0.024 | 0.080) | 0.009 | 0.015 |
| 273 | 22.75 | 0.07 | 0.024 | 0.079) | 0.009 | 0.015 |
| 274 | 22.83 | 0.07 | 0.024 | 0.079) | 0.009 | 0.015 |
| 275 | 22.92 | 0.07 | 0.024 | 0.079) | 0.009 | 0.015 |
| 276 | 23.00 | 0.07 | 0.024 | 0.079) | 0.009 | 0.015 |
| 277 | 23.08 | 0.07 | 0.024 | 0.079) | 0.009 | 0.015 |
| 278 | 23.17 | 0.07 | 0.024 | 0.079) | 0.009 | 0.015 |
| 279 | 23.25 | 0.07 | 0.024 | $0.078)$ | 0.009 | 0.015 |
| 280 | 23.33 | 0.07 | 0.024 | 0.078) | 0.009 | 0.015 |
| 281 | 23.42 | 0.07 | 0.024 | 0.078) | 0.009 | 0.015 |
| 282 | 23.50 | 0.07 | 0.024 | 0.078) | 0.009 | 0.015 |
| 283 | 23.58 | 0.07 | 0.024 | 0.078) | 0.009 | 0.015 |
| 284 | 23.67 | 0.07 | 0.024 | 0.078) | 0.009 | 0.015 |
| 285 | 23.75 | 0.07 | 0.024 | $0.078)$ | 0.009 | 0.015 |
| 286 | 23.83 | 0.07 | 0.024 | 0.077) | 0.009 | 0.015 |
| 287 | 23.92 | 0.07 | 0.024 | 0.077) | 0.009 | 0.015 |
| 288 | 24.00 | 0.07 | 0.024 | 0.077) | 0.009 | 0.015 |
|  | Sum = | $\begin{aligned} & \text { SS R } \\ & 100.0 \end{aligned}$ | t Used |  | Sum | 22.8 |
|  | times area 10.9(Ac.)/[(In)/(Ft.)] = 1.7(Ac.Ft) |  |  |  |  |  |
| Total soil loss $=1.15(\mathrm{In})$ |  |  |  |  |  |  |
| Total soil loss $=1.040$ (Ac.Ft) |  |  |  |  |  |  |
| Total rainfall = 3.04(In) |  |  |  |  |  |  |
| Flood volume $=\quad 75152.7$ Cubic Feet |  |  |  |  |  |  |
| Total soil loss = 45322.9 Cubic Feet |  |  |  |  |  |  |

Peak flow rate of this hydrograph $=\quad 3.090($ CFS $)$

| Peak flow rate of this hydrograph $=$ 3.090(CFS) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++ |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Hydrograph in 5 Minute intervals ((CFS)) |  |  |  |  |  |  |
| $\begin{aligned} & \text { Time(h+m) Volume Ac.Ft } \\ & 10.0 \end{aligned}$ |  | Q(CFS) | 0 | 2.5 | 5.0 | 7.5 |
| 0+ 5 | 0.0005 | 0.07 | Q | \| | \| | \| |
| 0+10 | 0.0016 | 0.16 | Q | \| | \| | \| |
| 0+15 | 0.0027 | 0.16 | Q | \| | \| | \| |
| 0+20 | 0.0041 | 0.20 | Q | \| | \| | \| |
| 0+25 | 0.0058 | 0.24 | Q | \| | \| | \| |
| 0+30 | 0.0075 | 0.25 | Q | 1 | 1 | \| |
| 0+35 | 0.0092 | 0.25 | Q | \| | 1 | \| |
| 0+40 | 0.0109 | 0.25 | Q | \| | \| | \| |
| 0+45 | 0.0126 | 0.25 | Q | , | \| | \| |
| 0+50 | 0.0146 | 0.29 | VQ | \| | 1 | \| |
| 0+55 | 0.0169 | 0.33 | VQ | \| | 1 | \| |
| $1+0$ | 0.0191 | 0.33 | VQ | \| | \| | \| |
| 1+ 5 | 0.0212 | 0.29 | VQ | \| | 1 | \| |
| 1+10 | 0.0229 | 0.25 | VQ | \| | 1 | \| |
| 1+15 | 0.0246 | 0.25 | Q | \| | 1 | \| |
| 1+20 | 0.0264 | 0.25 | Q | 1 | \| | \| |
| 1+25 | 0.0281 | 0.25 | Q | 1 | 1 | \| |
| 1+30 | 0.0298 | 0.25 | Q | 1 | 1 | I |
| 1+35 | 0.0315 | 0.25 | Q | 1 | 1 | \| |
| 1+40 | 0.0332 | 0.25 | Q | \| | 1 | 1 |
| 1+45 | 0.0349 | 0.25 | Q | 1 | \| | \| |


| 1+50 | 0.0369 | 0.29 | VQ | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+55 | 0.0392 | 0.33 | VQ | \| | \| |
| 2+ 0 | 0.0414 | 0.33 | VQ | \| | \| |
| 2+ 5 | 0.0437 | 0.33 | IQ | \| | । |
| 2+10 | 0.0460 | 0.33 | IQ | \| | 1 |
| 2+15 | 0.0483 | 0.33 | IQ | \| | 1 |
| 2+20 | 0.0506 | 0.33 | \|Q | \| | \| |
| 2+25 | 0.0529 | 0.33 | IQ | \| | \| |
| 2+30 | 0.0552 | 0.33 | IQ | \| | I |
| 2+35 | 0.0577 | 0.37 | IQ | \| | \| |
| 2+40 | 0.0605 | 0.41 | IQ | \| | \| |
| 2+45 | 0.0634 | 0.41 | IQ | \| | \| |
| 2+50 | 0.0662 | 0.41 | \|Q | \| | \| |
| 2+55 | 0.0691 | 0.41 | IQ | \| | \| |
| 3+ 0 | 0.0719 | 0.41 | \|Q | \| | \| |
| 3+ 5 | 0.0748 | 0.41 | IQ | \| | \| |
| 3+10 | 0.0777 | 0.41 | IQ | \| | \| |
| 3+15 | 0.0805 | 0.41 | \|Q | \| | \| |
| 3+20 | 0.0834 | 0.41 | IQ | \| | \| |
| 3+25 | 0.0862 | 0.41 | IQ | \| | \| |
| 3+30 | 0.0891 | 0.41 | IQV | \| | \| |
| 3+35 | 0.0920 | 0.41 | IQV | \| | \| |
| 3+40 | 0.0948 | 0.41 | IQV | \| | \| |
| 3+45 | 0.0977 | 0.41 | IQV | \| | \| |
| 3+50 | 0.1008 | 0.45 | IQV | \| | \| |
| 3+55 | 0.1042 | 0.49 | IQV | \| | \| |
| 4+ 0 | 0.1076 | 0.50 | IQV | \| | \| |
| 4+ 5 | 0.1110 | 0.50 | IQV | \| | \| |
| 4+10 | 0.1145 | 0.50 | IQV | \| | I |
| 4+15 | 0.1179 | 0.50 | IQV | । | \| |


| 4+20 | 0.1216 | 0.54 | \\| Q | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 4+25 | 0.1255 | 0.58 | \| Q | 1 | \| |
| 4+30 | 0.1295 | 0.58 | । QV | I | \| |
| 4+35 | 0.1335 | 0.58 | \| QV | \| | \| |
| 4+40 | 0.1375 | 0.58 | \\| QV | 1 | 1 |
| 4+45 | 0.1415 | 0.58 | \| QV | \| | 1 |
| 4+50 | 0.1458 | 0.62 | \| QV | , | \| |
| 4+55 | 0.1503 | 0.66 | \\| QV | , | \| |
| 5+ 0 | 0.1549 | 0.66 | I QV | I | 1 |
| 5+ 5 | 0.1590 | 0.59 | \| QV | , | \| |
| 5+10 | 0.1625 | 0.51 | \| QV | I | \| |
| 5+15 | 0.1659 | 0.50 | IQ V | \| | \| |
| 5+20 | 0.1696 | 0.54 | \\| QV | \| | 1 |
| 5+25 | 0.1736 | 0.58 | \\| Q V | \| | 1 |
| 5+30 | 0.1775 | 0.58 | \\| Q V | , | \| |
| 5+35 | 0.1818 | 0.62 | \\| Q V | , | \| |
| 5+40 | 0.1863 | 0.66 | \\| Q V | \\| | 1 |
| 5+45 | 0.1909 | 0.66 | \\| Q V | \| | \| |
| 5+50 | 0.1955 | 0.66 | \\| Q V | , | \| |
| 5+55 | 0.2001 | 0.66 | \\| Q V | , | \| |
| 6+ 0 | 0.2046 | 0.66 | \\| Q V | \| | 1 |
| 6+ 5 | 0.2095 | 0.70 | \\| Q V | \| | \| |
| 6+10 | 0.2146 | 0.74 | \\| Q V | 1 | 1 |
| 6+15 | 0.2197 | 0.75 | \| Q V | , | \| |
| 6+20 | 0.2248 | 0.75 | \\| Q V | 1 | 1 |
| 6+25 | 0.2300 | 0.75 | \| Q V | , | \| |
| 6+30 | 0.2351 | 0.75 | \\| Q V | \| | 1 |
| 6+35 | 0.2405 | 0.78 | \\| Q V | \| | 1 |
| 6+40 | 0.2462 | 0.82 | \\| Q V | I | 1 |
| 6+45 | 0.2519 | 0.83 | \\| Q V | । | । |


| 6+50 | 0.2576 | 0.83 |  | Q V |  | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+55 | 0.2634 | 0.83 |  | Q | $v$ | \| | \| |
| 7+ 0 | 0.2691 | 0.83 |  | Q | V | \| | \| |
| 7+ 5 | 0.2748 | 0.83 |  | Q | $v$ | \| | \| |
| 7+10 | 0.2805 | 0.83 |  | Q | V | \| | \| |
| 7+15 | 0.2862 | 0.83 |  | Q | V | \| | \| |
| 7+20 | 0.2922 | 0.87 |  | Q | $v$ | \| | \| |
| 7+25 | 0.2984 | 0.91 |  | Q | $v$ | \| | , |
| 7+30 | 0.3047 | 0.91 |  | Q | V | 1 | \| |
| 7+35 | 0.3113 | 0.95 |  | Q | V | \| | \| |
| 7+40 | 0.3181 | 0.99 |  | Q | v | \| | 1 |
| 7+45 | 0.3249 | 1.00 |  | Q | V | I | 1 |
| 7+50 | 0.3321 | 1.03 |  | Q | V | 1 | \| |
| 7+55 | 0.3395 | 1.07 |  | Q | v | 1 | \| |
| 8+ 0 | 0.3469 | 1.08 |  | Q |  | V \| | \| |
| $8+5$ | 0.3548 | 1.15 |  | Q |  | $\vee 1$ | I |
| 8+10 | 0.3633 | 1.23 |  | Q |  | v \| | \| |
| 8+15 | 0.3719 | 1.24 |  | Q |  | V \| | \| |
| $8+20$ | 0.3805 | 1.24 |  | Q |  | v 1 | I |
| 8+25 | 0.3890 | 1.24 |  | Q |  | v 1 | \| |
| 8+30 | 0.3976 | 1.24 |  | Q |  | V1 | 1 |
| 8+35 | 0.4064 | 1.28 |  | Q |  | VI | \| |
| 8+40 | 0.4155 | 1.32 |  | Q |  | V1 | I |
| $8+45$ | 0.4247 | 1.33 |  | Q |  | v1 | \| |
| $8+50$ | 0.4341 | 1.37 |  | Q |  | V | I |
| 8+55 | 0.4438 | 1.41 |  | Q |  | V | \| |
| 9+ 0 | 0.4535 | 1.41 |  | Q |  | V | I |
| 9+ 5 | 0.4637 | 1.49 |  | Q |  | V | I |
| 9+10 | 0.4745 | 1.57 |  |  | Q | IV | 1 |
| 9+15 | 0.4853 | 1.58 |  |  | Q | \|V | \| |


| 9+20 | 0.4965 | 1.61 | \| | Q | \|V |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+25 | 0.5079 | 1.65 | \| | Q | IV |  | \| |  |
| 9+30 | 0.5193 | 1.66 | \| | Q | \| V |  | I |  |
| 9+35 | 0.5310 | 1.70 |  | Q | I V |  | \| |  |
| 9+40 | 0.5429 | 1.74 |  | Q | 1 V |  | I |  |
| 9+45 | 0.5549 | 1.74 | \| | Q | 1 V |  |  |  |
| 9+50 | 0.5672 | 1.78 | \| | Q | 1 | V | \| |  |
| 9+55 | 0.5797 | 1.82 |  | Q | 1 | v |  |  |
| 10+ 0 | 0.5923 | 1.83 |  | Q | 1 | V | \| |  |
| 10+ 5 | 0.6031 | 1.57 | \| | Q |  | V |  |  |
| 10+10 | 0.6119 | 1.28 | \| | Q | \| | V |  |  |
| 10+15 | 0.6205 | 1.25 | \| | Q | \| | V |  |  |
| 10+20 | 0.6291 | 1.24 | \| | Q | \| | V | \| |  |
| 10+25 | 0.6377 | 1.24 | \| | Q | \| | V |  |  |
| 10+30 | 0.6463 | 1.24 | \| | Q | \| | V |  |  |
| 10+35 | 0.6561 | 1.43 | \| | Q | \| | v |  |  |
| 10+40 | 0.6674 | 1.63 | \| | Q | \| | v |  |  |
| 10+45 | 0.6788 | 1.66 | \| | Q | \| | v |  |  |
| 10+50 | 0.6902 | 1.66 | \| | Q | \| | v |  |  |
| 10+55 | 0.7016 | 1.66 | \| | Q | \| | V |  |  |
| 11+ 0 | 0.7131 | 1.66 | \| | Q | I | V |  |  |
| 11+ 5 | 0.7242 | 1.62 | । | Q | । | v | \| |  |
| 11+10 | 0.7351 | 1.58 | \| | Q | । | V |  |  |
| 11+15 | 0.7460 | 1.58 | \| | Q | \| | V |  |  |
| 11+20 | 0.7569 | 1.58 | \| | Q | \| | V | 1 |  |
| 11+25 | 0.7677 | 1.58 | \| | Q | \| | V | 1 |  |
| 11+30 | 0.7786 | 1.58 | \| | Q | । |  | V |  |
| 11+35 | 0.7889 | 1.50 | \| | Q | \| |  | V |  |
| 11+40 | 0.7987 | 1.42 | 1 | Q | 1 |  | v |  |
| 11+45 | 0.8084 | 1.41 | \| | Q | \| |  | V 1 | \| |







```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post24100.out
```



```
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain |
| :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| 1 | 0.08 | 0.07 | 0.037 |
| 2 | 0.17 | 0.07 | 0.037 |
| 3 | 0.25 | 0.07 | 0.037 |
| 4 | 0.33 | 0.10 | 0.056 |
| 5 | 0.42 | 0.10 | 0.056 |
| 6 | 0.50 | 0.10 | 0.056 |
| 7 | 0.58 | 0.10 | 0.056 |
| 8 | 0.67 | 0.10 | 0.056 |
| 9 | 0.75 | 0.10 | 0.056 |
| 10 | 0.83 | 0.13 | 0.074 |
| 11 | 0.92 | 0.13 | 0.074 |
| 12 | 1.00 | 0.13 | 0.074 |
| 13 | 1.08 | 0.10 | 0.056 |
| 14 | 1.17 | 0.10 | 0.056 |
| 15 | 1.25 | 0.10 | 0.056 |
| 16 | 1.33 | 0.10 | 0.056 |
| 17 | 1.42 | 0.10 | 0.056 |
| 18 | 1.50 | 0.10 | 0.056 |
| 19 | 1.58 | 0.10 | 0.056 |
| 20 | 1.67 | 0.10 | 0.056 |
| 21 | 1.75 | 0.10 | 0.056 |
| 22 | 1.83 | 0.13 | 0.074 |
| 23 | 1.92 | 0.13 | 0.074 |
| 24 | 2.00 | 0.13 | 0.074 |
| 25 | 2.08 | 0.13 | 0.074 |
| 26 | 2.17 | 0.13 | 0.074 |
| 27 | 2.25 | 0.13 | 0.074 |
| 28 | 2.33 | 0.13 | 0.074 |
| 29 | 2.42 | 0.13 | 0.074 |
| 30 | 2.50 | 0.13 | 0.074 |
| 31 | 2.58 | 0.17 | 0.093 |
| 32 | 2.67 | 0.17 | 0.093 |
| 33 | 2.75 | 0.17 | 0.093 |
| 34 | 2.83 | 0.17 | 0.093 |
| 35 | 2.92 | 0.17 | 0.093 |
| 36 | 3.00 | 0.17 | 0.093 |
| 37 | 3.08 | 0.17 | 0.093 |
| 38 | 3.17 | 0.17 | 0.093 |
| 39 | 3.25 | 0.17 | 0.093 |
| 40 | 3.33 | 0.17 | 0.093 |
| 41 | 3.42 | 0.17 | 0.093 |
| 42 | 3.50 | 0.17 | 0.093 |
| 43 | 3.58 | 0.17 | 0.093 |
| 44 | 3.67 | 0.17 | 0.093 |
| 45 | 3.75 | 0.17 | 0.093 |
| 46 | 3.83 | 0.20 | 0.111 |
| 47 | 3.92 | 0.20 | 0.111 |
| 48 | 4.00 | 0.20 | 0.111 |
| 49 | 4.08 | 0.20 | 0.111 |
| 50 | 4.17 | 0.20 | 0.111 |
| 51 | 4.25 | 0.20 | 0.111 |
| 52 | 4.33 | 0.23 | 0.130 |
| 53 | 4.42 | 0.23 | 0.130 |
| 54 | 4.50 | 0.23 | 0.130 |
| 55 | 4.58 | 0.23 | 0.130 |
| 56 | 4.67 | 0.23 | 0.130 |
| 57 | 4.75 | 0.23 | 0.130 |
| 58 | 4.83 | 0.27 | 0.148 |


| Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: |
| Max \| | Low | (In/Hr) |
| ( 0.143) | 0.014 | 0.023 |
| ( 0.142) | 0.014 | 0.023 |
| ( 0.142) | 0.014 | 0.023 |
| ( 0.141) | 0.021 | 0.035 |
| ( 0.140) | 0.021 | 0.035 |
| ( 0.140) | 0.021 | 0.035 |
| ( 0.139) | 0.021 | 0.035 |
| $0.139)$ | 0.021 | 0.035 |
| ( 0.138) | 0.021 | 0.035 |
| $0.138)$ | 0.028 | 0.046 |
| ( 0.137) | 0.028 | 0.046 |
| ( 0.137) | 0.028 | 0.046 |
| ( 0.136) | 0.021 | 0.035 |
| $0.136)$ | 0.021 | 0.035 |
| $0.135)$ | 0.021 | 0.035 |
| $0.134)$ | 0.021 | 0.035 |
| $0.134)$ | 0.021 | 0.035 |
| ( 0.133) | 0.021 | 0.035 |
| $0.133)$ | 0.021 | 0.035 |
| $0.132)$ | 0.021 | 0.035 |
| $0.132)$ | 0.021 | 0.035 |
| $0.131)$ | 0.028 | 0.046 |
| $0.131)$ | 0.028 | 0.046 |
| $0.130)$ | 0.028 | 0.046 |
| ( 0.130) | 0.028 | 0.046 |
| $0.129)$ | 0.028 | 0.046 |
| $0.129)$ | 0.028 | 0.046 |
| ( 0.128) | 0.028 | 0.046 |
| $0.128)$ | 0.028 | 0.046 |
| ( 0.127) | 0.028 | 0.046 |
| $0.127)$ | 0.035 | 0.058 |
| ( 0.126) | 0.035 | 0.058 |
| ( 0.125) | 0.035 | 0.058 |
| ( 0.125) | 0.035 | 0.058 |
| ( 0.124) | 0.035 | 0.058 |
| $0.124)$ | 0.035 | 0.058 |
| ( 0.123) | 0.035 | 0.058 |
| $0.123)$ | 0.035 | 0.058 |
| ( 0.122) | 0.035 | 0.058 |
| ( 0.122) | 0.035 | 0.058 |
| $0.121)$ | 0.035 | 0.058 |
| $0.121)$ | 0.035 | 0.058 |
| ( 0.120) | 0.035 | 0.058 |
| ( 0.120) | 0.035 | 0.058 |
| $0.119)$ | 0.035 | 0.058 |
| ( 0.119) | 0.042 | 0.069 |
| ( 0.118) | 0.042 | 0.069 |
| ( 0.118) | 0.042 | 0.069 |
| $0.117)$ | 0.042 | 0.069 |
| $0.117)$ | 0.042 | 0.069 |
| ( 0.116) | 0.042 | 0.069 |
| ( 0.116) | 0.049 | 0.081 |
| ( 0.115) | 0.049 | 0.081 |
| ( 0.115) | 0.049 | 0.081 |
| ( 0.114) | 0.049 | 0.081 |
| ( 0.114) | 0.049 | 0.081 |
| ( 0.113) | 0.049 | 0.081 |
| ( 0.113) | 0.056 | 0.092 |


| 59 | 4.92 | 0.27 | 0.148 | 0.112) | 0.056 | 0.092 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 60 | 5.00 | 0.27 | 0.148 | 0.112) | 0.056 | 0.092 |
| 61 | 5.08 | 0.20 | 0.111 | 0.111) | 0.042 | 0.069 |
| 62 | 5.17 | 0.20 | 0.111 | 0.111) | 0.042 | 0.069 |
| 63 | 5.25 | 0.20 | 0.111 | 0.110) | 0.042 | 0.069 |
| 64 | 5.33 | 0.23 | 0.130 | 0.110) | 0.049 | 0.081 |
| 65 | 5.42 | 0.23 | 0.130 | 0.110) | 0.049 | 0.081 |
| 66 | 5.50 | 0.23 | 0.130 | 0.109) | 0.049 | 0.081 |
| 67 | 5.58 | 0.27 | 0.148 | 0.109) | 0.056 | 0.092 |
| 68 | 5.67 | 0.27 | 0.148 | 0.108) | 0.056 | 0.092 |
| 69 | 5.75 | 0.27 | 0.148 | 0.108) | 0.056 | 0.092 |
| 70 | 5.83 | 0.27 | 0.148 | 0.107) | 0.056 | 0.092 |
| 71 | 5.92 | 0.27 | 0.148 | 0.107) | 0.056 | 0.092 |
| 72 | 6.00 | 0.27 | 0.148 | 0.106) | 0.056 | 0.092 |
| 73 | 6.08 | 0.30 | 0.167 | 0.106) | 0.063 | 0.104 |
| 74 | 6.17 | 0.30 | 0.167 | 0.105) | 0.063 | 0.104 |
| 75 | 6.25 | 0.30 | 0.167 | 0.105) | 0.063 | 0.104 |
| 76 | 6.33 | 0.30 | 0.167 | $0.104)$ | 0.063 | 0.104 |
| 77 | 6.42 | 0.30 | 0.167 | $0.104)$ | 0.063 | 0.104 |
| 78 | 6.50 | 0.30 | 0.167 | $0.103)$ | 0.063 | 0.104 |
| 79 | 6.58 | 0.33 | 0.186 | 0.103) | 0.071 | 0.115 |
| 80 | 6.67 | 0.33 | 0.186 | 0.102) | 0.071 | 0.115 |
| 81 | 6.75 | 0.33 | 0.186 | 0.102) | 0.071 | 0.115 |
| 82 | 6.83 | 0.33 | 0.186 | 0.102) | 0.071 | 0.115 |
| 83 | 6.92 | 0.33 | 0.186 | 0.101) | 0.071 | 0.115 |
| 84 | 7.00 | 0.33 | 0.186 | 0.101) | 0.071 | 0.115 |
| 85 | 7.08 | 0.33 | 0.186 | 0.100) | 0.071 | 0.115 |
| 86 | 7.17 | 0.33 | 0.186 | 0.100) | 0.071 | 0.115 |
| 87 | 7.25 | 0.33 | 0.186 | 0.099) | 0.071 | 0.115 |
| 88 | 7.33 | 0.37 | 0.204 | 0.099) | 0.078 | 0.127 |
| 89 | 7.42 | 0.37 | 0.204 | 0.098) | 0.078 | 0.127 |
| 90 | 7.50 | 0.37 | 0.204 | 0.098) | 0.078 | 0.127 |
| 91 | 7.58 | 0.40 | 0.223 | 0.097) | 0.085 | 0.138 |
| 92 | 7.67 | 0.40 | 0.223 | 0.097) | 0.085 | 0.138 |
| 93 | 7.75 | 0.40 | 0.223 | 0.097) | 0.085 | 0.138 |
| 94 | 7.83 | 0.43 | 0.241 | 0.096) | 0.092 | 0.150 |
| 95 | 7.92 | 0.43 | 0.241 | 0.096) | 0.092 | 0.150 |
| 96 | 8.00 | 0.43 | 0.241 | $0.095)$ | 0.092 | 0.150 |
| 97 | 8.08 | 0.50 | 0.278 | 0.095 | $0.106)$ | 0.184 |
| 98 | 8.17 | 0.50 | 0.278 | 0.094 | $0.106)$ | 0.184 |
| 99 | 8.25 | 0.50 | 0.278 | 0.094 | $0.106)$ | 0.185 |
| 100 | 8.33 | 0.50 | 0.278 | 0.093 | $0.106)$ | 0.185 |
| 101 | 8.42 | 0.50 | 0.278 | 0.093 | $0.106)$ | 0.185 |
| 102 | 8.50 | 0.50 | 0.278 | 0.093 | $0.106)$ | 0.186 |
| 103 | 8.58 | 0.53 | 0.297 | 0.092 | $0.113)$ | 0.205 |
| 104 | 8.67 | 0.53 | 0.297 | 0.092 | $0.113)$ | 0.205 |
| 105 | 8.75 | 0.53 | 0.297 | 0.091 | $0.113)$ | 0.206 |
| 106 | 8.83 | 0.57 | 0.316 | 0.091 | $0.120)$ | 0.225 |
| 107 | 8.92 | 0.57 | 0.316 | 0.090 | 0.120) | 0.225 |
| 108 | 9.00 | 0.57 | 0.316 | 0.090 | 0.120) | 0.226 |
| 109 | 9.08 | 0.63 | 0.353 | 0.090 | $0.134)$ | 0.263 |
| 110 | 9.17 | 0.63 | 0.353 | 0.089 | $0.134)$ | 0.264 |
| 111 | 9.25 | 0.63 | 0.353 | 0.089 | $0.134)$ | 0.264 |
| 112 | 9.33 | 0.67 | 0.371 | 0.088 | $0.141)$ | 0.283 |
| 113 | 9.42 | 0.67 | 0.371 | 0.088 | $0.141)$ | 0.283 |
| 114 | 9.50 | 0.67 | 0.371 | 0.087 | $0.141)$ | 0.284 |
| 115 | 9.58 | 0.70 | 0.390 | 0.087 | $0.148)$ | 0.303 |
| 116 | 9.67 | 0.70 | 0.390 | 0.087 | $0.148)$ | 0.303 |
| 117 | 9.75 | 0.70 | 0.390 | 0.086 | $0.148)$ | 0.304 |
| 118 | 9.83 | 0.73 | 0.408 | 0.086 | 0.155) | 0.323 |


| 119 | 9.92 | 0.73 | 0.408 | 0.085 | 0.155) | 0.323 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 120 | 10.00 | 0.73 | 0.408 | 0.085 | $0.155)$ | 0.323 |
| 121 | 10.08 | 0.50 | 0.278 | 0.085 | 0.106) | 0.194 |
| 122 | 10.17 | 0.50 | 0.278 | 0.084 | $0.106)$ | 0.194 |
| 123 | 10.25 | 0.50 | 0.278 | 0.084 | $0.106)$ | 0.195 |
| 124 | 10.33 | 0.50 | 0.278 | 0.083 | $0.106)$ | 0.195 |
| 125 | 10.42 | 0.50 | 0.278 | 0.083 | $0.106)$ | 0.195 |
| 126 | 10.50 | 0.50 | 0.278 | 0.083 | $0.106)$ | 0.196 |
| 127 | 10.58 | 0.67 | 0.371 | 0.082 | 0.141) | 0.289 |
| 128 | 10.67 | 0.67 | 0.371 | 0.082 | 0.141) | 0.289 |
| 129 | 10.75 | 0.67 | 0.371 | 0.081 | 0.141) | 0.290 |
| 130 | 10.83 | 0.67 | 0.371 | 0.081 | 0.141) | 0.290 |
| 131 | 10.92 | 0.67 | 0.371 | 0.081 | 0.141) | 0.291 |
| 132 | 11.00 | 0.67 | 0.371 | 0.080 | 0.141) | 0.291 |
| 133 | 11.08 | 0.63 | 0.353 | 0.080 | $0.134)$ | 0.273 |
| 134 | 11.17 | 0.63 | 0.353 | 0.079 | $0.134)$ | 0.273 |
| 135 | 11.25 | 0.63 | 0.353 | 0.079 | $0.134)$ | 0.274 |
| 136 | 11.33 | 0.63 | 0.353 | 0.079 | $0.134)$ | 0.274 |
| 137 | 11.42 | 0.63 | 0.353 | 0.078 | $0.134)$ | 0.274 |
| 138 | 11.50 | 0.63 | 0.353 | 0.078 | $0.134)$ | 0.275 |
| 139 | 11.58 | 0.57 | 0.316 | 0.077 | 0.120) | 0.238 |
| 140 | 11.67 | 0.57 | 0.316 | 0.077 | 0.120) | 0.239 |
| 141 | 11.75 | 0.57 | 0.316 | 0.077 | 0.120) | 0.239 |
| 142 | 11.83 | 0.60 | 0.334 | 0.076 | 0.127) | 0.258 |
| 143 | 11.92 | 0.60 | 0.334 | 0.076 | $0.127)$ | 0.258 |
| 144 | 12.00 | 0.60 | 0.334 | 0.075 | $0.127)$ | 0.259 |
| 145 | 12.08 | 0.83 | 0.464 | 0.075 | $0.176)$ | 0.389 |
| 146 | 12.17 | 0.83 | 0.464 | 0.075 | $0.176)$ | 0.389 |
| 147 | 12.25 | 0.83 | 0.464 | 0.074 | $0.176)$ | 0.390 |
| 148 | 12.33 | 0.87 | 0.483 | 0.074 | 0.183) | 0.409 |
| 149 | 12.42 | 0.87 | 0.483 | 0.074 | $0.183)$ | 0.409 |
| 150 | 12.50 | 0.87 | 0.483 | 0.073 | $0.183)$ | 0.409 |
| 151 | 12.58 | 0.93 | 0.520 | 0.073 | 0.197) | 0.447 |
| 152 | 12.67 | 0.93 | 0.520 | 0.072 | 0.197) | 0.447 |
| 153 | 12.75 | 0.93 | 0.520 | 0.072 | $0.197)$ | 0.448 |
| 154 | 12.83 | 0.97 | 0.538 | 0.072 | $0.205)$ | 0.466 |
| 155 | 12.92 | 0.97 | 0.538 | 0.071 | $0.205)$ | 0.467 |
| 156 | 13.00 | 0.97 | 0.538 | 0.071 | $0.205)$ | 0.467 |
| 157 | 13.08 | 1.13 | 0.631 | 0.071 | $0.240)$ | 0.560 |
| 158 | 13.17 | 1.13 | 0.631 | 0.070 | 0.240) | 0.561 |
| 159 | 13.25 | 1.13 | 0.631 | 0.070 | $0.240)$ | 0.561 |
| 160 | 13.33 | 1.13 | 0.631 | 0.070 | 0.240) | 0.561 |
| 161 | 13.42 | 1.13 | 0.631 | 0.069 | 0.240) | 0.562 |
| 162 | 13.50 | 1.13 | 0.631 | 0.069 | 0.240) | 0.562 |
| 163 | 13.58 | 0.77 | 0.427 | 0.069 | 0.162) | 0.358 |
| 164 | 13.67 | 0.77 | 0.427 | 0.068 | $0.162)$ | 0.359 |
| 165 | 13.75 | 0.77 | 0.427 | 0.068 | 0.162) | 0.359 |
| 166 | 13.83 | 0.77 | 0.427 | 0.068 | 0.162) | 0.359 |
| 167 | 13.92 | 0.77 | 0.427 | 0.067 | 0.162) | 0.360 |
| 168 | 14.00 | 0.77 | 0.427 | 0.067 | 0.162) | 0.360 |
| 169 | 14.08 | 0.90 | 0.501 | 0.066 | 0.190) | 0.435 |
| 170 | 14.17 | 0.90 | 0.501 | 0.066 | 0.190) | 0.435 |
| 171 | 14.25 | 0.90 | 0.501 | 0.066 | 0.190) | 0.435 |
| 172 | 14.33 | 0.87 | 0.483 | 0.065 | $0.183)$ | 0.417 |
| 173 | 14.42 | 0.87 | 0.483 | 0.065 | $0.183)$ | 0.417 |
| 174 | 14.50 | 0.87 | 0.483 | 0.065 | $0.183)$ | 0.418 |
| 175 | 14.58 | 0.87 | 0.483 | 0.064 | $0.183)$ | 0.418 |
| 176 | 14.67 | 0.87 | 0.483 | 0.064 | $0.183)$ | 0.418 |
| 177 | 14.75 | 0.87 | 0.483 | 0.064 | $0.183)$ | 0.419 |
| 178 | 14.83 | 0.83 | 0.464 | 0.063 | $0.176)$ | 0.401 |


| 179 | 14.92 | 0.83 | 0.464 | 0.063 | $0.176)$ | 0.401 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 180 | 15.00 | 0.83 | 0.464 | 0.063 | $0.176)$ | 0.401 |
| 181 | 15.08 | 0.80 | 0.445 | 0.063 | $0.169)$ | 0.383 |
| 182 | 15.17 | 0.80 | 0.445 | 0.062 | $0.169)$ | 0.383 |
| 183 | 15.25 | 0.80 | 0.445 | 0.062 | $0.169)$ | 0.384 |
| 184 | 15.33 | 0.77 | 0.427 | 0.062 | $0.162)$ | 0.365 |
| 185 | 15.42 | 0.77 | 0.427 | 0.061 | $0.162)$ | 0.366 |
| 186 | 15.50 | 0.77 | 0.427 | 0.061 | $0.162)$ | 0.366 |
| 187 | 15.58 | 0.63 | 0.353 | 0.061 | $0.134)$ | 0.292 |
| 188 | 15.67 | 0.63 | 0.353 | 0.060 | $0.134)$ | 0.292 |
| 189 | 15.75 | 0.63 | 0.353 | 0.060 | $0.134)$ | 0.293 |
| 190 | 15.83 | 0.63 | 0.353 | 0.060 | $0.134)$ | 0.293 |
| 191 | 15.92 | 0.63 | 0.353 | 0.059 | $0.134)$ | 0.293 |
| 192 | 16.00 | 0.63 | 0.353 | 0.059 | $0.134)$ | 0.294 |
| 193 | 16.08 | 0.13 | 0.074 | $0.059)$ | 0.028 | 0.046 |
| 194 | 16.17 | 0.13 | 0.074 | $0.058)$ | 0.028 | 0.046 |
| 195 | 16.25 | 0.13 | 0.074 | $0.058)$ | 0.028 | 0.046 |
| 196 | 16.33 | 0.13 | 0.074 | $0.058)$ | 0.028 | 0.046 |
| 197 | 16.42 | 0.13 | 0.074 | $0.058)$ | 0.028 | 0.046 |
| 198 | 16.50 | 0.13 | 0.074 | 0.057) | 0.028 | 0.046 |
| 199 | 16.58 | 0.10 | 0.056 | $0.057)$ | 0.021 | 0.035 |
| 200 | 16.67 | 0.10 | 0.056 | 0.057) | 0.021 | 0.035 |
| 201 | 16.75 | 0.10 | 0.056 | $0.056)$ | 0.021 | 0.035 |
| 202 | 16.83 | 0.10 | 0.056 | $0.056)$ | 0.021 | 0.035 |
| 203 | 16.92 | 0.10 | 0.056 | $0.056)$ | 0.021 | 0.035 |
| 204 | 17.00 | 0.10 | 0.056 | $0.056)$ | 0.021 | 0.035 |
| 205 | 17.08 | 0.17 | 0.093 | $0.055)$ | 0.035 | 0.058 |
| 206 | 17.17 | 0.17 | 0.093 | $0.055)$ | 0.035 | 0.058 |
| 207 | 17.25 | 0.17 | 0.093 | $0.055)$ | 0.035 | 0.058 |
| 208 | 17.33 | 0.17 | 0.093 | $0.054)$ | 0.035 | 0.058 |
| 209 | 17.42 | 0.17 | 0.093 | $0.054)$ | 0.035 | 0.058 |
| 210 | 17.50 | 0.17 | 0.093 | $0.054)$ | 0.035 | 0.058 |
| 211 | 17.58 | 0.17 | 0.093 | $0.054)$ | 0.035 | 0.058 |
| 212 | 17.67 | 0.17 | 0.093 | $0.053)$ | 0.035 | 0.058 |
| 213 | 17.75 | 0.17 | 0.093 | $0.053)$ | 0.035 | 0.058 |
| 214 | 17.83 | 0.13 | 0.074 | $0.053)$ | 0.028 | 0.046 |
| 215 | 17.92 | 0.13 | 0.074 | $0.053)$ | 0.028 | 0.046 |
| 216 | 18.00 | 0.13 | 0.074 | $0.052)$ | 0.028 | 0.046 |
| 217 | 18.08 | 0.13 | 0.074 | $0.052)$ | 0.028 | 0.046 |
| 218 | 18.17 | 0.13 | 0.074 | $0.052)$ | 0.028 | 0.046 |
| 219 | 18.25 | 0.13 | 0.074 | $0.052)$ | 0.028 | 0.046 |
| 220 | 18.33 | 0.13 | 0.074 | $0.051)$ | 0.028 | 0.046 |
| 221 | 18.42 | 0.13 | 0.074 | 0.051) | 0.028 | 0.046 |
| 222 | 18.50 | 0.13 | 0.074 | 0.051) | 0.028 | 0.046 |
| 223 | 18.58 | 0.10 | 0.056 | 0.051) | 0.021 | 0.035 |
| 224 | 18.67 | 0.10 | 0.056 | $0.050)$ | 0.021 | 0.035 |
| 225 | 18.75 | 0.10 | 0.056 | 0.050) | 0.021 | 0.035 |
| 226 | 18.83 | 0.07 | 0.037 | 0.050) | 0.014 | 0.023 |
| 227 | 18.92 | 0.07 | 0.037 | 0.050) | 0.014 | 0.023 |
| 228 | 19.00 | 0.07 | 0.037 | $0.049)$ | 0.014 | 0.023 |
| 229 | 19.08 | 0.10 | 0.056 | $0.049)$ | 0.021 | 0.035 |
| 230 | 19.17 | 0.10 | 0.056 | $0.049)$ | 0.021 | 0.035 |
| 231 | 19.25 | 0.10 | 0.056 | $0.049)$ | 0.021 | 0.035 |
| 232 | 19.33 | 0.13 | 0.074 | $0.048)$ | 0.028 | 0.046 |
| 233 | 19.42 | 0.13 | 0.074 | $0.048)$ | 0.028 | 0.046 |
| 234 | 19.50 | 0.13 | 0.074 | $0.048)$ | 0.028 | 0.046 |
| 235 | 19.58 | 0.10 | 0.056 | $0.048)$ | 0.021 | 0.035 |
| 236 | 19.67 | 0.10 | 0.056 | $0.048)$ | 0.021 | 0.035 |
| 237 | 19.75 | 0.10 | 0.056 | 0.047) | 0.021 | 0.035 |
| 238 | 19.83 | 0.07 | 0.037 | $0.047)$ | 0.014 | 0.023 |


| 239 | 19.92 | 0.07 | 0.037 | 0.047) | 0.014 | 0.023 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 240 | 20.00 | 0.07 | 0.037 | 0.047) | 0.014 | 0.023 |
| 241 | 20.08 | 0.10 | 0.056 | 0.047) | 0.021 | 0.035 |
| 242 | 20.17 | 0.10 | 0.056 | $0.046)$ | 0.021 | 0.035 |
| 243 | 20.25 | 0.10 | 0.056 | $0.046)$ | 0.021 | 0.035 |
| 244 | 20.33 | 0.10 | 0.056 | $0.046)$ | 0.021 | 0.035 |
| 245 | 20.42 | 0.10 | 0.056 | $0.046)$ | 0.021 | 0.035 |
| 246 | 20.50 | 0.10 | 0.056 | $0.046)$ | 0.021 | 0.035 |
| 247 | 20.58 | 0.10 | 0.056 | $0.045)$ | 0.021 | 0.035 |
| 248 | 20.67 | 0.10 | 0.056 | $0.045)$ | 0.021 | 0.035 |
| 249 | 20.75 | 0.10 | 0.056 | $0.045)$ | 0.021 | 0.035 |
| 250 | 20.83 | 0.07 | 0.037 | $0.045)$ | 0.014 | 0.023 |
| 251 | 20.92 | 0.07 | 0.037 | $0.045)$ | 0.014 | 0.023 |
| 252 | 21.00 | 0.07 | 0.037 | $0.044)$ | 0.014 | 0.023 |
| 253 | 21.08 | 0.10 | 0.056 | $0.044)$ | 0.021 | 0.035 |
| 254 | 21.17 | 0.10 | 0.056 | $0.044)$ | 0.021 | 0.035 |
| 255 | 21.25 | 0.10 | 0.056 | $0.044)$ | 0.021 | 0.035 |
| 256 | 21.33 | 0.07 | 0.037 | $0.044)$ | 0.014 | 0.023 |
| 257 | 21.42 | 0.07 | 0.037 | $0.044)$ | 0.014 | 0.023 |
| 258 | 21.50 | 0.07 | 0.037 | $0.043)$ | 0.014 | 0.023 |
| 259 | 21.58 | 0.10 | 0.056 | $0.043)$ | 0.021 | 0.035 |
| 260 | 21.67 | 0.10 | 0.056 | $0.043)$ | 0.021 | 0.035 |
| 261 | 21.75 | 0.10 | 0.056 | $0.043)$ | 0.021 | 0.035 |
| 262 | 21.83 | 0.07 | 0.037 | $0.043)$ | 0.014 | 0.023 |
| 263 | 21.92 | 0.07 | 0.037 | $0.043)$ | 0.014 | 0.023 |
| 264 | 22.00 | 0.07 | 0.037 | $0.042)$ | 0.014 | 0.023 |
| 265 | 22.08 | 0.10 | 0.056 | $0.042)$ | 0.021 | 0.035 |
| 266 | 22.17 | 0.10 | 0.056 | $0.042)$ | 0.021 | 0.035 |
| 267 | 22.25 | 0.10 | 0.056 | $0.042)$ | 0.021 | 0.035 |
| 268 | 22.33 | 0.07 | 0.037 | $0.042)$ | 0.014 | 0.023 |
| 269 | 22.42 | 0.07 | 0.037 | $0.042)$ | 0.014 | 0.023 |
| 270 | 22.50 | 0.07 | 0.037 | $0.042)$ | 0.014 | 0.023 |
| 271 | 22.58 | 0.07 | 0.037 | $0.042)$ | 0.014 | 0.023 |
| 272 | 22.67 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 273 | 22.75 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 274 | 22.83 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 275 | 22.92 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 276 | 23.00 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 277 | 23.08 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 278 | 23.17 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 279 | 23.25 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 280 | 23.33 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 281 | 23.42 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 282 | 23.50 | 0.07 | 0.037 | 0.041) | 0.014 | 0.023 |
| 283 | 23.58 | 0.07 | 0.037 | 0.040) | 0.014 | 0.023 |
| 284 | 23.67 | 0.07 | 0.037 | 0.040) | 0.014 | 0.023 |
| 285 | 23.75 | 0.07 | 0.037 | $0.040)$ | 0.014 | 0.023 |
| 286 | 23.83 | 0.07 | 0.037 | 0.040) | 0.014 | 0.023 |
| 287 | 23.92 | 0.07 | 0.037 | 0.040) | 0.014 | 0.023 |
| 288 | 24.00 | 0.07 | 0.037 | 0.040) | 0.014 | 0.023 |
| Sum $=\begin{gathered}\text { (Loss Rate } \\ 100.0\end{gathered}$ |  |  |  |  | Sum $=$ | 42.0 |
| Flood volume = Effective rainfall 3.50(In) |  |  |  |  |  |  |
| times area 10.9(Ac.) |  |  |  | t.)] = | 3.2(Ac.Ft) |  |
|  | Total | loss | 1.14(In) |  |  |  |
|  | Total | loss | 1.033(Ac.Ft) |  |  |  |
|  | Total | fall | 4.64(In) |  |  |  |
|  | Flood | me = | 138583.4 Cubic Feet |  |  |  |
|  | Total | loss | 45003.6 Cubic Fee |  |  |  |

Peak flow rate of this hydrograph $=\quad$ 6.176(CFS)


| 1+50 | 0.0562 | 0.44 | VQ | \| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+55 | 0.0597 | 0.50 | VQ | \| | \\| |
| 2+ 0 | 0.0631 | 0.50 | V Q | \| | । |
| 2+ 5 | 0.0666 | 0.51 | V Q | \| | \| |
| 2+10 | 0.0701 | 0.51 | V Q | \| | \\| |
| 2+15 | 0.0736 | 0.51 | V Q | \| | \| |
| 2+20 | 0.0771 | 0.51 | V Q | \| | 1 |
| 2+25 | 0.0806 | 0.51 | IVQ | \| | । |
| 2+30 | 0.0841 | 0.51 | IVQ | \| | \| |
| 2+35 | 0.0879 | 0.56 | IVQ | \| | \| |
| 2+40 | 0.0922 | 0.62 | \|VQ | \| | \| |
| 2+45 | 0.0966 | 0.63 | IVQ | \| | I |
| 2+50 | 0.1009 | 0.63 | IVQ | \| | । |
| 2+55 | 0.1053 | 0.63 | \|VQ | \| | I |
| 3+ 0 | 0.1096 | 0.63 | IVQ | \| | \| |
| $3+5$ | 0.1140 | 0.63 | IVQ | I | \| |
| 3+10 | 0.1183 | 0.63 | \|VQ | \| | \| |
| 3+15 | 0.1227 | 0.63 | IVQ | \| | \| |
| 3+20 | 0.1271 | 0.63 | \|VQ | \| | \| |
| 3+25 | 0.1314 | 0.63 | IVQ | I | \| |
| 3+30 | 0.1358 | 0.63 | \|VQ | \| | \\| |
| 3+35 | 0.1401 | 0.63 | \|VQ | \| | \\| |
| 3+40 | 0.1445 | 0.63 | \|VQ | \| | I |
| $3+45$ | 0.1488 | 0.63 | IVQ | \| | \| |
| 3+50 | 0.1536 | 0.69 | IVQ | \| | \| |
| 3+55 | 0.1587 | 0.75 | IV Q | \| | \| |
| 4+ 0 | 0.1640 | 0.76 | \\| VQ | 1 | I |
| 4+ 5 | 0.1692 | 0.76 | \\| VQ | I | \| |
| 4+10 | 0.1744 | 0.76 | \\| VQ | \| | \| |
| 4+15 | 0.1796 | 0.76 | \| VQ | \| | \| |


| 4+20 | 0.1853 | 0.82 | I VQ | \| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 4+25 | 0.1913 | 0.88 | \\| VQ |  | \| |
| 4+30 | 0.1974 | 0.88 | \| VQ | , | \| |
| 4+35 | 0. 2035 | 0.89 | \\| VQ | \| | \| |
| 4+40 | 0.2096 | 0.89 | I VQ |  | 1 |
| 4+45 | 0.2157 | 0.89 | \\| VQ |  | \| |
| 4+50 | 0.2222 | 0.94 | \| VQ | 1 | \| |
| 4+55 | 0.2291 | 1.00 | \\| V Q | \| | \| |
| 5+ 0 | 0. 2360 | 1.01 | 1 V Q |  | 1 |
| 5+ 5 | 0.2422 | 0.90 | \\| Q |  | \| |
| 5+10 | 0.2476 | 0.78 | \\| Q | \| | \| |
| 5+15 | 0.2528 | 0.76 | \\| Q | \| | \| |
| $5+20$ | 0.2584 | 0.82 | \\| Q |  | I |
| 5+25 | 0.2645 | 0.88 | \\| Q |  | \| |
| 5+30 | 0.2706 | 0.88 | \\| Q |  | \| |
| 5+35 | 0.2770 | 0.94 | \\| Q | \| | \| |
| 5+40 | 0.2840 | 1.00 | \\| VQ |  | I |
| 5+45 | 0.2909 | 1.01 | \\| VQ |  | \| |
| 5+50 | 0.2979 | 1.01 | \\| VQ |  | I |
| 5+55 | 0.3049 | 1.01 | \\| VQ |  | \| |
| 6+ 0 | 0.3118 | 1.01 | \\| VQ |  | 1 |
| 6+ 5 | 0.3192 | 1.07 | Q |  | \| |
| 6+10 | 0.3270 | 1.13 | Q |  | \| |
| 6+15 | 0.3348 | 1.14 | Q |  | \| |
| 6+20 | 0.3426 | 1.14 | \\| Q |  | I |
| 6+25 | 0.3505 | 1.14 | Q |  | \| |
| 6+30 | 0.3583 | 1.14 | \\| Q |  | \| |
| 6+35 | 0.3665 | 1.19 | \\| Q |  | \| |
| 6+40 | 0.3752 | 1.26 | \\| VQ |  | I |
| 6+45 | 0.3839 | 1.26 | \\| VQ |  | \| |


| 6+50 | 0.3926 | 1.26 | \| | VQ | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+55 | 0.4013 | 1.26 | \| | Q | \| | \| |
| 7+ 0 | 0.4100 | 1.26 | \| | Q | \| | \| |
| 7+ 5 | 0.4187 | 1.26 | \| | Q | \| | \| |
| 7+10 | 0.4274 | 1.26 | । | Q | । | । |
| 7+15 | 0.4362 | 1.26 | । | Q | । | । |
| 7+20 | 0.4453 | 1.32 | \| | Q | 1 | \| |
| 7+25 | 0.4548 | 1.38 | \| | Q | I | \| |
| 7+30 | 0.4644 | 1.39 | 1 | Q | 1 | \| |
| 7+35 | 0.4743 | 1.45 | \| | Q | \| | \| |
| 7+40 | 0.4847 | 1.51 | \| | Q | 1 | \| |
| 7+45 | 0.4952 | 1.52 | I | Q | I | \| |
| 7+50 | 0.5060 | 1.57 | \| | Q | \| | I |
| 7+55 | 0.5173 | 1.64 | । | Q | । | I |
| 8+ 0 | 0.5286 | 1.64 | । | Q | । | I |
| 8+ 5 | 0.5411 | 1.81 | I | VQ |  | \| |
| 8+10 | 0.5548 | 2.00 | \\| | VQ |  | \| |
| 8+15 | 0.5687 | 2.02 | \| |  | Q \| | \| |
| 8+20 | 0.5827 | 2.03 | । | VQ | Q \| | I |
| 8+25 | 0.5967 | 2.03 | I |  | Q \| | I |
| 8+30 | 0.6108 | 2.04 | \| |  | Q \| | \| |
| 8+35 | 0.6255 | 2.14 | \| |  | Q \| | \| |
| 8+40 | 0.6409 | 2.24 | 1 |  | Q \| | I |
| 8+45 | 0.6565 | 2.26 | \\| |  | VQ\| | I |
| 8+50 | 0.6727 | 2.35 | \| |  | VQ\| | \| |
| $8+55$ | 0.6896 | 2.46 | I |  | VQ\| | \| |
| 9+ 0 | 0.7066 | 2.47 | , |  | VQ\| | \| |
| 9+ 5 | 0.7250 | 2.66 | 1 |  | VQ | I |
| 9+10 | 0.7447 | 2.87 | 1 |  | VIQ | 1 |
| 9+15 | 0.7647 | 2.89 | । |  | VIQ | 1 |


| 9+20 | 0.7853 | 2.99 | \| | V\|Q |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+25 | 0.8066 | 3.10 | \| | V Q |  | \| |  |
| 9+30 | 0.8281 | 3.11 | \| | V Q |  | \| |  |
| 9+35 | 0.8502 | 3.21 | \| | V Q |  | \| |  |
| 9+40 | 0.8730 | 3.32 | I | $\checkmark$ Q |  | \| |  |
| 9+45 | 0.8960 | 3.33 | \| | IV Q |  | \| |  |
| 9+50 | 0.9196 | 3.43 | । | IV Q |  | \| |  |
| 9+55 | 0.9439 | 3.53 | \| | IV |  | \| |  |
| 10+ 0 | 0.9684 | 3.55 | \| | \\| V |  | \| |  |
| 10+ 5 | 0.9884 | 2.92 | \| | IQV |  | \| |  |
| 10+10 | 1.0038 | 2.22 | \| | Q \| V |  | \| |  |
| 10+15 | 1.0186 | 2.15 | \| | Q \\| V |  |  |  |
| 10+20 | 1.0333 | 2.14 | \| | Q \| V |  |  |  |
| 10+25 | 1.0481 | 2.15 | \| | Q \| V |  |  |  |
| 10+30 | 1.0629 | 2.15 | \| | Q \| V |  |  |  |
| 10+35 | 1.0809 | 2.61 | \| | Q V |  | \| |  |
| 10+40 | 1.1023 | 3.11 | I | । QV |  |  |  |
| 10+45 | 1.1242 | 3.17 | \| | \| Q V |  |  | \| |
| 10+50 | 1.1461 | 3.19 | \| | \\| Q V |  |  |  |
| 10+55 | 1.1681 | 3.19 | - | \| Q |  | \| |  |
| 11+ 0 | 1.1901 | 3.20 | \| | \\| Q V |  |  |  |
| 11+ 5 | 1.2116 | 3.11 | \| | \\| Q | V | \| | \| |
| 11+10 | 1.2323 | 3.01 | \| | \\| Q | V |  |  |
| 11+15 | 1.2530 | 3.01 | - | \\| Q | V | \| |  |
| 11+20 | 1.2738 | 3.01 | I | \\| Q | V | \| |  |
| 11+25 | 1.2945 | 3.01 | \\| | \\| Q | V | \| | 1 |
| 11+30 | 1.3153 | 3.02 | , | \\| Q | V | \| |  |
| 11+35 | 1.3349 | 2.84 | , | IQ | V |  |  |
| 11+40 | 1.3531 | 2.65 | \| | Q | $v$ |  |  |
| 11+45 | 1.3712 | 2.63 | \| | Q | V |  | I |


| 11+50 | 1.3899 | 2.72 | \| | Q | v | \\| |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11+55 | 1.4093 | 2.82 | \| | IQ | v | - |  |  |
| 12+ 0 | 1.4289 | 2.84 | \| | \|Q | v | \\| |  |  |
| 12+ 5 | 1.4529 | 3.48 | 1 | \\| Q |  | v I |  |  |
| 12+10 | 1.4817 | 4.18 | \| | । |  | v 1 |  |  |
| 12+15 | 1.5111 | 4.27 | \| | 1 |  | V I |  |  |
| 12+20 | 1.5412 | 4.38 | \| | \| |  | V1 |  |  |
| 12+25 | 1.5721 | 4.48 | \| | , |  | V1 |  |  |
| 12+30 | 1.6030 | 4.49 | \| | 1 |  | V |  |  |
| 12+35 | 1.6353 | 4.68 | 1 | 1 |  | Q V |  |  |
| 12+40 | 1.6689 | 4.89 | \| | 1 |  | QV |  |  |
| $12+45$ | 1.7027 | 4.91 | \| | 1 |  | Q\|V |  |  |
| 12+50 | 1.7373 | 5.01 | \| | I |  | QV |  |  |
| 12+55 | 1.7725 | 5.12 | \| | I |  | Q | v |  |
| $13+0$ | 1.8078 | 5.13 | 1 | 1 |  | Q | V |  |
| $13+5$ | 1.8463 | 5.59 | 1 | I |  | 1 | QV |  |
| 13+10 | 1.8883 | 6.09 | \| | I |  | \| | VQ |  |
| 13+15 | 1.9307 | 6.16 | I | I |  | \| | Q |  |
| 13+20 | 1.9732 | 6.17 | I | 1 |  | 1 | Q |  |
| 13+25 | 2.0157 | 6.17 | 1 | , |  | 1 | QV |  |
| 13+30 | 2.0582 | 6.18 | 1 | I |  | 1 | QV |  |
| 13+35 | 2.0939 | 5.17 | I | 1 |  | Q |  | $\checkmark$ |
| 13+40 | 2.1220 | 4.08 | \| | I | Q | 1 |  | V |
| $13+45$ | 2.1493 | 3.96 | \| | 1 | Q | \| |  | V |
| 13+50 | 2.1765 | 3.95 | \| | 1 | Q | \| |  | V |
| 13+55 | 2.2037 | 3.95 | I | 1 | Q | 1 |  | V |
| 14+ 0 | 2.2309 | 3.95 | 1 | I | Q | 1 |  | V |
| 14+ 5 | 2.2607 | 4.32 | 1 | I | Q | - 1 |  | V |
| 14+10 | 2.2932 | 4.73 | \| | I |  | Q \| |  | V |
| 14+15 | 2.3261 | 4.78 | 1 | I |  | Q\| |  |  |






## Proposed Condition Basin Routing

FLOOD HYDROGRAPH ROUTING PROGRAM Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012 Study date: 11/11/21

```
---
        Gateway Height
        Basin Routing
        Area A
        2yr 24hr
Program License Serial Number 6232
-----------------------------------------------
            From study/file name: moval33post242.rte
******************************HYDROGRAPH
            Number of intervals = 290
            Time interval = 5.0 (Min.)
            Maximum/Peak flow rate = 0.656 (CFS)
            Total volume = 0.399 (Ac.Ft)
        Status of hydrographs being held in storage
                        Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
        Peak (CFS)
                        0.000 0.000 0.000 0.000
0.000
        Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000 0.000
0.000
    *******************************************************************
*****
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 202.000 to Point/Station
203.000
    **** RETARDING BASIN ROUTING ****
```

User entry of depth-outflow-storage data

-     - Total number of inflow hydrograph intervals $=290$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)
```



| 0.12 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1.250 | 0.06 | 0.06 | 0.002 | 0 | 1 \| | \| |
| 0.12 |  |  |  |  |  |  |
| 1.333 | 0.06 | 0.06 | 0.002 | 0 | 1 \| | \| |
| 0.12 |  |  |  |  |  |  |
| 1.417 | 0.06 | 0.06 | 0.002 | 0 | - | \| |
| 0.12 |  |  |  |  |  |  |
| 1.500 | 0.06 | 0.06 | 0.002 | 0 | - | \| |
| 0.12 |  |  |  |  |  |  |
| 1.583 | 0.06 | 0.06 | 0.002 | 0 | 1 \| | \| |
| 0.12 |  |  |  |  |  |  |
| 1.667 | 0.06 | 0.06 | 0.002 | 0 | , | \| |
| 0.12 |  |  |  |  |  |  |
| 1.750 | 0.06 | 0.06 | 0.002 | 0 | , | \| |
| 0.12 |  |  |  |  |  |  |
| 1.833 | 0.07 | 0.06 | 0.002 | OI | \| | \| |
| 0.12 - 0.0 .01 |  |  |  |  |  |  |
| 1.917 | 0.08 | 0.06 | 0.002 | 0 | \| | \| |
| 0.12 |  |  |  |  |  |  |
| 2.000 | 0.08 | 0.06 | 0.002 | 0 | \| | \| |
| 0.13 |  |  |  |  |  |  |
| 2.083 | 0.08 | 0.07 | 0.002 | 0 | \| | \| |
| 0.13 |  |  |  |  |  |  |
| 2.167 | 0.08 | 0.07 | 0.002 | 0 | $1 \quad 1$ | \| |
| 0.14 0.10 0 |  |  |  |  |  |  |
| 2.250 | 0.08 | 0.07 | 0.002 | 0 | 1 \| | \| |
| 0.14 |  |  |  |  |  |  |
| 2.333 | 0.08 | 0.07 | 0.002 | 0 | 1 \| | \| |
| 0.14 |  |  |  |  |  |  |
| 2.417 | 0.08 | 0.07 | 0.002 | 0 | 1 \| | \| |
| 0.15 |  |  |  |  |  |  |
| 2.500 | 0.08 | 0.07 | 0.002 | 0 | 1 \| | \| |
| 0.15 |  |  |  |  |  |  |
| 2.583 | 0.09 | 0.08 | 0.002 | OI | \| | \| |
| 0.15 |  |  |  |  |  |  |
| 2.667 | 0.10 | 0.08 | 0.003 | OI | , | \| |
| 0.16 O. 0.10 |  |  |  |  |  |  |
| 2.750 | 0.10 | 0.08 | 0.003 | 0 | $1 \quad 1$ | \| |
| 0.16 0.0.08 |  |  |  |  |  |  |
| 2.833 | 0.10 | 0.08 | 0.003 | 0 | 1 \| | \| |
| 0.17 |  |  |  |  |  |  |
| 2.917 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.17 |  |  |  |  |  |  |
| 3.000 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.18 |  |  |  |  |  |  |
| 3.083 | 0.10 | 0.09 | 0.003 | 0 | \| | \| |
| 0.18 |  |  |  |  |  |  |
| 3.167 | 0.10 | 0.09 | 0.003 | 0 | \| | \| |
| 0.18 , 0.10 |  |  |  |  |  |  |
| 3.250 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.19 - 0.10 |  |  |  |  |  |  |
| 3.333 | 0.10 | 0.09 | 0.003 | 0 | \| | | \| |
| 0.19 0. 0 |  |  |  |  |  |  |
| 3.417 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.19 |  |  |  |  |  |  |
| 3.500 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.19 |  |  |  |  |  |  |
| 3.583 | 0.10 | 0.09 | 0.003 | 0 | \| | \| |
| 0.19 |  |  |  |  |  |  |
| 3.667 | 0.10 | 0.10 | 0.003 | 0 | \| | \| |








| 0.15 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 18.750 | 0.06 | 0.07 | 0.002 \| IO | I | \| |
| 0.14 |  |  |  |  |  |
| 18.833 | 0.05 | 0.07 | 0.002 \| IO | I | \| |
| 0.14 |  |  |  |  |  |
| 18.917 | 0.04 | 0.06 | $0.002 \mid I 0$ | \| | | \| |
| 0.13 (0.01 |  |  |  |  |  |
| 19.000 | 0.04 | 0.06 | 0.002 \|IO | , | \| |
| 0.12 |  |  |  |  |  |
| 19.083 | 0.05 | 0.06 | 0.002 \| 0 | \| | | \| |
| 0.11 |  |  |  |  |  |
| 19.167 | 0.06 | 0.06 | 0.002 \| 0 | 1 \| | \| |
| 0.11 |  |  |  |  |  |
| 19.250 | 0.06 | 0.06 | 0.002 \| 0 | 1 \| | \| |
| 0.11 |  |  |  |  |  |
| 19.333 | 0.07 | 0.06 | 0.002 \| OI | \| | \| |
| 0.11 |  |  |  |  |  |
| 19.417 | 0.08 | 0.06 | 0.002 OI | \| | \| |
| 0.12 |  |  |  |  |  |
| 19.500 | 0.08 | 0.06 | $0.002 \mid 0$ | \| | \| |
| 0.13 |  |  |  |  |  |
| 19.583 | 0.07 | 0.07 | 0.002 \| 0 | \| | \| |
| 0.13 |  |  |  |  |  |
| 19.667 | 0.06 | 0.06 | 0.002 \| IO | \| | \| |
| 0.13 |  |  |  |  |  |
| 19.750 | 0.06 | 0.06 | 0.002 \| IO | \| | \| |
| 0.13 |  |  |  |  |  |
| 19.833 | 0.05 | 0.06 | 0.002 \| 0 | \| | \| |
| 0.12 |  |  |  |  |  |
| 19.917 | 0.04 | 0.06 | 0.002 \| IO | \| | \| |
| 0.12 0.0.00 |  |  |  |  |  |
| 20.000 | 0.04 | 0.05 | 0.002 \|IO | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.083 | 0.05 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.10 0.0.0. 0 |  |  |  |  |  |
| 20.167 | 0.06 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.10 |  |  |  |  |  |
| 20.250 | 0.06 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.333 | 0.06 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.417 | 0.06 | 0.05 | $0.002 \mid 0$ | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.500 | 0.06 | 0.06 | 0.002 \| 0 | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.583 | 0.06 | 0.06 | $0.002 \mid 0$ | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.667 | 0.06 | 0.06 | 0.002 \| 0 | \| | \| |
| 0.11 0.0.0. |  |  |  |  |  |
| 20.750 | 0.06 | 0.06 | $0.002 \mid 0$ | $\mid$ \| | \| |
|  |  |  |  |  |  |
| 20.833 | 0.05 | 0.06 | 0.002 \| 0 | I | \| |
| 0.11 - |  |  |  |  |  |
| 20.917 | 0.04 | 0.05 | 0.002 \| IO | \| | \| |
| 0.11 |  |  |  |  |  |
| 21.000 | 0.04 | 0.05 | 0.002 \| IO | \| | \| |
| 0.10 |  |  |  |  |  |
| 21.083 | 0.05 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.10 |  |  |  |  |  |
| 21.167 | 0.06 | 0.05 | 0.002 \| 0 | 1 \| | \| |




FLOOD HYDROGRAPH ROUTING PROGRAM Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012 Study date: 11/11/21

```
---
        Gateway Height
        Basin Routing
        Area A
        100yr 1hr
Program License Serial Number 6232
-- --------------------------------------------------------------------
        ********************* HYDROGRAPH INFORMATION
***********************
            From study/file name: moval33post1100.rte
*****************************HYDROGRAPH
DATA****************************
            Number of intervals = 14
            Time interval = 5.0 (Min.)
            Maximum/Peak flow rate = 13.098 (CFS)
            Total volume = 0.370 (Ac.Ft)
        Status of hydrographs being held in storage
                        Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
        Peak (CFS)
                                0.000 0.000 0.000 0.000
0.000
        Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000
                            0.000
0.000
    ********************************************************************
*****
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 202.000 to Point/Station
203.000
    **** RETARDING BASIN ROUTING ****
```

$\qquad$
User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals $=14$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
```

Initial basin outflow $=0.00$ (CFS)

5.32

| 1.250 | 0.00 | 0.50 | 0.324 | IO |
| :---: | :---: | :---: | :---: | :---: |
| 5.29 |  |  |  |  |
| 1.333 | 0.00 | 0.50 | 0.321 | IO |
| 5.26 |  |  |  |  |
| 1.417 | 0.00 | 0.50 | 0.317 | IO |
| 5.23 |  |  |  |  |
| 1.500 | 0.00 | 0.50 | 0.314 | IO |
| 5.20 |  |  |  |  |
| 1.583 | 0.00 | 0.50 | 0.310 | IO |
| 5.17 |  |  |  |  |
| 1.667 | 0.00 | 0.50 | 0.307 | IO |

5.13 $1.750 \quad 0.00 \quad 0.50$
5.10 $1.833 \quad 0.00 \quad 0.50$
0.303 IO
5.07 $1.917 \quad 0.00 \quad 0.50$
5.04 $2.000 \quad 0.00 \quad 0.50$
5.01 $2.083 \quad 0.00 \quad 0.50$
4.98 $2.167 \quad 0.00 \quad 0.50$
4.95 $2.250 \quad 0.00 \quad 0.50$
4.91 2.333
4.88 $2.417 \quad 0.00 \quad 0.50$
4.85 $2.500 \quad 0.00 \quad 0.50$
4.82 $2.583 \quad 0.00 \quad 0.50$
4.79 $2.667 \quad 0.00 \quad 0.50$
4.76 $2.750 \quad 0.00 \quad 0.50$
4.73 $2.833 \quad 0.00 \quad 0.50$
4.70 $2.917 \quad 0.00 \quad 0.50$
4.66 $3.000 \quad 0.00 \quad 0.50$
4.63 $3.083 \quad 0.00 \quad 0.50$
4.60 $3.167 \quad 0.00 \quad 0.50$
4.57 $\begin{array}{lll}3.250 & 0.00 & 0.50\end{array}$
4.54 $3.333 \quad 0.00 \quad 0.50$
4.51 $3.417 \quad 0.00 \quad 0.50$
4.48 3.500
0.00
0.50
4.45
$0.00 \quad 0.50$
4.41
3.667
0.00
0.50
0.300 IO
0.296 IO
0.293 IO
0.290 IO
0.286 IO
0.283 IO
0.279 IO
0.276 IO
0.272 IO
0.269 IO
0.265 IO
0.262 IO
0.259 IO
0.255 IO
0.252 IO
0.248 IO
0.245 IO
0.241 IO
0.238 IO
0.234 IO
0.231 IO
0.228 IO
0.224 IO

| 4.38 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3.750 | 0.00 | 0.50 | 0.221 | IO | 1 \| | \| |
| 4.35 |  |  |  |  |  |  |
| 3.833 | 0.00 | 0.50 | 0.217 | IO | 1 | \| |
| 4.32 |  |  |  |  |  |  |
| 3.917 | 0.00 | 0.50 | 0.214 | IO | \| | \| |
| 4.29 |  |  |  |  |  |  |
| 4.000 | 0.00 | 0.50 | 0.210 | IO | 1 \| | \| |
| 4.26 |  |  |  |  |  |  |
| 4.083 | 0.00 | 0.50 | 0.207 | IO | 1 \| | \| |
| 4.23 |  |  |  |  |  |  |
| 4.167 | 0.00 | 0.50 | 0.203 | IO | 1 \| | \| |
| 4.19 |  |  |  |  |  |  |
| 4.250 | 0.00 | 0.50 | 0.200 | IO | 1 \| | \| |
| 4.16 |  |  |  |  |  |  |
| 4.333 | 0.00 | 0.50 | 0.197 | IO | \| | \| |
| 4.13 |  |  |  |  |  |  |
| 4.417 | 0.00 | 0.50 | 0.193 | IO | $\dagger$ | \| |
| 4.10 |  |  |  |  |  |  |
| 4.500 | 0.00 | 0.50 | 0.190 | IO | 1 | \| |
| 4.07 |  |  |  |  |  |  |
| 4.583 | 0.00 | 0.50 | 0.186 | IO | 1 \| | 1 |
| 4.04 |  |  |  |  |  |  |
| 4.667 | 0.00 | 0.50 | 0.183 | IO | \| | | \| |
| 4.01 |  |  |  |  |  |  |
| 4.750 | 0.00 | 0.50 | 0.179 | IO | 1 \| | \| |
| 3.97 0. 0.000 |  |  |  |  |  |  |
| 4.833 | 0.00 | 0.50 | 0.176 | IO | 1 \| | \| |
| 3.93 0.83 |  |  |  |  |  |  |
| 4.917 | 0.00 | 0.50 | 0.172 | IO | 1 \| | 1 |
| 3.89 lloll |  |  |  |  |  |  |
| 5.000 | 0.00 | 0.50 | 0.169 | IO | 1 \| | \| |
| 3.85 |  |  |  |  |  |  |
| 5.083 | 0.00 | 0.50 | 0.166 | IO | \| | | \| |
| 3.81 |  |  |  |  |  |  |
| 5.167 | 0.00 | 0.50 | 0.162 | IO | 1 \| | \| |
| 3.77 |  |  |  |  |  |  |
| 5.250 | 0.00 | 0.50 | 0.159 | IO | 1 \| | \| |
| 3.73 |  |  |  |  |  |  |
| 5.333 | 0.00 | 0.50 | 0.155 | IO | \| | \| |
| 3.69 |  |  |  |  |  |  |
| 5.417 | 0.00 | 0.50 | 0.152 | IO | \| | \| |
| 3.64 0.0.0.152 |  |  |  |  |  |  |
| 5.500 | 0.00 | 0.50 | 0.148 | IO | \| | \| |
| 3.60 0.50. 0.00 |  |  |  |  |  |  |
| 5.583 | 0.00 | 0.50 | 0.145 | IO | \| | \| |
| 3.56 ( 0.50 .5 |  |  |  |  |  |  |
| 5.667 | 0.00 | 0.50 | 0.141 | IO | 1 \| | \| |
| 3.52 |  |  |  |  |  |  |
| 5.750 | 0.00 | 0.50 | 0.138 | IO | \| | | \| |
| 3.48 (0.70 |  |  |  |  |  |  |
| 5.833 | 0.00 | 0.50 | 0.135 | IO | 1 \| | \| |
| 3.44 - $0.00 .13 \mathrm{l}^{\text {l }}$ |  |  |  |  |  |  |
| 5.917 | 0.00 | 0.50 | 0.131 | IO | \| | \\| |
| 3.40 - 0.131 |  |  |  |  |  |  |
| 6.000 | 0.00 | 0.50 | 0.128 | IO | \| | \| |
| 3.36 - 0.10 l |  |  |  |  |  |  |
| 6.083 | 0.00 | 0.50 | 0.124 | IO | \| | | \| |
| 3.32 |  |  |  |  |  |  |
| 6.167 | 0.00 | 0.50 | 0.121 | IO | 1 | 1 |


| 3.28 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6.250 | 0.00 | 0.50 | 0.117 | IO | 1 \| | \| |
| 3.24 |  |  |  |  |  |  |
| 6.333 | 0.00 | 0.50 | 0.114 | IO | 1 \| | \| |
| 3.20 |  |  |  |  |  |  |
| 6.417 | 0.00 | 0.50 | 0.110 | IO | 1 \| | \| |
| 3.16 |  |  |  |  |  |  |
| 6.500 | 0.00 | 0.50 | 0.107 | IO | 1 \| | \| |
| 3.12 |  |  |  |  |  |  |
| 6.583 | 0.00 | 0.50 | 0.104 | IO | \| | | \| |
| 3.08 |  |  |  |  |  |  |
| 6.667 | 0.00 | 0.50 | 0.100 | IO | 1 \| | \| |
| 3.04 |  |  |  |  |  |  |
| 6.750 | 0.00 | 0.50 | 0.097 | IO | \| | \| |
| 3.00 |  |  |  |  |  |  |
| 6.833 | 0.00 | 0.50 | 0.093 | IO | $\mid$ | \| |
| 2.94 |  |  |  |  |  |  |
| 6.917 | 0.00 | 0.50 | 0.090 | IO | \| | \| |
| 2.89 |  |  |  |  |  |  |
| 7.000 | 0.00 | 0.50 | 0.086 | IO | 1 | \| |
| 2.84 |  |  |  |  |  |  |
| 7.083 | 0.00 | 0.50 | 0.083 | IO | 1 \| | \| |
| 2.78 |  |  |  |  |  |  |
| 7.167 | 0.00 | 0.50 | 0.079 | IO | 1 \| | \| |
| 2.73 |  |  |  |  |  |  |
| 7.250 | 0.00 | 0.50 | 0.076 | IO | 1 \| | \| |
| 2.68 |  |  |  |  |  |  |
| 7.333 | 0.00 | 0.50 | 0.073 | IO | 1 \| | \| |
| 2.62 |  |  |  |  |  |  |
| 7.417 | 0.00 | 0.50 | 0.069 | IO | $1 \quad 1$ | \| |
| 2.57 |  |  |  |  |  |  |
| 7.500 | 0.00 | 0.50 | 0.066 | IO | 1 | \| |
| 2.52 |  |  |  |  |  |  |
| 7.583 | 0.00 | 0.50 | 0.062 | IO | 1 \| | \| |
| 2.47 |  |  |  |  |  |  |
| 7.667 | 0.00 | 0.50 | 0.059 | IO | 1 \| | \| |
| 2.41 |  |  |  |  |  |  |
| 7.750 | 0.00 | 0.50 | 0.055 | IO | 1 \| | \| |
| 2.36 0.70 |  |  |  |  |  |  |
| 7.833 | 0.00 | 0.50 | 0.052 | IO | 1 | \| |
| 2.31 |  |  |  |  |  |  |
| 7.917 | 0.00 | 0.50 | 0.048 | IO | \| | \| |
| 2.25 loll |  |  |  |  |  |  |
| 8.000 | 0.00 | 0.50 | 0.045 | IO | 1 \| | \| |
| 2.20 |  |  |  |  |  |  |
| 8.083 | 0.00 | 0.50 | 0.042 | IO | 1 \| | \| |
| 2.15 |  |  |  |  |  |  |
| 8.167 | 0.00 | 0.50 | 0.038 | IO | 1 \| | I |
| 2.09 |  |  |  |  |  |  |
| 8.250 | 0.00 | 0.50 | 0.035 | IO | \| | \| |
| 2.04 (0.00 |  |  |  |  |  |  |
| 8.333 | 0.00 | 0.50 | 0.031 | IO | \| | \| |
| 1.95 - |  |  |  |  |  |  |
| 8.417 | 0.00 | 0.50 | 0.028 | IO | \| | \| |
| 1.74 0.40 |  |  |  |  |  |  |
| 8.500 | 0.00 | 0.50 | 0.024 | IO | 1 \| | \| |
| 1.52 |  |  |  |  |  |  |
| 8.583 | 0.00 | 0.50 | 0.021 | IO | 1 \| | \| |
| 1.31 |  |  |  |  |  |  |
| 8.667 | 0.00 | 0.50 | 0.017 | IO | 1 \| | \| |


| 1.09 |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8.750 | 0.00 | 0.44 | 0.014 | IO | \| | \| | । |
| 0.89 |  |  |  |  |  |  |  |
| 8.833 | 0.00 | 0.36 | 0.011 | 0 | \| | \| | \| |
| 0.72 |  |  |  |  |  |  |  |
| 8.917 | 0.00 | 0.29 | 0.009 | 0 | \| | \| | \| |
| $\begin{aligned} & 0.58 \\ & 9.000 \end{aligned}$ | 0.00 | 0.23 | 0.007 | 0 | \| | । | \| |
| 0.47 |  |  |  |  |  |  |  |
| 9.083 | 0.00 | 0.19 | 0.006 | 0 | \| | \| | 1 |
| 0.37 |  |  |  |  |  |  |  |
| 9.167 | 0.00 | 0.15 | 0.005 | 0 | \| | \| | \| |
| 0.30 9.250 |  |  |  |  |  |  |  |
| 0.24 | 0.00 | 0.12 | 0.004 | 0 | 1 | 1 | 1 |
| 9.333 | 0.00 | 0.10 | 0.003 | 0 | \| | \| | , |
| $0.20$ | 0.00 | 0. 08 | 0. 003 | 0 | , | , | , |
| 0.16 |  |  | 0.003 |  | 1 | 1 | 1 |
| 9.500 | 0.00 | 0.06 | 0.002 | 0 | \| | I | 1 |
| 0.10 | 0.00 | 0.05 | 0.002 | 0 | 1 | 1 | 1 |
| 9.667 | 0.00 | 0.04 | 0.001 | 0 | \| | I | I |
| 0.08 |  |  |  |  |  |  |  |
| $\begin{aligned} & 9.750 \\ & 0.07 \end{aligned}$ | 0.00 | 0.03 | 0.001 | 0 | I | I | \| |
| 9.833 | 0.00 | 0.03 | 0.001 | 0 | \| | \| | \| |
| 0.05 |  |  |  |  |  |  |  |
| 9.917 | 0.00 | 0.02 | 0.001 | 0 | \| | \| | I |
| $\begin{aligned} & 0.04 \\ & 10.000 \end{aligned}$ | 0.00 | 0.02 | 0.001 | 0 | \| | \| | \| |
| 0.03 |  |  |  |  |  |  |  |
| 10.083 | 0.00 | 0.01 | 0.000 | 0 | \| | \| | 1 |
| 0.03 |  |  |  |  |  |  |  |
| 10.167 | 0.00 | 0.01 | 0.000 | 0 | \| | \| | \| |
| 0.02 10.250 |  |  |  |  |  |  |  |
| $\begin{aligned} & 10.250 \\ & 0.02 \end{aligned}$ | 0.00 | 0.01 | 0.000 | 0 | \| | \| | \| |
| 10.333 | 0.00 | 0.01 | 0.000 | 0 | \| | \| | \| |
| 0.01 |  |  |  |  |  |  |  |
| 10.417 | 0.00 | 0.01 | 0.000 | 0 | \| | \| | \| |
| 0.01 |  |  |  |  |  |  |  |
| 10.500 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.01 10.583 |  |  |  |  |  |  |  |
| 10.583 0.01 | 0.00 | 0.00 | 0.000 | 0 | \| | I | 1 |
| 10.667 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.01 |  |  |  |  |  |  |  |
| 10.750 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.00 |  |  |  |  |  |  |  |
| 10.833 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.00 |  |  |  |  |  |  |  |
| 10.917 | 0.00 | 0.00 | 0.000 | 0 | \| | I | I |
| $\begin{aligned} & 0.00 \\ & 11.000 \end{aligned}$ | 0.00 | 0.00 | 0.000 | 0 | । | \| | \| |
| 0.00 |  |  |  |  |  |  |  |
| 11.083 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \\| |
| 0.00 |  |  |  |  |  |  |  |
| 11.167 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |

```
0.00
*****************************HYDROGRAPH
DATA****************************
                Number of intervals = 134
                Time interval = 5.0 (Min.)
                Maximum/Peak flow rate = 0.500 (CFS)
                Total volume = 0.370 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
            Peak (CFS) 0.000 0.000 0.000 0.000
0.000
            Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000
                            0.000
0.000
    ********************************************************************
*****
```



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```
---
        Gateway Height
        Basin Routing
        Area A
        100yr 3hr
Program License Serial Number 6232
-- --------------------------------------------------------------------
        ********************* HYDROGRAPH INFORMATION
***********************
            From study/file name: moval33post3100.rte
******************************HYDROGRAPH
            Number of intervals = 38
            Time interval = 5.0 (Min.)
            Maximum/Peak flow rate = 6.789 (CFS)
            Total volume = 0.550 (Ac.Ft)
        Status of hydrographs being held in storage
                        Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
            Peak (CFS)
                                0.000
                            0.000
                            0.000 0.000
0.000
        Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000
                            0.000
0.000
    ********************************************************************
*****
    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 202.000 to Point/Station
203.000
    **** RETARDING BASIN ROUTING ****
```

User entry of depth-outflow-storage data

-     - Total number of inflow hydrograph intervals $=38$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
```

Initial basin outflow $=0.00$ (CFS)

|  | Depth vs. Basin Dept (Ft.) |  | Depth vs. D Outflow (CFS) |  | (S | arge -0*dt c.Ft) | $\begin{gathered} \left(\mathrm{S}+\mathrm{O}^{*} \mathrm{dt} / 2\right) \\ (\mathrm{Ac} . \mathrm{Ft}) \end{gathered}$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0.000 | 0.000 | 0.00 |  |  | 0.000 |  |  |  |
|  | 1.000 | 0.016 | 0.50 |  |  | 0.014 |  |  |  |
|  | 2.000 | 0.032 | 0.50 |  |  | 0.030 |  |  |  |
|  | 3.000 | 0.097 | 0.50 |  |  | 0.095 |  |  |  |
|  | 4.000 | 0.182 | 0.50 |  |  | 0.180 |  |  |  |
|  | 5.000 | 0.292 | 24.00 |  |  | 0.209 |  |  |  |
|  | 6.000 | 0.402 | 24.00 |  |  | 0.319 |  |  |  |
|  | Hydrograph Detention Basin Routing |  |  |  |  |  |  |  |  |
| Graph values: 'I'= unit inflow; '0'=outflow at time shown |  |  |  |  |  |  |  |  |  |
| Time | Inflow | Outflow | Storage |  |  | 1.7 | 3.39 | 5.09 | 6.79 |
| Depth (Hours) | s) (CFS) |  |  |  |  |  |  |  |  |
| (Ft.) |  |  |  |  |  |  |  |  |  |
| 0.083 | 30.47 | 0.05 | 0.001 | 0 I |  | \| | \| | \| | \| |
| 0.09 |  |  |  |  |  |  |  |  |  |
| 0.167 | $7 \quad 0.84$ | 0.16 | 0.005 |  |  | \| | \| | \| | \| |
| 0.33 |  |  |  |  |  |  |  |  |  |
| 0.250 | $0 \quad 0.76$ | 0.29 | 0.009 | 10 I |  | \| | \| | \| | \| |
| 0.58 |  |  |  |  |  |  |  |  |  |
| 0.333 | 30.89 | 0.39 | 0.013 |  | I | \| | \| | \| | \| |
| 0.79 |  |  |  |  |  |  |  |  |  |
| 0.417 | 71.04 | 0.50 | 0.016 | 0 |  | \| | \| | \| | \| |
| 1.01 | - 1.20 | 050 | 0. 020 | 0 | I | \| | , | , |  |
| 1.27 |  |  |  |  |  |  |  |  |  |
| 0.583 | 31.16 | 0.50 | 0.025 | 10 | I | 1 | \| | \| | \| |
| 1.57 |  |  |  |  |  |  |  |  |  |
| 0.667 | $7 \quad 1.21$ | 0.50 | 0.030 | 10 | I | \| | \| | \| | \| |
| 1.86 |  |  |  |  |  |  |  |  |  |
| 0.750 | $0 \quad 1.31$ | 0.50 | 0.035 | 10 |  | \| | \| | \| | \| |
| 2.05 | 1.17 | 0.50 | 0.040 | 0 | I | \| | \| | \| | । |
| 2.13 |  |  |  |  |  |  |  |  |  |
| 0.917 | $7 \quad 1.11$ | 0.50 | 0.045 | 10 | I | \| | \| | \| | \| |
| 2.19 |  |  |  |  |  |  |  |  |  |
| 1.000 | 01.24 | 0.50 | 0.049 | 10 | I | 1 | \| | \| | \| |
| 2.26 |  |  |  |  |  |  |  |  |  |
| 1.083 | 31.52 | 0.50 | 0.055 | 10 |  | I | \| | \| | \| |
| 2.36 |  |  |  |  |  |  |  |  |  |
| 1.167 | 71.68 | 0.50 | 0.063 | 10 |  | I | 1 | 1 | \| |



| 3.73 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3.750 | 0.00 | 0.50 | 0.155 | I 0 | \| | \| |
| 3.69 |  |  |  |  |  |  |
| 3.833 | 0.00 | 0.50 | 0.152 | I 0 | $1 \quad 1$ | \| |
| 3.64 |  |  |  |  |  |  |
| 3.917 | 0.00 | 0.50 | 0.148 | I 0 | \| | \| |
| 3.60 |  |  |  |  |  |  |
| 4.000 | 0.00 | 0.50 | 0.145 | I 0 | 1 \| | \| |
| 3.56 |  |  |  |  |  |  |
| 4.083 | 0.00 | 0.50 | 0.141 | I 0 | $1 \quad 1$ | \| |
| 3.52 |  |  |  |  |  |  |
| 4.167 | 0.00 | 0.50 | 0.138 | I 0 | \| | \| |
| 3.48 |  |  |  |  |  |  |
| 4.250 | 0.00 | 0.50 | 0.135 | I 0 | 1 \| | \| |
| 3.44 |  |  |  |  |  |  |
| 4.333 | 0.00 | 0.50 | 0.131 | I 0 | 1 \| | \| |
| 3.40 |  |  |  |  |  |  |
| 4.417 | 0.00 | 0.50 | 0.128 | I 0 | 1 \| | \| |
| 3.36 |  |  |  |  |  |  |
| 4.500 | 0.00 | 0.50 | 0.124 | I 0 | I | \| |
| 3.32 |  |  |  |  |  |  |
| 4.583 | 0.00 | 0.50 | 0.121 | I 0 | 1 \| | \| |
| 3.28 |  |  |  |  |  |  |
| 4.667 | 0.00 | 0.50 | 0.117 | I 0 | 1 \| | \| |
| 3.24 |  |  |  |  |  |  |
| 4.750 | 0.00 | 0.50 | 0.114 | I 0 | 1 \| | \| |
| 3.20 |  |  |  |  |  |  |
| 4.833 | 0.00 | 0.50 | 0.110 | I 0 | $1 \quad 1$ | \| |
| 3.16 |  |  |  |  |  |  |
| 4.917 | 0.00 | 0.50 | 0.107 | I 0 | 1 | \| |
| 3.12 |  |  |  |  |  |  |
| 5.000 | 0.00 | 0.50 | 0.104 | I 0 | 1 | \| |
| 3.08 |  |  |  |  |  |  |
| 5.083 | 0.00 | 0.50 | 0.100 | I 0 | \| | \| |
| 3.04 |  |  |  |  |  |  |
| 5.167 | 0.00 | 0.50 | 0.097 | I 0 | 1 \| | \| |
| 3.00 (0.00 |  |  |  |  |  |  |
| 5.250 | 0.00 | 0.50 | 0.093 | I 0 | $1 \quad 1$ | \| |
| 2.94 O 0.00 |  |  |  |  |  |  |
| 5.333 | 0.00 | 0.50 | 0.090 | I 0 | 1 | \| |
| 2.89 |  |  |  |  |  |  |
| 5.417 | 0.00 | 0.50 | 0.086 | I 0 | \| | | \| |
| 2.84 |  |  |  |  |  |  |
| 5.500 | 0.00 | 0.50 | 0.083 | I 0 | 1 \| | \| |
| 2.78 |  |  |  |  |  |  |
| 5.583 | 0.00 | 0.50 | 0.079 | I 0 | \| | \| |
| 2.73 |  |  |  |  |  |  |
| 5.667 | 0.00 | 0.50 | 0.076 | I 0 | \| | \| |
| 2.68 (0.50 |  |  |  |  |  |  |
| 5.750 | 0.00 | 0.50 | 0.073 | I 0 | \| | \| |
| 2.62 l |  |  |  |  |  |  |
| 5.833 | 0.00 | 0.50 | 0.069 | I 0 | \| | \| |
| 2.57 (0.830 |  |  |  |  |  |  |
| 5.917 | 0.00 | 0.50 | 0.066 | I 0 | \| | \| |
| 2.52 |  |  |  |  |  |  |
| 6.000 | 0.00 | 0.50 | 0.062 | I 0 | $1 \quad 1$ | \| |
| 2.47 |  |  |  |  |  |  |
| 6.083 | 0.00 | 0.50 | 0.059 | I 0 | \| | \| |
| 2.41 |  |  |  |  |  |  |
| 6.167 | 0.00 | 0.50 | 0.055 | I 0 | $1 \quad 1$ | \| |


| 2.36 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6.250 | 0.00 | 0.50 | 0.052 | I 0 | 1 \| | \| |
| 2.31 |  |  |  |  |  |  |
| 6.333 | 0.00 | 0.50 | 0.049 | I 0 | 1 \| | \| |
| 2.25 |  |  |  |  |  |  |
| 6.417 | 0.00 | 0.50 | 0.045 | I 0 | 1 \| | \| |
| 2.20 |  |  |  |  |  |  |
| 6.500 | 0.00 | 0.50 | 0.042 | I 0 | 1 \| | \| |
| 2.15 |  |  |  |  |  |  |
| 6.583 | 0.00 | 0.50 | 0.038 | I 0 | \| | \| |
| 2.09 |  |  |  |  |  |  |
| 6.667 | 0.00 | 0.50 | 0.035 | I 0 | \| | | \| |
| 2.04 |  |  |  |  |  |  |
| 6.750 | 0.00 | 0.50 | 0.031 | I 0 | \| | \| |
| 1.96 - 0.00 l |  |  |  |  |  |  |
| 6.833 | 0.00 | 0.50 | 0.028 | I 0 | \| | \| |
| 1.74 |  |  |  |  |  |  |
| 6.917 | 0.00 | 0.50 | 0.024 | I 0 | - | \| |
| 1.52 |  |  |  |  |  |  |
| 7.000 | 0.00 | 0.50 | 0.021 | I 0 | \| | \| |
| 1.31 |  |  |  |  |  |  |
| 7.083 | 0.00 | 0.50 | 0.018 | I 0 | 1 \| | \| |
| 1.09 |  |  |  |  |  |  |
| 7.167 | 0.00 | 0.45 | 0.014 | I 0 | \| | \| |
| 0.89 |  |  |  |  |  |  |
| 7.250 | 0.00 | 0.36 | 0.011 | IO | \| | \| |
|  |  |  |  |  |  |  |
| 7.333 | 0.00 | 0.29 | 0.009 | IO | \| | \| |
| 0.58 |  |  |  |  |  |  |
| 7.417 | 0.00 | 0.23 | 0.007 | IO | 1 \| | \| |
| 0.47 |  |  |  |  |  |  |
| 7.500 | 0.00 | 0.19 | 0.006 | 0 | 1 \| | \| |
| 0.38 |  |  |  |  |  |  |
| 7.583 | 0.00 | 0.15 | 0.005 | 0 | 1 \| | \| |
| 0.30 |  |  |  |  |  |  |
| 7.667 | 0.00 | 0.12 | 0.004 | 0 | 1 \| | \| |
| 0.24 |  |  |  |  |  |  |
| 7.750 | 0.00 | 0.10 | 0.003 | 0 | \| | \| |
| 0.20 0. 0 |  |  |  |  |  |  |
| 7.833 | 0.00 | 0.08 | 0.003 | 0 | I | \| |
| 0.16 0.0.0.00 |  |  |  |  |  |  |
| 7.917 | 0.00 | 0.06 | 0.002 | 0 | \| | \| |
| 0.13 0.0.0. |  |  |  |  |  |  |
| 8.000 | 0.00 | 0.05 | 0.002 | 0 | 1 \| | \| |
| 0.10 |  |  |  |  |  |  |
| 8.083 | 0.00 | 0.04 | 0.001 | 0 | 1 \| | \| |
| 0.08 |  |  |  |  |  |  |
| 8.167 | 0.00 | 0.03 | 0.001 | 0 | 1 \| | \| |
| 0.07 0.00 |  |  |  |  |  |  |
| 8.250 | 0.00 | 0.03 | 0.001 | 0 | \| | \| |
| 0.05 0.0. |  |  |  |  |  |  |
| 8.333 | 0.00 | 0.02 | 0.001 | 0 | \| | \| |
| 0.04 - 0.00 l |  |  |  |  |  |  |
| 8.417 | 0.00 | 0.02 | 0.001 | 0 | \| | | \| |
| 0.03 0.0.0 |  |  |  |  |  |  |
| 8.500 | 0.00 | 0.01 | 0.000 | 0 | \| | \| |
| 0.03 |  |  |  |  |  |  |
| 8.583 | 0.00 | 0.01 | 0.000 | 0 | 1 | \| |
| 0.02 |  |  |  |  |  |  |
| 8.667 | 0.00 | 0.01 | 0.000 | 0 | I | \| |



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```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)
```





| 3.90 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6.250 | 0.00 | 0.50 | 0.170 | I 0 | \| | \| |
| 3.86 |  |  |  |  |  |  |
| 6.333 | 0.00 | 0.50 | 0.167 | I 0 | \| | \| |
| 3.82 |  |  |  |  |  |  |
| 6.417 | 0.00 | 0.50 | 0.163 | I 0 | \| | \| |
| 3.78 |  |  |  |  |  |  |
| 6.500 | 0.00 | 0.50 | 0.160 | I 0 | $1 \quad 1$ | \| |
| 3.74 |  |  |  |  |  |  |
| 6.583 | 0.00 | 0.50 | 0.157 | I 0 | 1 \| | 1 |
| 3.70 |  |  |  |  |  |  |
| 6.667 | 0.00 | 0.50 | 0.153 | I 0 | 1 \| | \| |
| 3.66 |  |  |  |  |  |  |
| 6.750 | 0.00 | 0.50 | 0.150 | I 0 | 1 \| | \| |
| 3.62 |  |  |  |  |  |  |
| 6.833 | 0.00 | 0.50 | 0.146 | I 0 | 1 \| | \| |
| 3.58 |  |  |  |  |  |  |
| 6.917 | 0.00 | 0.50 | 0.143 | I 0 | 1 \| | 1 |
| 3.54 |  |  |  |  |  |  |
| 7.000 | 0.00 | 0.50 | 0.139 | I 0 | $1 \quad 1$ | \| |
| 3.50 |  |  |  |  |  |  |
| 7.083 | 0.00 | 0.50 | 0.136 | I 0 | 1 \| | \| |
| 3.46 |  |  |  |  |  |  |
| 7.167 | 0.00 | 0.50 | 0.132 | I 0 | \| | \| |
| 3.42 |  |  |  |  |  |  |
| 7.250 | 0.00 | 0.50 | 0.129 | I 0 | 1 \| | \| |
| 3.38 |  |  |  |  |  |  |
| 7.333 | 0.00 | 0.50 | 0.126 | I 0 | \| | 1 |
| 3.34 |  |  |  |  |  |  |
| 7.417 | 0.00 | 0.50 | 0.122 | I 0 | \| | \| |
| 3.30 |  |  |  |  |  |  |
| 7.500 | 0.00 | 0.50 | 0.119 | I 0 | 1 \| | 1 |
| 3.26 |  |  |  |  |  |  |
| 7.583 | 0.00 | 0.50 | 0.115 | I 0 | 1 \| | \| |
| 3.22 |  |  |  |  |  |  |
| 7.667 | 0.00 | 0.50 | 0.112 | I 0 | 1 \| | \| |
| 3.17 0. 0.0 .50 |  |  |  |  |  |  |
| 7.750 | 0.00 | 0.50 | 0.108 | I 0 | \| | 1 |
| 3.13 |  |  |  |  |  |  |
| 7.833 | 0.00 | 0.50 | 0.105 | I 0 | \| | 1 |
| 3.09 |  |  |  |  |  |  |
| 7.917 | 0.00 | 0.50 | 0.102 | I 0 | \| | \| |
| 3.05 |  |  |  |  |  |  |
| 8.000 | 0.00 | 0.50 | 0.098 | I 0 | \| | \| |
| 3.01 |  |  |  |  |  |  |
| 8.083 | 0.00 | 0.50 | 0.095 | I 0 | \| | \| |
| 2.96 |  |  |  |  |  |  |
| 8.167 | 0.00 | 0.50 | 0.091 | I 0 | 1 \| | \| |
| 2.91 |  |  |  |  |  |  |
| 8.250 | 0.00 | 0.50 | 0.088 | I 0 | 1 \| | \| |
| 2.86 |  |  |  |  |  |  |
| 8.333 | 0.00 | 0.50 | 0.084 | I 0 | \| | | \| |
| 2.80 |  |  |  |  |  |  |
| 8.417 | 0.00 | 0.50 | 0.081 | I 0 | 1 \| | \| |
| 2.75 |  |  |  |  |  |  |
| 8.500 | 0.00 | 0.50 | 0.077 | I 0 | 1 \| | \| |
| 2.70 |  |  |  |  |  |  |
| 8.583 | 0.00 | 0.50 | 0.074 | I 0 | 1 \| | \| |
| 2.65 |  |  |  |  |  |  |
| 8.667 | 0.00 | 0.50 | 0.071 | I 0 | 1 \| | \| |


| 2.59 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8.750 | 0.00 | 0.50 | 0.067 | I 0 | 1 \| | \| |
| 2.54 |  |  |  |  |  |  |
| 8.833 | 0.00 | 0.50 | 0.064 | I 0 | 1 \| | \| |
| 2.49 |  |  |  |  |  |  |
| 8.917 | 0.00 | 0.50 | 0.060 | I 0 | 1 \| | \| |
| 2.43 |  |  |  |  |  |  |
| 9.000 | 0.00 | 0.50 | 0.057 | I 0 | 1 \| | \| |
| 2.38 |  |  |  |  |  |  |
| 9.083 | 0.00 | 0.50 | 0.053 | I 0 | - | \| |
| 2.33 |  |  |  |  |  |  |
| 9.167 | 0.00 | 0.50 | 0.050 | I 0 | 1 \| | \| |
| 2.27 |  |  |  |  |  |  |
| 9.250 | 0.00 | 0.50 | 0.046 | I 0 | - | \| |
| 2.22 |  |  |  |  |  |  |
| 9.333 | 0.00 | 0.50 | 0.043 | I 0 | 1 | \| |
| 2.17 |  |  |  |  |  |  |
| 9.417 | 0.00 | 0.50 | 0.040 | I 0 | 1 | \| |
| 2.12 |  |  |  |  |  |  |
| 9.500 | 0.00 | 0.50 | 0.036 | I 0 | 1 | \| |
| 2.06 |  |  |  |  |  |  |
| 9.583 | 0.00 | 0.50 | 0.033 | I 0 | \| | | \| |
| 2.01 |  |  |  |  |  |  |
| 9.667 | 0.00 | 0.50 | 0.029 | I 0 | 1 \| | \| |
| 1.82 |  |  |  |  |  |  |
| 9.750 | 0.00 | 0.50 | 0.026 | I 0 | 1 \| | \| |
| 1.61 0.0.0.026 I |  |  |  |  |  |  |
| 9.833 | 0.00 | 0.50 | 0.022 | I 0 | 1 \| | \| |
| 1.39 |  |  |  |  |  |  |
| 9.917 | 0.00 | 0.50 | 0.019 | I 0 | $1 \quad 1$ | \| |
| 1.18 |  |  |  |  |  |  |
| 10.000 | 0.00 | 0.48 | 0.015 | I 0 | 1 | \| |
| 0.97 |  |  |  |  |  |  |
| 10.083 | 0.00 | 0.39 | 0.012 | I 0 | 1 \| | \| |
| 0.78 |  |  |  |  |  |  |
| 10.167 | 0.00 | 0.31 | 0.010 | IO | 1 \| | \| |
| 0.63 |  |  |  |  |  |  |
| 10.250 | 0.00 | 0.25 | 0.008 | IO | 1 \| | \| |
| 0.51 |  |  |  |  |  |  |
| 10.333 | 0.00 | 0.20 | 0.007 | IO | 1 \| | \| |
| 0.41 0.30 |  |  |  |  |  |  |
| 10.417 | 0.00 | 0.16 | 0.005 | 0 | \| | \| |
| 0.33 (0.0. |  |  |  |  |  |  |
| 10.500 | 0.00 | 0.13 | 0.004 | 0 | 1 \| | \| |
| 0.26 0.0.00 |  |  |  |  |  |  |
| 10.583 | 0.00 | 0.11 | 0.003 | 0 | 1 \| | \| |
| 0.21 |  |  |  |  |  |  |
| 10.667 | 0.00 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.17 |  |  |  |  |  |  |
| 10.750 | 0.00 | 0.07 | 0.002 | 0 | 1 \| | \| |
|  |  |  |  |  |  |  |
| 10.833 | 0.00 | 0.06 | 0.002 | 0 | \| | \| |
| 0.11 0. 0.0 .0 |  |  |  |  |  |  |
| 10.917 | 0.00 | 0.04 | 0.001 | 0 | \| | \| |
| 0.09 0.0.0. |  |  |  |  |  |  |
| 11.000 | 0.00 | 0.04 | 0.001 | 0 | 1 \| | \| |
| 0.07 |  |  |  |  |  |  |
| 11.083 | 0.00 | 0.03 | 0.001 | 0 | 1 \| | \| |
| 0.06 |  |  |  |  |  |  |
| 11.167 | 0.00 | 0.02 | 0.001 | 0 | 1 \| | \| |



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```
---
        Gateway Height
        Basin Routing
        Area A
        100yr 24hr
Program License Serial Number 6232
-----------------------------------------------
            From study/file name: moval33post24100.rte
******************************HYDROGRAPH
            Number of intervals = 290
            Time interval = 5.0 (Min.)
            Maximum/Peak flow rate = 2.267 (CFS)
            Total volume = 1.168 (Ac.Ft)
        Status of hydrographs being held in storage
                        Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
            Peak (CFS)
                                0.000
                            0.000 0.000
                            0.000 0.000
0.000
        Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000
                            0.000
0.000
    ********************************************************************
*****
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 202.000 to Point/Station
203.000
    **** RETARDING BASIN ROUTING ****
```

User entry of depth-outflow-storage data

-     - Total number of inflow hydrograph intervals $=290$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)
```



| 0.29 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1.250 | 0.14 | 0.14 | 0.005 | \| IO | \| | \| |
| 0.29 |  |  |  |  |  |  |
| 1.333 | 0.14 | 0.14 | 0.005 | \| IO | I | \| |
| 0.29 |  |  |  |  |  |  |
| 1.417 | 0.14 | 0.14 | 0.005 | \| IO | \| | \| |
| 0.29 |  |  |  |  |  |  |
| 1.500 | 0.14 | 0.14 | 0.005 | \| 10 | \| | \| |
| 0.28 - 0.10 |  |  |  |  |  |  |
| 1.583 | 0.14 | 0.14 | 0.005 | 10 | \| | \| |
| 0.28 |  |  |  |  |  |  |
| 1.667 | 0.14 | 0.14 | 0.005 | 10 | \| | \| |
| 0.28 |  |  |  |  |  |  |
| 1.750 | 0.14 | 0.14 | 0.005 | 10 | \| | \| |
| 0.28 |  |  |  |  |  |  |
| 1.833 | 0.16 | 0.14 | 0.005 | 0 | \| | \| |
| 0.29 |  |  |  |  |  |  |
| 1.917 | 0.18 | 0.15 | 0.005 | 0 | \| | \| |
| 0.30 |  |  |  |  |  |  |
| 2.000 | 0.19 | 0.16 | 0.005 | 0 | \| | \| |
| 0.31 |  |  |  |  |  |  |
| 2.083 | 0.19 | 0.16 | 0.005 | 0 | \| | \| |
| 0.32 |  |  |  |  |  |  |
| 2.167 | 0.19 | 0.17 | 0.005 | 0 | \| | \| |
| 0.33 |  |  |  |  |  |  |
| 2.250 | 0.19 | 0.17 | 0.005 | 0 | \| | \| |
| 0.34 |  |  |  |  |  |  |
| 2.333 | 0.19 | 0.17 | 0.006 | 0 | \| | \| |
| 0.35 |  |  |  |  |  |  |
| 2.417 | 0.19 | 0.18 | 0.006 | 0 | \| | \| |
| 0.35 |  |  |  |  |  |  |
| 2.500 | 0.19 | 0.18 | 0.006 | 0 | \| | \| |
| 0.36 |  |  |  |  |  |  |
| 2.583 | 0.21 | 0.18 | 0.006 | 0 | \| | \| |
| 0.36 |  |  |  |  |  |  |
| 2.667 | 0.23 | 0.19 | 0.006 | OI | \| | \| |
| 0.38 O. 0.10 |  |  |  |  |  |  |
| 2.750 | 0.23 | 0.20 | 0.006 | OI | \| | \| |
| 0.39 |  |  |  |  |  |  |
| 2.833 | 0.23 | 0.20 | 0.007 | OI | \| | \| |
| 0.41 0.23 0.20 |  |  |  |  |  |  |
| 2.917 | 0.23 | 0.21 | 0.007 | OI | \| | \| |
| 0.42 |  |  |  |  |  |  |
| 3.000 | 0.23 | 0.21 | 0.007 | 0 | \| | \| |
| 0.43 |  |  |  |  |  |  |
| 3.083 | 0.23 | 0.22 | 0.007 | 10 | \| | \| |
| 0.43 |  |  |  |  |  |  |
| 3.167 | 0.23 | 0.22 | 0.007 | 0 | \| | 1 |
| 0.44 0.23 0 |  |  |  |  |  |  |
| 3.250 | 0.23 | 0.22 | 0.007 | 10 | \| | \| |
| 0.45 0. 0 |  |  |  |  |  |  |
| 3.333 | 0.23 | 0.22 | 0.007 | 10 | \| | \| |
| 0.45 |  |  |  |  |  |  |
| 3.417 | 0.23 | 0.23 | 0.007 | 0 | \| | \| |
| 0.45 |  |  |  |  |  |  |
| 3.500 | 0.23 | 0.23 | 0.007 | 0 | \| | \| |
| 0.45 |  |  |  |  |  |  |
| 3.583 | 0.23 | 0.23 | 0.007 | 10 | \| | \| |
| 0.46 |  |  |  |  |  |  |
| 3.667 | 0.23 | 0.23 | 0.007 | 10 | 1 \| | \| |


| 0.46 |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3.750 | 0.23 | 0.23 | 0.007 | 1 | 0 | \| | \| | \| |
| 0.46 |  |  |  |  |  |  |  |  |
| 3.833 | 0.26 | 0.23 | 0.007 | \| | 0 | \| | \| | \| |
| 0.46 |  |  |  |  |  |  |  |  |
| 3.917 | 0.28 | 0.24 | 0.008 | \| | 0 | \| | \| | \| |
| 0.48 |  |  |  |  |  |  |  | \| |
| 0.49 0.28 0.25 |  |  |  |  |  |  |  |  |
| 4.083 | 0.28 | 0.25 | 0.008 | 1 | 0 |  | \| | \| |
| 0.51 |  |  |  |  |  |  |  |  |
| 4.167 | 0.28 | 0.26 | 0.008 | \| | 0 | \| | \| | 1 |
| 0.52 |  |  |  |  |  |  |  |  |
| 0.52 0.28 0.26 0.008 |  |  |  |  |  |  |  | \| |
| - 4.333 | 0.30 | 0.27 | 0.009 | \| | OI | \| | \| | \| |
| 0.54 |  |  |  |  |  |  |  |  |
| 4.417 | 0.32 | 0.28 | 0.009 | I | OI |  | \| | \| |
| 0.55 |  |  |  |  |  |  |  |  |
| 4.500 | 0.32 | 0.29 | 0.009 | \| | 0 | \| | \| | \| |
| 0.57 | 0. 32 | 0. 29 | - 009 | , | 0 |  | , |  |
| 0.59 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| $\begin{array}{llll}0.60 & 0.32 & 0.30 & 0.010\end{array}$ |  |  |  |  |  |  |  |  |
| 4.750 | 0.32 | 0.30 | 0.010 | \| | 0 |  | \| | \| |
| 0.61 |  |  |  |  |  |  |  |  |
| 4.833 | 0.35 | 0.31 | 0.010 | \| | 0 | \| | \| | \| |
| 0.62 0.35 0.31 |  |  |  |  |  |  |  |  |
| 4.917 | 0.37 | 0.32 | 0.010 | \| | OI | \| | \| | \| |
| 0.64 |  |  |  |  |  |  |  |  |
| 5.000 | 0.37 | 0.33 | 0.011 | \| | OI | \| | \| | \| |
| 0.66 |  |  |  |  |  |  |  |  |
| 0.67 0.6 0.30 |  |  |  |  |  |  |  |  |
| 5.167 | 0.28 | 0.33 | 0.010 | \| | IO | I | \| | \| |
| 0.65 |  |  |  |  |  |  |  |  |
| 5.250 | 0.28 | 0.32 | 0.010 | \| | IO | I | \| | \| |
| 0.64 |  |  |  |  |  |  |  |  |
| 0.63 0.3 0.31 |  |  |  |  |  |  |  |  |
| 5.417 | 0.32 | 0.31 | 0.010 | \| | 0 |  | \| | \| |
| 0.63 0.32 0.31 |  |  |  |  |  |  |  |  |
| 5.500 | 0.32 | 0.32 | 0.010 | \| | 0 |  | \| |  |
| 0.63 0.32 0.32 |  |  |  |  |  |  |  |  |
| 5.583 | 0.35 | 0.32 | 0.010 | \| | 0 |  | \| | I |
| 0.64 |  |  |  |  |  |  |  |  |
| 5.667 | 0.37 | 0.33 | 0.010 | \| | OI | \| | \| | \| |
| 0.65 |  |  |  |  |  |  |  |  |
| 0.67 |  |  |  |  |  |  |  |  |
| 5.833 | 0.37 | 0.34 | 0.011 | \| | OI |  | \| | \| |
| 0.69 0. 0.31 |  |  |  |  |  |  |  |  |
| 5.917 | 0.37 | 0.35 | 0.011 | \| | OI | \| | \| | \| |
| 0.70 0.0.01 |  |  |  |  |  |  |  |  |
| 6.000 | 0.37 | 0.35 | 0.011 | \| | OI |  | \| | \| |
| 0.71 |  |  |  |  |  |  |  |  |
| ${ }^{6.72}$ | 0.40 | 0.36 | 0.011 | 1 | 0 |  | \| | \| |
| 6.167 | 0.42 | 0.37 | 0.012 | \\| | 0 | \| | \| | \| |



| 1.95 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8.750 | 0.83 | 0.50 | 0.033 | 01 | I | \| |
| 2.02 |  |  |  |  |  |  |
| 8.833 | 0.87 | 0.50 | 0.036 | 01 | I \| | 1 |
| 2.06 |  |  |  |  |  |  |
| 8.917 | 0.90 | 0.50 | 0.039 | 01 | I \| | 1 |
| 2.10 |  |  |  |  |  |  |
| 9.000 | 0.91 | 0.50 | 0.041 | 0\| | I \| | \| |
| 2.14 |  |  |  |  |  |  |
| 9.083 | 0.99 | 0.50 | 0.044 | 0\| | I \| | \| |
| 2.19 0.50 0.50 0.048 |  |  |  |  |  |  |
| 9.167 | 1.06 | 0.50 | 0.048 | 0\| | I \| | \| |
| 2.25 |  |  |  |  |  |  |
| 9.250 | 1.06 | 0.50 | 0.052 | 01 | I \| | \| |
| 2.31 ( |  |  |  |  |  |  |
| 9.333 | 1.11 | 0.50 | 0.056 | 0\| | I \\| | \| |
| 2.37 |  |  |  |  |  |  |
| 9.417 | 1.14 | 0.50 | 0.060 | 0\| | I | \| |
| 2.43 ( |  |  |  |  |  |  |
| 9.500 | 1.14 | 0.50 | 0.065 | 01 | I | \| |
| 2.50 - 0.50 .14 |  |  |  |  |  |  |
| 9.583 | 1.19 | 0.50 | 0.069 | 0\| | I | \| |
| 2.57 |  |  |  |  |  |  |
| 9.667 | 1.22 | 0.50 | 0.074 | 0\| | \| I | \| |
| 2.65 |  |  |  |  |  |  |
| 9.750 | 1.22 | 0.50 | 0.079 | 0\| | \| I | \| |
| 2.72 |  |  |  |  |  |  |
| 9.833 | 1.27 | 0.50 | 0.084 | 01 | \| I | \| |
| 2.80 |  |  |  |  |  |  |
| 9.917 | 1.30 | 0.50 | 0.090 | 0\| | \| I | \| |
| 2.89 1.30 0.50 |  |  |  |  |  |  |
| 10.000 | 1.30 | 0.50 | 0.095 | 0\| | \| I | \| |
| 2.97 |  |  |  |  |  |  |
| 10.083 | 1.02 | 0.50 | 0.100 | 01 | I | \| |
| 3.03 (0.50, |  |  |  |  |  |  |
| 10.167 | 0.80 | 0.50 | 0.102 | 0\| | I | \| |
| 3.06 0.78 0. 0.100 - |  |  |  |  |  |  |
| 10.250 | 0.78 | 0.50 | 0.104 | 0\| | I | \| |
| 3.09 0. 0.10 .10 |  |  |  |  |  |  |
| 10.333 | 0.79 | 0.50 | 0.106 | 0\| | I | \| |
| 3.110 .70 .10 - 0.70 - |  |  |  |  |  |  |
| 10.417 | 0.79 | 0.50 | 0.108 | 0\| | I | \| |
| 3.13 |  |  |  |  |  |  |
| 10.500 | 0.79 | 0.50 | 0.110 | 0\| | I | \| |
| 3.16 0.583 0.50 |  |  |  |  |  |  |
| 10.583 | 1.00 | 0.50 | 0.113 | 0\| | I | \| |
| 3.19 |  |  |  |  |  |  |
| 10.667 | 1.16 | 0.50 | 0.117 | 01 | I | \| |
|  |  |  |  |  |  |  |
| 10.750 | 1.17 | 0.50 | 0.122 | 01 | I | \| |
| 3.29 - 0.120 |  |  |  |  |  |  |
| 10.833 | 1.17 | 0.50 | 0.126 | 0\| | I | \| |
| 3.34 I 1.17 I |  |  |  |  |  |  |
| 10.917 | 1.17 | 0.50 | 0.131 | 0\| | I | \| |
| 3.40 - 0.50 .10 |  |  |  |  |  |  |
| 11.000 | 1.17 | 0.50 | 0.135 | 0\| | I | \| |
| 3.45 - 0.50 .1 |  |  |  |  |  |  |
| 11.083 | 1.13 | 0.50 | 0.140 | 0\| | I | \| |
| 3.51 |  |  |  |  |  |  |
| 11.167 | 1.10 | 0.50 | 0.144 | 0\| | I | \| |


| 3.56 |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11.250 | 1.10 | 0.50 | 0.148 | 1 | 01 | I |  |  |  | I |
| 3.60 |  |  |  |  |  |  |  |  |  |  |
| 11.333 | 1.10 | 0.50 | 0.153 | । | 0\| | I |  |  |  |  |
| 3.65 |  |  |  |  |  |  |  |  |  |  |
| 11.417 | 1.11 | 0.50 | 0.157 | \| | 01 | I |  |  |  |  |
| $\begin{aligned} & 3.70 \\ & 11.500 \end{aligned}$ | 1.11 | 0.50 | 0.161 | \| | 0\| | I |  |  |  |  |
| 3.75 |  |  |  |  |  |  |  |  |  |  |
| 11.583 | 1.03 | 0.50 | 0.165 | \| | 01 | I |  |  |  |  |
| 3.80 11.667 |  |  |  |  |  |  |  |  |  |  |
| 11.667 | 0.97 | 0.50 | 0.168 | 1 | 이 |  |  |  |  |  |
| 3.84 11.750 | 0.96 | 0.50 | 0.171 | \| | 01 |  |  |  |  |  |
| 3.88 |  |  |  |  |  |  |  |  |  |  |
| 11.833 | 1.01 | 0.50 | 0.175 | \| | 이 | I |  |  |  |  |
| 3.92 |  |  |  |  |  |  |  |  |  |  |
| 11.917 | 1.04 | 0.50 | 0.178 | 1 | 01 | I |  |  |  |  |
| 3.96 12.000 |  |  |  |  |  |  |  |  |  |  |
| 12.000 | 1.04 | 0.51 | 0.182 | \| | 이 | I |  |  |  |  |
| $\begin{gathered} 4.00 \\ 12.083 \end{gathered}$ | 1.33 | 1.08 | 0.185 | \| | , | 0 | I |  |  | \| |
| 4.02 |  |  |  |  |  |  |  |  |  |  |
| 12.167 | 1.55 | 1.39 | 0.186 | । | \| |  | 0 | I |  |  |
| 4.04 |  |  |  |  |  |  |  |  |  |  |
| 12.250 | 1.57 | 1.54 | 0.187 | 1 | \| |  |  | OI |  |  |
| 4.04 12.333 |  |  |  |  |  |  |  |  |  |  |
| 12.333 | 1.61 | 1.58 | 0.187 | \| | \| |  |  | 0 |  |  |
| 4.05 12.417 |  |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & 12.417 \\ & 4.05 \end{aligned}$ | 1.65 | 1.62 | 0.187 | \| | \| |  |  | OI |  |  |
| 12.500 | 1.65 | 1.64 | 0.187 | 1 | \| |  |  |  |  |  |
| $\begin{aligned} & 4.05 \\ & 12.583 \end{aligned}$ | 1.73 | 1.68 | 0. 188 | । | , |  |  |  |  |  |
| 4.05 |  |  |  | 1 | 1 |  |  |  |  |  |
| 12.667 | 1.80 | 1.75 | 0.188 | \| | \| |  |  |  |  |  |
| 4.05 12.750 |  |  |  |  |  |  |  |  |  |  |
| $4.06$ | 1.80 | 1.79 | 0.188 | I | \| |  |  |  |  |  |
| 12.833 | 1.85 | 1.82 | 0.188 | \| | \| |  |  |  | II |  |
| 4.06 |  |  |  |  |  |  |  |  |  |  |
| 12.917 | 1.88 | 1.86 | 0.188 | \| | \| |  |  |  | 0 |  |
| 4.06 |  |  |  |  |  |  |  |  |  |  |
| 13.000 | 1.88 | 1.88 | 0.188 | \| | \| |  |  |  | 0 |  |
| 4.06 13.083 | 2.09 |  |  |  |  |  |  |  |  |  |
| 4.06 | 2.09 |  | 0.189 | 1 | 1 |  |  |  | 0 |  |
| 13.167 | 2.25 | 2.14 | 0.190 | \| | \| |  |  |  |  |  |
| 4.07 |  |  |  |  |  |  |  |  |  |  |
| 13.250 | 2.26 | 2.24 | 0.190 | \| | 1 |  |  |  |  |  |
| 4.07 |  |  |  |  |  |  |  |  |  |  |
| 13.333 | 2.26 | 2.26 | 0.190 | I | \| |  |  |  |  |  |
| 4.07 13.417 |  |  |  |  |  |  |  |  |  |  |
| 13.417 4.08 | 2.27 | 2.26 | 0.190 | 1 | \| |  |  |  |  |  |
| 4.08 13.500 | 2.27 | 2.27 | 0.190 | । | । |  |  |  |  |  |
| 4.08 |  |  |  |  |  |  |  |  |  |  |
| 13.583 | 1.82 | 2.08 | 0.189 | \| | \| |  |  |  |  |  |
| 4.07 |  |  |  |  |  |  |  |  |  |  |
| 13.667 | 1.47 | 1.71 | 0.188 | \| | \| |  | I | I |  |  |





| 2.14 |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 21.250 | 0.14 | 0.50 | 0.039 | \| I | 0\| |  | \| |
| 2.11 |  |  |  |  |  |  |  |
| 21.333 | 0.11 | 0.50 | 0.036 | \| I | 0\| |  | \| |
| 2.07 |  |  |  |  |  |  |  |
| 21.417 | 0.09 | 0.50 | 0.034 | \| I | 0\| |  | \| |
| 2.02 |  |  |  |  |  |  |  |
| 21.500 | 0.09 | 0.50 | 0.031 | \| I | 0\| |  | \| |
| 1.92 |  |  |  |  |  |  |  |
| 21.583 | 0.12 | 0.50 | 0.028 | \| I | 0\| |  | \| |
| 1.75 |  |  |  |  |  |  |  |
| 21.667 | 0.14 | 0.50 | 0.025 | \| I | $0 \mid$ |  | \| |
| 1.59 (0.50 |  |  |  |  |  |  |  |
| 21.750 | 0.14 | 0.50 | 0.023 | \| I | 0\| |  | 1 |
| 1.44 (0.50 |  |  |  |  |  |  |  |
| 21.833 | 0.11 | 0.50 | 0.020 | \| I | 0\| |  | \| |
| 1.28 (0.50. |  |  |  |  |  |  |  |
| 21.917 | 0.09 | 0.50 | 0.018 | \| I | 0\| |  | 1 |
| 1.11 |  |  |  |  |  |  |  |
| 22.000 | 0.09 | 0.47 | 0.015 | \| I | 0 \| |  | \| |
| 0.94 |  |  |  |  |  |  |  |
| 22.083 | 0.12 | 0.40 | 0.013 | \| I | 0 |  | \| |
|  |  |  |  |  |  |  |  |
| 22.167 | 0.14 | 0.35 | 0.011 | \| I | 0 |  | \| |
| 0.69 0. 0.14 |  |  |  |  |  |  |  |
| 22.250 | 0.14 | 0.31 | 0.010 | \| I | 0 \| |  | \| |
| 0.61 |  |  |  |  |  |  |  |
| 22.333 | 0.11 | 0.27 | 0.009 | \|I | 0 |  | \| |
| 0.54 0. 0.11 |  |  |  |  |  |  |  |
| 22.417 | 0.09 | 0.24 | 0.008 | \|I | 0 |  | \| |
| 0.48 |  |  |  |  |  |  |  |
| 22.500 | 0.09 | 0.21 | 0.007 | \| IO | \| |  | 1 |
| 0.42 |  |  |  |  |  |  |  |
| 22.583 | 0.09 | 0.19 | 0.006 | \| IO | 1 |  | \| |
| 0.37 |  |  |  |  |  |  |  |
| 22.667 | 0.09 | 0.17 | 0.005 | \| IO | \| |  | \| |
| 0.34 |  |  |  |  |  |  |  |
| 22.750 | 0.09 | 0.15 | 0.005 | IO | \| |  | \| |
| 0.31 |  |  |  |  |  |  |  |
| 22.833 | 0.09 | 0.14 | 0.005 | IO | \| |  | \| |
| 0.28 - 0 |  |  |  |  |  |  |  |
| 22.917 | 0.09 | 0.13 | 0.004 | 10 | \| |  | \| |
| 0.27 0.09 |  |  |  |  |  |  |  |
| 23.000 | 0.09 | 0.12 | 0.004 | 10 | \| |  | \| |
| 0.25 0.0.12 |  |  |  |  |  |  |  |
| 23.083 | 0.09 | 0.12 | 0.004 | 10 | \| |  | \| |
| 0.24 |  |  |  |  |  |  |  |
| 23.167 | 0.09 | 0.11 | 0.004 | 10 | \| |  | \| |
| 0.23 |  |  |  |  |  |  |  |
| 23.250 | 0.09 | 0.11 | 0.004 | 10 | \| |  | \| |
| 0.22 loll |  |  |  |  |  |  |  |
| 23.333 | 0.09 | 0.11 | 0.003 | 10 | \| |  | \| |
| 0.21 - 0.11 |  |  |  |  |  |  |  |
| 23.417 | 0.09 | 0.10 | 0.003 | 10 | \| |  | \| |
| 0.21 - 0. |  |  |  |  |  |  |  |
| 23.500 | 0.09 | 0.10 | 0.003 | 10 | \| |  | \| |
| 0.20 - 0.10 l |  |  |  |  |  |  |  |
| 23.583 | 0.09 | 0.10 | 0.003 | 10 | \| |  | \| |
| 0.20 |  |  |  |  |  |  |  |
| 23.667 | 0.09 | 0.10 | 0.003 | 10 | \| |  | 1 |


| 0.20 |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 23.750 | 0.09 | 0.10 | 0.003 | 10 | \| | \| | \| |
| 0.19 |  |  |  |  |  |  |  |
| 23.833 | 0.09 | 0.10 | 0.003 | 10 | 1 | \| | \| |
| 0.19 |  |  |  |  |  |  |  |
| 23.917 | 0.09 | 0.10 | 0.003 | 10 | \| | \| | \| |
| 0.19 0.0.00 |  |  |  |  |  |  |  |
| 24.000 | 0.09 | 0.10 | 0.003 | 10 | 1 | 1 | 1 |
| 0.19 |  |  |  |  |  |  |  |
| 24.083 | 0.04 | 0.09 | 0.003 | IO | \| | \| | \| |
| 0.18 |  |  |  |  |  |  |  |
| 24.167 | 0.00 | 0.08 | 0.002 | IO | \| | \| | \| |
| 0.15 |  |  |  |  |  |  |  |
| 24.250 | 0.00 | 0.06 | 0.002 | 0 | 1 | \| | \| |
| 0.12 |  |  |  |  |  |  |  |
| 24.333 | 0.00 | 0.05 | 0.002 | 0 | \| | \| | \| |
| 0.10 |  |  |  |  |  |  |  |
| 24.417 | 0.00 | 0.04 | 0.001 | 0 | 1 | \| | \| |
| 0.08 |  |  |  |  |  |  |  |
| 24.500 | 0.00 | 0.03 | 0.001 | 0 | \| | 1 | \| |
| 0.06 |  |  |  |  |  |  |  |
| 24.583 | 0.00 | 0.03 | 0.001 | 0 | \| | \| | \| |
| 0.05 |  |  |  |  |  |  |  |
| 24.667 | 0.00 | 0.02 | 0.001 | 0 | 1 | \| | \| |
| 0.04 |  |  |  |  |  |  |  |
| 24.750 | 0.00 | 0.02 | 0.001 | 0 | \| | \| | \| |
| 0.03 |  |  |  |  |  |  |  |
| 24.833 | 0.00 | 0.01 | 0.000 | 0 | 1 | \| | \| |
| 0.03 |  |  |  |  |  |  |  |
| 24.917 | 0.00 | 0.01 | 0.000 | 0 | 1 | \| | \| |
| 0.02 |  |  |  |  |  |  |  |
| 25.000 | 0.00 | 0.01 | 0.000 | 0 | \| | 1 | \| |
| 0.02 |  |  |  |  |  |  |  |
| 25.083 | 0.00 | 0.01 | 0.000 | 0 | \| | \| | \| |
| 0.01 - 0.0 .1 |  |  |  |  |  |  |  |
| 25.167 | 0.00 | 0.01 | 0.000 | 0 | \| | \| | \| |
| 0.01 |  |  |  |  |  |  |  |
| 25.250 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.01 |  |  |  |  |  |  |  |
| 25.333 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.01 |  |  |  |  |  |  |  |
| 25.417 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.01 |  |  |  |  |  |  |  |
| 25.500 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.00 0.0.00 |  |  |  |  |  |  |  |
| 25.583 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.00 |  |  |  |  |  |  |  |
| 25.667 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.00 |  |  |  |  |  |  |  |
| 25.750 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.00 |  |  |  |  |  |  |  |
| 25.833 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.00 - |  |  |  |  |  |  |  |
| 25.917 | 0.00 | 0.00 | 0.000 | 0 | \| | \| | \| |
| 0.00 l |  |  |  |  |  |  |  |
| ****************************HYDROGRAPH |  |  |  |  |  |  |  |
| DATA**************************** |  |  |  |  |  |  |  |
|  |  | Numbe | interval | ls | 11 |  |  |
|  |  | Time | val = | 5 | in.) |  |  |



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```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)
```



| 0.15 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1.250 | 0.16 | 0.11 | 0.010 | 101 | \| | \| |
| 0.16 |  |  |  |  |  |  |
| 1.333 | 0.16 | 0.11 | 0.010 | 10 | 1 \| | \| |
| 0.16 |  |  |  |  |  |  |
| 1.417 | 0.16 | 0.12 | 0.010 | 0 | I | \| |
| 0.17 |  |  |  |  |  |  |
| 1.500 | 0.16 | 0.12 | 0.010 | 0 | \| | \| |
| 0.17 |  |  |  |  |  |  |
| 1.583 | 0.16 | 0.12 | 0.011 | 0 | \| | \| |
| 0.18 |  |  |  |  |  |  |
| 1.667 | 0.16 | 0.13 | 0.011 | 0 | \| | \| |
| 0.18 |  |  |  |  |  |  |
| 1.750 | 0.16 | 0.13 | 0.011 | 0 | \| | \| |
| 0.18 |  |  |  |  |  |  |
| 1.833 | 0.18 | 0.13 | 0.011 | OI | \| | \| |
| 0.19 |  |  |  |  |  |  |
| 1.917 | 0.21 | 0.14 | 0.012 | OI | \| | \| |
| 0.20 |  |  |  |  |  |  |
| 2.000 | 0.21 | 0.14 | 0.012 | OI | \| | \| |
| 0.20 |  |  |  |  |  |  |
| 2.083 | 0.21 | 0.15 | 0.013 | OI | \| | \| |
| 0.21 |  |  |  |  |  |  |
| 2.167 | 0.21 | 0.15 | 0.013 | OI | \| | \| |
| 0.22 0.21 0.15 |  |  |  |  |  |  |
| 2.250 | 0.21 | 0.16 | 0.013 | OI | \| | \| |
| 0.22 |  |  |  |  |  |  |
| 2.333 | 0.21 | 0.16 | 0.014 | OI | \| | \| |
| 0.23 |  |  |  |  |  |  |
| 2.417 | 0.21 | 0.16 | 0.014 | OI | \| | \| |
| 0.24 |  |  |  |  |  |  |
| 2.500 | 0.21 | 0.17 | 0.014 | 0 | \| | \| |
| 0.24 |  |  |  |  |  |  |
| 2.583 | 0.23 | 0.17 | 0.015 | OI | \| | \| |
| 0.25 |  |  |  |  |  |  |
| 2.667 | 0.26 | 0.18 | 0.015 | OI | \| | \| |
| 0.25 O. 0. |  |  |  |  |  |  |
| 2.750 | 0.26 | 0.18 | 0.016 | OI | \| | \| |
| 0.26 |  |  |  |  |  |  |
| 2.833 | 0.26 | 0.19 | 0.016 | OI | \| | \| |
| 0.27 |  |  |  |  |  |  |
| 2.917 | 0.26 | 0.20 | 0.017 | OI | \| | \| |
| 0.28 |  |  |  |  |  |  |
| 3.000 | 0.26 | 0.20 | 0.017 | \| OI | \| | \| |
| 0.29 O. 0. |  |  |  |  |  |  |
| 3.083 | 0.26 | 0.21 | 0.018 | \| OI | \| | \| |
| 0.29 |  |  |  |  |  |  |
| 3.167 | 0.26 | 0.21 | 0.018 | \| OI | \| | \| |
| 0.30 O |  |  |  |  |  |  |
| 3.250 | 0.26 | 0.21 | 0.018 | OI | \| | \| |
| 0.31 0.21 0.018 |  |  |  |  |  |  |
| 3.333 | 0.26 | 0.22 | 0.019 | OI | \| | \| |
| 0.31 - 0.0 .010 \| | | |  |  |  |  |  |  |
| 3.417 | 0.26 | 0.22 | 0.019 | OI | \| | \| |
| 0.32 |  |  |  |  |  |  |
| 3.500 | 0.26 | 0.23 | 0.019 | 0 | \| | \| |
| 0.32 |  |  |  |  |  |  |
| 3.583 | 0.26 | 0.23 | 0.020 | 0 | \| | \| |
| 0.33 |  |  |  |  |  |  |
| 3.667 | 0.26 | 0.23 | 0.020 | \| 0 | 1 \| | \| |



| 0.54 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6.250 | 0.47 | 0.38 | 0.033 | 0 I | \| | \| |
| 0.55 |  |  |  |  |  |  |
| 6.333 | 0.47 | 0.39 | 0.033 | 0 I | 1 | 1 |
| 0.56 |  |  |  |  |  |  |
| 6.417 | 0.47 | 0.40 | 0.034 | OI | \| | 1 |
| 0.57 |  |  |  |  |  |  |
| 6.500 | 0.47 | 0.40 | 0.034 | OI | \| | \| |
| 0.57 |  |  |  |  |  |  |
| 6.583 | 0.50 | 0.41 | 0.035 | OI | \| | \| |
| 0.58 |  |  |  |  |  |  |
| 6.667 | 0.52 | 0.42 | 0.036 | O\|I |  | \| |
| 0.60 (0.4 |  |  |  |  |  |  |
| 6.750 | 0.53 | 0.42 | 0.036 | O\|I |  | \| |
| 0.61 (0.4 |  |  |  |  |  |  |
| 6.833 | 0.53 | 0.43 | 0.037 | O\|I |  | \| |
| 0.62 |  |  |  |  |  |  |
| 6.917 | 0.53 | 0.44 | 0.038 | O\|I | \| | 1 |
| 0.63 (0.50. |  |  |  |  |  |  |
| 7.000 | 0.53 | 0.45 | 0.038 | O\|I | \| | \| |
| 0.64 0.5 |  |  |  |  |  |  |
| 7.083 | 0.53 | 0.45 | 0.039 | OI |  | \| |
| 0.65 |  |  |  |  |  |  |
| 7.167 | 0.53 | 0.46 | 0.039 | OI |  | \| |
| 0.65 |  |  |  |  |  |  |
| 7.250 | 0.53 | 0.46 | 0.040 | OI |  | \| |
| 0.66 |  |  |  |  |  |  |
| 7.333 | 0.55 | 0.47 | 0.040 | OI |  | \| |
| 0.67 |  |  |  |  |  |  |
| 7.417 | 0.58 | 0.48 | 0.041 | 0 I | I | \| |
| 0.68 |  |  |  |  |  |  |
| 7.500 | 0.58 | 0.48 | 0.042 | 0 I | I | 1 |
| 0.69 |  |  |  |  |  |  |
| 7.583 | 0.60 | 0.49 | 0.042 | 0 I | I | \| |
| 0.70 |  |  |  |  |  |  |
| 7.667 | 0.63 | 0.50 | 0.043 | 0 | I | \| |
| 0.72 |  |  |  |  |  |  |
| 7.750 | 0.63 | 0.51 | 0.044 | 10 | I | \| |
| 0.73 0.05 0.52 0.045 |  |  |  |  |  |  |
| 7.833 | 0.65 | 0.52 | 0.045 | 10 | I | \| |
| 0.75 - 0.08 I0 |  |  |  |  |  |  |
| 7.917 | 0.68 | 0.53 | 0.046 | 10 |  | \| |
| 0.76 |  |  |  |  |  |  |
| 8.000 | 0.68 | 0.54 | 0.047 | 10 | I | \| |
| 0.78 |  |  |  |  |  |  |
| 8.083 | 0.73 | 0.56 | 0.048 | 10 | I | \| |
| 0.80 0. 0.780 |  |  |  |  |  |  |
| 8.167 | 0.78 | 0.57 | 0.049 | 0 | I | \| |
|  |  |  |  |  |  |  |
| 8.250 | 0.79 | 0.59 | 0.050 | 0 | 0 I \| | \| |
| 0.84 - 0.8 |  |  |  |  |  |  |
| 8.333 | 0.79 | 0.60 | 0.052 | \| 0 | 0 I \| | \| |
| 0.86 O 0.70 |  |  |  |  |  |  |
| 8.417 | 0.79 | 0.62 | 0.053 |  | 0 I \| | \| |
| 0.88 |  |  |  |  |  |  |
| 8.500 | 0.79 | 0.63 | 0.054 |  | 0 I \| | \| |
| 0.90 |  |  |  |  |  |  |
| 8.583 | 0.81 | 0.64 | 0.055 |  | 0 I \| | \| |
| 0.92 - 0.81 |  |  |  |  |  |  |
| 8.667 | 0.84 | 0.66 | 0.056 |  | 0 I \| | \| |







| 2.06 |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 21.250 | 0.16 | 0.70 | 0.128 | \| I | \| | 0 \| | \| |
| 2.04 |  |  |  |  |  |  |  |
| 21.333 | 0.13 | 0.70 | 0.124 | \| I | \| | 0 \| | \| |
| 2.02 |  |  |  |  |  |  |  |
| 21.417 | 0.11 | 0.70 | 0.120 | \| I | \| | 0 \| | \| |
| 2.00 |  |  |  |  |  |  |  |
| 21.500 | 0.11 | 0.70 | 0.116 | \| I | \| | 0 \| | \| |
| 1.94 |  |  |  |  |  |  |  |
| 21.583 | 0.13 | 0.70 | 0.112 | \| I | \| | 0 \| | \| |
| 1.87 0. 0.13 |  |  |  |  |  |  |  |
| 21.667 | 0.15 | 0.70 | 0.108 | \\| I | \| | 0 | \| |
| 1.80 |  |  |  |  |  |  |  |
| 21.750 | 0.16 | 0.70 | 0.105 | \| I | \| | 0 \| | \| |
| 1.74 |  |  |  |  |  |  |  |
| 21.833 | 0.13 | 0.70 | 0.101 | \\| I | \| | 0 | \| |
| 1.68 0.11 0.70 0.007 |  |  |  |  |  |  |  |
| 21.917 | 0.11 | 0.70 | 0.097 | \| I | 1 | 0 | \| |
| 1.61 |  |  |  |  |  |  |  |
| 22.000 | 0.11 | 0.70 | 0.093 | \| I | \| | 0 \| | \| |
| 1.54 |  |  |  |  |  |  |  |
| 22.083 | 0.13 | 0.70 | 0.089 | \| I | \| | 0 | \| |
| 1.48 |  |  |  |  |  |  |  |
| 22.167 | 0.15 | 0.70 | 0.085 | \| I | \| | 0 | \| |
| 1.41 0. 0.15 |  |  |  |  |  |  |  |
| 22.250 | 0.16 | 0.70 | 0.081 | \| I | \| | 0 | \| |
| 1.35 0.16 0.70 |  |  |  |  |  |  |  |
| 22.333 | 0.13 | 0.70 | 0.077 | \| I | \| | 0 | \| |
| 1.29 |  |  |  |  |  |  |  |
| 22.417 | 0.11 | 0.70 | 0.073 | \| I | \| | 0 | \| |
| 1.22 |  |  |  |  |  |  |  |
| 22.500 | 0.11 | 0.70 | 0.069 | \| I | 1 | 0 | \| |
| 1.15 |  |  |  |  |  |  |  |
| 22.583 | 0.11 | 0.70 | 0.065 | \| I | \| | 0 \| | \| |
| 1.08 |  |  |  |  |  |  |  |
| 22.667 | 0.11 | 0.70 | 0.061 | \| I | \| | 0 | \| |
| 1.02 O. 0.11 |  |  |  |  |  |  |  |
| 22.750 | 0.11 | 0.66 | 0.057 | \| I | 10 | 0 | \| |
| 0.95 0.11 |  |  |  |  |  |  |  |
| 22.833 | 0.11 | 0.62 | 0.053 | \| I | 10 | 0 \| | \| |
| 0.89 O 0.11 |  |  |  |  |  |  |  |
| 22.917 | 0.11 | 0.58 | 0.050 | \| I | 10 | \| | \| |
| 0.83 |  |  |  |  |  |  |  |
| 23.000 | 0.11 | 0.54 | 0.047 | \| I | 10 | \| | \| |
| 0.78 |  |  |  |  |  |  |  |
| 23.083 | 0.11 | 0.51 | 0.044 | \| I | 10 | 1 | \| |
| 0.73 |  |  |  |  |  |  |  |
| 23.167 | 0.11 | 0.48 | 0.041 | \| I | 0 | \| | \| |
| 0.69 |  |  |  |  |  |  |  |
| 23.250 | 0.11 | 0.45 | 0.039 | \| I | 0 | \| | \| |
| 0.64 0.11 0.41 |  |  |  |  |  |  |  |
| 23.333 | 0.11 | 0.42 | 0.036 | \| I | 01 | \| | \| |
| 0.61 0.11 0.0 .01 |  |  |  |  |  |  |  |
| 23.417 | 0.11 | 0.40 | 0.034 | \| I | 0\| | \| | \| |
| 0.57 0.11 0.41 |  |  |  |  |  |  |  |
| 23.500 | 0.11 | 0.38 | 0.032 | \| I | 0 \| | \| | \| |
| 0.54 0. 0.11 |  |  |  |  |  |  |  |
| 23.583 | 0.11 | 0.36 | 0.030 | \| I | 0 \| | \| | \| |
| 0.51 0. 0.11 |  |  |  |  |  |  |  |
| 23.667 | 0.11 | 0.34 | 0.029 | \| I | 0 \| | \| | \| |





FLOOD HYDROGRAPH ROUTING PROGRAM
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```
    Program License Serial Number 6232
        ********************** HYDROGRAPH INFORMATION
************************
        From study/file name: moval33post1100.rte
*****************************HYDROGRAPH
DATA****************************
        Number of intervals = 15
        Time interval = 5.0 (Min.)
        Maximum/Peak flow rate = 32.689 (CFS)
            Total volume = 1.008 (Ac.Ft)
        Status of hydrographs being held in storage
            Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
        Peak (CFS)
        0.000 0.000 0.000 0.000
        Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000 0.000
0.000
0.000
    ******************************************************************
*****
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 102.000 to Point/Station
103.000
    **** RETARDING BASIN ROUTING ****
```

User entry of depth-outflow-storage data
--
Total number of inflow hydrograph intervals $=15$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
```

Initial basin outflow $=0.00$ (CFS)




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```
    Program License Serial Number 6232
        ********************** HYDROGRAPH INFORMATION
***********************
        From study/file name: moval33post3100.rte
******************************HYDROGRAPH
DATA****************************
        Number of intervals = 39
        Time interval = 5.0 (Min.)
        Maximum/Peak flow rate = 18.168 (CFS)
            Total volume = 1.500 (Ac.Ft)
        Status of hydrographs being held in storage
            Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
        Peak (CFS)
                        0.000 0.000
                            0.000 0.000
                            0.000
0.000
        Vol (Ac.Ft)
            0.000
                            0.000
                            0.000
                            0.000
0.000
    ******************************************************************
*****
    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 102.000 to Point/Station
103.000
    **** RETARDING BASIN ROUTING ****
```

$+$
User entry of depth-outflow-storage data
--
Total number of inflow hydrograph intervals $=39$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
```

Initial basin outflow $=0.00$ (CFS)




| 416.250 | 0.00 | 0.01 | 0.219 | 0 |
| :---: | :---: | :---: | :---: | :---: |
| 2.50 |  |  |  |  |
| 416.333 | 0.00 | 0.01 | 0.219 | 0 |
| 2.50 |  |  |  |  |
| 416.417 | 0.00 | 0.01 | 0.219 | 0 |
| 2.50 |  |  |  |  |
| 416.500 | 0.00 | 0.01 | 0.219 | 0 |
| 2.49 |  |  |  |  |
| 416.583 | 0.00 | 0.01 | 0.219 | 0 |
| 2.49 |  |  |  |  |
| 416.667 | 0.00 | 0.01 | 0.219 | 0 |
| 2.49 |  |  |  |  |

Remaining water in basin $=0.22$ (Ac.Ft)
$* * * * * * * * * * * * * * * * * * * * * * * * * * * * H Y D R O G R A P H ~$
Number of intervals $=5001$ Time interval = 5.0 (Min.) Maximum/Peak flow rate $=15.879$ (CFS) Total volume = 1.281 (Ac.Ft)
Status of hydrographs being held in storage Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
0.000
Peak (CFS)
0.000
0.000
$0.000 \quad 0.000$
0.000
Vol (Ac.Ft)
0.000
0.000
0.000
0.000
*****
 $\qquad$

FLOOD HYDROGRAPH ROUTING PROGRAM
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```
P--
-- -------------------------------------------------------------------
    ********************* HYDROGRAPH INFORMATION
**********************
            From study/file name: moval33post6100.rte
*****************************HYDROGRAPH
DATA****************************
            Number of intervals = 75
            Time interval = 5.0 (Min.)
            Maximum/Peak flow rate = 16.161 (CFS)
            Total volume = 1.893 (Ac.Ft)
        Status of hydrographs being held in storage
                        Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
        Peak (CFS)
                                0.000
                            0.000
                            0.000 0.000
0.000
        Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000
                            0.000
0.000
    ******************************************************************
*****
    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 102.000 to Point/Station
103.000
    **** RETARDING BASIN ROUTING ****
```

$+$
User entry of depth-outflow-storage data
--
Total number of inflow hydrograph intervals $=75$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
```

Initial basin outflow $=0.00$ (CFS)




| 4.03 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6.250 | 0.00 | 0.35 | 0.564 | 0 | \| | \| |
| 4.01 |  |  |  |  |  |  |
| 6.333 | 0.00 | 0.18 | 0.562 | 0 | 1 \| | \| |
| 4.01 - 0.18 \| |  |  |  |  |  |  |
| 6.417 | 0.00 | 0.09 | 0.561 | 0 | 1 \| | \| |
| 4.00 |  |  |  |  |  |  |
| 6.500 | 0.00 | 0.05 | 0.560 | 0 | I | \| |
| 4.00 |  |  |  |  |  |  |
| 6.583 | 0.00 | 0.03 | 0.560 | 0 | - | \| |
| 4.00 |  |  |  |  |  |  |
| 6.667 | 0.00 | 0.01 | 0.560 | 0 | $1 \quad 1$ | \| |
| 4.00 |  |  |  |  |  |  |
| 6.750 | 0.00 | 0.01 | 0.560 | 0 | , | \| |
| 4.00 |  |  |  |  |  |  |
| 6.833 | 0.00 | 0.01 | 0.560 | 0 | 1 \| | \| |
| 4.00 |  |  |  |  |  |  |
| 6.917 | 0.00 | 0.01 | 0.560 | 0 | \| | \| |
| 4.00 |  |  |  |  |  |  |
| 7.000 | 0.00 | 0.01 | 0.560 | 0 | 1 \| | \| |
| 4.00 |  |  |  |  |  |  |
| 7.083 | 0.00 | 0.01 | 0.560 | 0 | \| | \| |
| 4.00 |  |  |  |  |  |  |
| 7.167 | 0.00 | 0.01 | 0.560 | 0 | - | \| |
| 4.00 |  |  |  |  |  |  |
| 7.250 | 0.00 | 0.01 | 0.560 | 0 | - | \| |
| 4.00 lloll |  |  |  |  |  |  |
| 7.333 | 0.00 | 0.01 | 0.559 | 0 | 1 \| | \| |
| 4.00 |  |  |  |  |  |  |
| 7.417 | 0.00 | 0.01 | 0.559 | 0 | $1 \quad 1$ | \| |
| 4.00 |  |  |  |  |  |  |
| 7.500 | 0.00 | 0.01 | 0.559 | 0 | \| | | \| |
| 4.00 |  |  |  |  |  |  |
| 7.583 | 0.00 | 0.01 | 0.559 | 0 | 1 \| | \| |
| 4.00 |  |  |  |  |  |  |
| 7.667 | 0.00 | 0.01 | 0.559 | 0 | , | \| |
| 4.00 |  |  |  |  |  |  |
| 7.750 | 0.00 | 0.01 | 0.559 | 0 | - | \| |
| 4.00 |  |  |  |  |  |  |
| 7.833 | 0.00 | 0.01 | 0.559 | 0 | \| | \| |
| 4.00 0.83 |  |  |  |  |  |  |
| 7.917 | 0.00 | 0.01 | 0.559 | 0 | \| | | \| |
| 4.00 0.0.01 0 |  |  |  |  |  |  |
| 8.000 | 0.00 | 0.01 | 0.559 | 0 | 1 \| | \| |
| 4.00 0.01 |  |  |  |  |  |  |
| 8.083 | 0.00 | 0.01 | 0.559 | 0 | \| | \| |
| 4.00 |  |  |  |  |  |  |
| 8.167 | 0.00 | 0.01 | 0.559 | 0 | \| | \| |
| 3.99 |  |  |  |  |  |  |
| 8.250 | 0.00 | 0.01 | 0.559 | 0 | \| | \| |
| 3.99 - 0.00 .10 |  |  |  |  |  |  |
| 8.333 | 0.00 | 0.01 | 0.559 | 0 | 1 \| | \| |
| 3.99 - 0.0 .010 |  |  |  |  |  |  |
| 8.417 | 0.00 | 0.01 | 0.559 | 0 | \| | \| |
| 3.99 0.0.01 |  |  |  |  |  |  |
| 8.500 | 0.00 | 0.01 | 0.559 | 0 | \| | \| |
| 3.99 |  |  |  |  |  |  |
| 8.583 | 0.00 | 0.01 | 0.558 | 0 | \| | \| |
| 3.99 |  |  |  |  |  |  |
| 8.667 | 0.00 | 0.01 | 0.558 | 0 | 1 \| | \| |

2.51

| 416.250 | 0.00 | 0.01 | 0.222 | 0 | \| | \| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2.51 |  |  |  |  |  |  |  |
| 416.333 | 0.00 | 0.01 | 0.221 | 0 | \| | \| | 1 |
| 2.51 |  |  |  |  |  |  |  |
| 416.417 | 0.00 | 0.01 | 0.221 | 0 | \| | \| | \| |
| 2.51 |  |  |  |  |  |  |  |
| 416.500 | 0.00 | 0.01 | 0.221 | 0 | \| | \| | \| |
| 2.51 |  |  |  |  |  |  |  |
| 416.583 | 0.00 | 0.01 | 0.221 | 0 | \| | \| | \| |
| 2.51 |  |  |  |  |  |  |  |
| 416.667 | 0.00 | 0.01 | 0.221 | 0 | \| | \| | \| |
| 2.51 |  |  |  |  |  |  |  |

Remaining water in basin $=0.22$ (Ac.Ft)


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```
---
    Gateway Heights
        Basin Routing
        100 year 24hr
        Basin C N Now Basin B
        Program License Serial Number 6232
        ********************** HYDROGRAPH INFORMATION
***********************
            From study/file name: moval33post24100.rte
*****************************HYDROGRAPH
DATA****************************
            Number of intervals = 291
            Time interval = 5.0 (Min.)
            Maximum/Peak flow rate = 6.176 (CFS)
            Total volume = 3.181 (Ac.Ft)
        Status of hydrographs being held in storage
                        Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
        Peak (CFS)
                        0.000 0.000
        0.000 0.000
0.000
        Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000
                            0.000
0.000
    ******************************************************************
*****
    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 102.000 to Point/Station
103.000
    **** RETARDING BASIN ROUTING ****
```

$-$
User entry of depth-outflow-storage data
--
Total number of inflow hydrograph intervals $=291$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
```

Initial basin outflow $=0.00$ (CFS)




| 2.99 |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6.250 | 1.14 | 0.01 | 0.327 | 0 | I \| |  | \| |
| 3.03 |  |  |  |  |  |  |  |
| 6.333 | 1.14 | 0.01 | 0.334 | 0 | I \| |  | \| |
| 3.06 |  |  |  |  |  |  |  |
| 6.417 | 1.14 | 0.01 | 0.342 | 0 | I \| |  | \| |
| 3.09 |  |  |  |  |  |  |  |
| 6.500 | 1.14 | 0.01 | 0.350 | 0 | I \| |  | \| |
| 3.12 |  |  |  |  |  |  |  |
| 6.583 | 1.19 | 0.01 | 0.358 | 0 | I \| |  | \| |
| 3.16 |  |  |  |  |  |  |  |
| 6.667 | 1.26 | 0.01 | 0.366 | 0 | I \| |  | \| |
| 3.19 |  |  |  |  |  |  |  |
| 6.750 | 1.26 | 0.01 | 0.375 | 0 | I \| |  | $\mid$ |
| 3.23 (0.01 |  |  |  |  |  |  |  |
| 6.833 | 1.26 | 0.01 | 0.384 | 0 | I \| |  | \| |
| 3.26 |  |  |  |  |  |  |  |
| 6.917 | 1.26 | 0.01 | 0.392 | 0 | I \| |  | \| |
| 3.30 ( 3. |  |  |  |  |  |  |  |
| 7.000 | 1.26 | 0.01 | 0.401 | 0 | I \| |  | \| |
| 3.34 l |  |  |  |  |  |  |  |
| 7.083 | 1.26 | 0.01 | 0.409 | 0 | I \| |  | \| |
| 3.37 |  |  |  |  |  |  |  |
| 7.167 | 1.26 | 0.01 | 0.418 | 0 | I \| |  | \| |
| 3.41 1.26 |  |  |  |  |  |  |  |
| 7.250 | 1.26 | 0.01 | 0.427 | 0 | I \| |  | \| |
| 3.44 |  |  |  |  |  |  |  |
| 7.333 | 1.32 | 0.01 | 0.436 | 0 | I \| |  | \| |
| 3.48 |  |  |  |  |  |  |  |
| 7.417 | 1.38 | 0.01 | 0.445 | 0 | I \| |  | \| |
| 3.52 |  |  |  |  |  |  |  |
| 7.500 | 1.39 | 0.01 | 0.454 | 0 | I \\| |  | \| |
| 3.56 |  |  |  |  |  |  |  |
| 7.583 | 1.45 | 0.01 | 0.464 | 0 | I |  | \| |
| 3.60 ( 3. |  |  |  |  |  |  |  |
| 7.667 | 1.51 | 0.01 | 0.474 | 0 | I |  | \| |
| 3.64 (1) |  |  |  |  |  |  |  |
| 7.750 | 1.52 | 0.01 | 0.484 | 0 | I \| |  | \| |
|  |  |  |  |  |  |  |  |
| 7.833 | 1.57 | 0.01 | 0.495 | 0 | I |  | \| |
| 3.73 0, 0.01 |  |  |  |  |  |  |  |
| 7.917 | 1.64 | 0.01 | 0.506 | 0 | I |  | \| |
| 3.78 |  |  |  |  |  |  |  |
| 8.000 | 1.64 | 0.01 | 0.517 | 0 | I |  | \| |
| 3.82 |  |  |  |  |  |  |  |
| 8.083 | 1.81 | 0.01 | 0.529 | 0 | \| I |  | \| |
| 3.87 |  |  |  |  |  |  |  |
| 8.167 | 2.00 | 0.01 | 0.542 | 0 | \| I |  | \| |
| 3.93 ( 3.1 |  |  |  |  |  |  |  |
| 8.250 | 2.02 | 0.01 | 0.556 | 0 | \| I |  | \| |
| 3.98 l |  |  |  |  |  |  |  |
| 8.333 | 2.03 | 0.69 | 0.567 | 10 | \| I |  | \| |
| 4.03 ( 0.0 .50 l |  |  |  |  |  |  |  |
| 8.417 | 2.03 | 1.34 | 0.574 | \| | 0 \| I |  | \| |
|  |  |  |  |  |  |  |  |
| 8.500 | 2.04 | 1.68 | 0.578 | \| | 0 I |  | \| |
| 4.07 |  |  |  |  |  |  |  |
| 8.583 | 2.14 | 1.87 | 0.580 | \| | 10 I |  | \| |
| 4.08 ( 4.8 |  |  |  |  |  |  |  |
| 8.667 | 2.24 | 2.03 | 0.582 | \| | \| OI |  | 1 |


| 4.08 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8.750 | 2.26 | 2.13 | 0.583 | \| | 0 \| | \| |
| 4.09 |  |  |  |  |  |  |
| 8.833 | 2.35 | 2.22 | 0.584 | \| | OI \| | \| |
| 4.09 |  |  |  |  |  |  |
| 8.917 | 2.46 | 2.31 | 0.585 | $\dagger$ | OI | \| |
| 4.10 |  |  |  |  |  |  |
| 9.000 | 2.47 | 2.38 | 0.586 | 1 | 0 | \| |
| 4.10 |  |  |  |  |  |  |
| 9.083 | 2.66 | 2.47 | 0.587 | 1 \| | OI | \| |
| 4.10 |  |  |  |  |  |  |
| 9.167 | 2.87 | 2.61 | 0.588 | $1 \quad 1$ | OI \| | \| |
| 4.11 |  |  |  |  |  |  |
| 9.250 | 2.89 | 2.74 | 0.590 | $\|\quad\|$ | 0 \| | \| |
| 4.11 - 0.50 |  |  |  |  |  |  |
| 9.333 | 2.99 | 2.84 | 0.591 | 1 \| | OI \| | \| |
| 4.12 \| 4 | |  |  |  |  |  |  |
| 9.417 | 3.10 | 2.94 | 0.592 | $1 \quad 1$ | OI | \| |
| 4.12 ( 4 ( |  |  |  |  |  |  |
| 9.500 | 3.11 | 3.02 | 0.593 | $1 \quad 1$ | OI | \| |
| 4.13 |  |  |  |  |  |  |
| 9.583 | 3.21 | 3.09 | 0.593 | 1 \| | 0 | \| |
| 4.13 |  |  |  |  |  |  |
| 9.667 | 3.32 | 3.17 | 0.594 | 1 \| | OI | \| |
| 4.13 |  |  |  |  |  |  |
| 9.750 | 3.33 | 3.25 | 0.595 | $1 \quad 1$ | OI | \| |
| 4.13 |  |  |  |  |  |  |
| 9.833 | 3.43 | 3.31 | 0.596 | 1 \| | 10 | \| |
| 4.14 loll |  |  |  |  |  |  |
| 9.917 | 3.53 | 3.39 | 0.597 | 1 \| | \|OI | \| |
| 4.14 \| |  |  |  |  |  |  |
| 10.000 | 3.55 | 3.46 | 0.597 | $1 \quad 1$ | \|OI | \| |
| 4.14 |  |  |  |  |  |  |
| 10.083 | 2.92 | 3.35 | 0.596 | $1 \quad 1$ | I ${ }^{0}$ | \| |
| 4.14 (0.5 |  |  |  |  |  |  |
| 10.167 | 2.22 | 2.98 | 0.592 | $1 \quad 1$ | I 0\| | \| |
| 4.12 l |  |  |  |  |  |  |
| 10.250 | 2.15 | 2.60 | 0.588 | 1 \| | I 0 \| | \| |
| 4.11 - |  |  |  |  |  |  |
| 10.333 | 2.14 | 2.38 | 0.586 | 1 | IO \| | \| |
| 4.10 |  |  |  |  |  |  |
| 10.417 | 2.15 | 2.26 | 0.584 | 1 \| | 0 | \| |
| 4.09 \| |  |  |  |  |  |  |
| 10.500 | 2.15 | 2.21 | 0.584 | 1 \| | 0 | \| |
| 4.09 |  |  |  |  |  |  |
| 10.583 | 2.61 | 2.29 | 0.585 | $1 \quad 1$ | 0 I \| | \| |
| 4.10 |  |  |  |  |  |  |
| 10.667 | 3.11 | 2.57 | 0.588 | \| | 0 I | \| |
| 4.11 - 4.11 |  |  |  |  |  |  |
| 10.750 | 3.17 | 2.85 | 0.591 | $1 \quad 1$ | 0 I | \| |
| 4.12 l |  |  |  |  |  |  |
| 10.833 | 3.19 | 3.01 | 0.592 | $1 \quad 1$ | OI | \| |
| 4.12 - 4.10 .10 |  |  |  |  |  |  |
| 10.917 | 3.19 | 3.10 | 0.593 | $1 \quad 1$ | 0 | \| |
| 4.13 |  |  |  |  |  |  |
| 11.000 | 3.20 | 3.14 | 0.594 | \| | 0 | \| |
| 4.13 |  |  |  |  |  |  |
| 11.083 | 3.11 | 3.15 | 0.594 | \| | 0 | \| |
| 4.13 |  |  |  |  |  |  |
| 11.167 | 3.01 | 3.11 | 0.594 | 1 \| | IO | \| |


| 4.13 |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11.250 | 3.01 | 3.06 | 0.593 | \| | \| | 이 |  |  | \| |
| 4.13 |  |  |  |  |  |  |  |  |  |
| 11.333 | 3.01 | 3.04 | 0.593 | \| | \| | 이 |  |  | \| |
| 4.13 |  |  |  |  |  |  |  |  |  |
| 11.417 | 3.01 | 3.02 | 0.593 | \| | \| | 이 |  |  | \| |
| 4.13 11.500 | 3.02 | 3.02 | 0.593 | \| | \| | 0 |  |  | I |
| 4.13 |  |  |  |  |  |  |  |  | I |
| 11.583 | 2.84 | 2.98 | 0.592 | \| | \| | IO\| |  |  | \| |
| 4.12 |  |  |  |  |  |  |  |  |  |
| 11.667 | 2.65 | 2.86 | 0.591 | \| | \| | IO \| |  |  | \| |
| 4.12 |  |  |  |  |  |  |  |  |  |
| 11.750 | 2.63 | 2.75 | 0.590 | \| | \| | IO \| |  |  | \| |
| $\begin{aligned} & 4.11 \\ & 11.833 \end{aligned}$ | 2.72 | 2.71 | 0.589 | I |  |  |  |  |  |
| 4.11 |  |  | 0.589 |  |  |  |  |  | I |
| 11.917 | 2.82 | 2.74 | 0.590 | 1 |  | 0 \| |  |  | \| |
| 4.11 |  |  |  |  |  |  |  |  |  |
| 12.000 | 2.84 | 2.78 | 0.590 | \| | \| | 0 \| |  |  |  |
| 4.12 12.083 |  |  |  |  |  |  |  |  |  |
| 12.083 | 3.48 | 2.97 | 0.592 | \| | \| | 이 I |  |  | \| |
| $\begin{aligned} & 4.12 \\ & 12.167 \end{aligned}$ | 4.18 | 3.38 | 0.597 | \| | I |  |  |  | I |
| 4.14 |  |  |  |  |  |  |  |  |  |
| 12.250 | 4.27 | 3.79 | 0.601 | \| | \| | 10 | I |  | \| |
| $4.16$ | 4.38 | 4.05 | 0.604 | , | , |  | 0 I |  | \| |
| 4.17 |  |  |  |  |  |  |  |  |  |
| 12.417 | 4.48 | 4.23 | 0.606 | \| | \| | \| | 0 I |  | \| |
| $\begin{aligned} & 4.18 \\ & 12.500 \end{aligned}$ | 4.49 | 4.35 | 0.607 | \| | \| |  |  |  |  |
| 4.18 |  |  |  |  |  |  |  |  |  |
| 12.583 | 4.68 | 4.47 | 0.608 | \| | \| | \| |  |  | \| |
| 4.19 |  |  |  |  |  |  |  |  |  |
| 12.667 | 4.89 | 4.62 | 0.610 | \| | \| | \| |  |  |  |
| 4.19 |  |  |  |  |  |  |  |  |  |
| 12.750 | 4.91 | 4.75 | 0.611 | I |  | \| |  |  | $\dagger$ |
| 4.20 |  |  |  |  |  |  |  |  |  |
| 12.833 | 5.01 | 4.85 | 0.613 | \| |  | \| |  |  |  |
| $\begin{aligned} & 4.20 \\ & 12.917 \end{aligned}$ | 5.12 | 4.96 | 0.614 | \| |  | \| |  |  | \| |
| 4.21 |  |  |  |  |  |  |  |  |  |
| 13.000 | 5.13 | 5.04 | 0.614 | \| |  | \| |  | 0 | \| |
| 4.21 |  |  |  |  |  |  |  |  |  |
| 13.083 | 5.59 | 5.19 | 0.616 | \| |  | \| |  | 0 I |  |
| 4.22 13.167 | 6.09 | 5.51 |  |  |  |  |  |  |  |
| 4.23 | 6.09 | 5.51 | 0.620 |  |  | 1 |  | 0 | 1 |
| 13.250 | 6.16 | 5.80 | 0.623 | \| |  | \| |  |  | OI\| |
| $4.24$ |  |  |  |  |  |  |  |  |  |
| 4.25 | 6.17 | 5.98 | 0.625 | 1 |  | 1 |  |  | OI |
| 13.417 | 6.17 | 6.07 | 0.626 | 1 |  | \| |  |  | 01 |
| 4.25 13.500 |  |  |  |  |  |  |  |  |  |
| 13.500 4.25 | 6.18 | 6.12 | 0.626 | \| |  | \| |  |  | OI |
| 13.583 | 5.17 | 5.91 | 0.624 | \| |  | \| |  | I | 0 |
| 4.25 |  |  |  |  |  |  |  |  |  |
| 13.667 | 4.08 | 5.29 | 0.617 | \| | \| | \| | I | 0 |  |





Remaining water in basin $=0.24$ (Ac.Ft)


## Appendix B

## Preliminary Design - Offsite Flows - Point 304

## Circular

Diameter $(\mathrm{ft}) \quad=3.00$

| Invert Elev (ft) | $=1.00$ |
| :--- | :--- |
| Slope (\%) | $=9.20$ |
| N-Value | $=0.012$ |

Calculations
Compute by:
Known Q (cfs)

Known Q
$=90.60$

Highlighted

| Depth $(\mathrm{ft})$ | $=1.35$ |
| :--- | :--- |
| Q $(\mathrm{cfs})$ | $=90.60$ |
| Area $(\mathrm{sqft})$ | $=3.10$ |
| Velocity (ft/s) | $=29.18$ |
| Wetted Perim $(\mathrm{ft})$ | $=4.42$ |
| Crit Depth, Yc $(\mathrm{ft})$ | $=2.85$ |
| Top Width $(\mathrm{ft})$ | $=2.99$ |
| EGL (ft) | $=14.59$ |



## Preliminary Design - Offsite Flows - Point 403

## Circular

Diameter $(\mathrm{ft}) \quad=2.00$

| Invert Elev (ft) | $=1.00$ |
| :--- | :--- |
| Slope (\%) | $=2.00$ |
| N-Value | $=0.012$ |

## Calculations

Compute by:
Known Q (cfs)

Known Q
$=26.70$

Highlighted

| Depth $(\mathrm{ft})$ | $=1.32$ |
| :--- | :--- |
| Q (cfs) | $=26.70$ |
| Area $(\mathrm{sqft})$ | $=2.21$ |
| Velocity (ft/s) | $=12.10$ |
| Wetted Perim (ft) | $=3.80$ |
| Crit Depth, Yc (ft) | $=1.81$ |
| Top Width (ft) | $=1.89$ |
| EGL (ft) | $=3.60$ |



## Preliminary Design - Offsite Flows - Point 403 - Alt Min slope

Circular
Diameter $(\mathrm{ft}) \quad=3.00$

| Invert Elev (ft) | $=1.00$ |
| :--- | :--- |
| Slope (\%) | $=0.30$ |
| N-Value | $=0.012$ |

Calculations
Compute by:
Known Q (cfs)

Known Q
$=26.70$

Highlighted

| Depth $(\mathrm{ft})$ | $=1.81$ |
| :--- | :--- |
| $\mathrm{Q}(\mathrm{cfs})$ | $=26.70$ |
| Area (sqft) | $=4.46$ |
| Velocity (ft/s) | $=5.98$ |
| Wetted Perim (ft) | $=5.34$ |
| Crit Depth, Yc (ft) | $=1.67$ |
| Top Width (ft) | $=2.93$ |
| EGL (ft) | $=2.37$ |



## Preliminary Design - Offsite Flows - Point 502

## Circular

Diameter $(\mathrm{ft}) \quad=1.50$

| Invert Elev (ft) | $=1.00$ |
| :--- | :--- |
| Slope (\%) | $=1.00$ |
| N-Value | $=0.012$ |

Calculations
Compute by:
Known Q (cfs)

Known Q $=7.80$

Highlighted

| Depth $(\mathrm{ft})$ | $=0.91$ |
| :--- | :--- |
| Q (cfs) | $=7.800$ |
| Area $(\mathrm{sqft})$ | $=1.13$ |
| Velocity (ft/s) | $=6.93$ |
| Wetted Perim (ft) | $=2.68$ |
| Crit Depth, Yc $(\mathrm{ft})$ | $=1.08$ |
| Top Width $(\mathrm{ft})$ | $=1.46$ |
| EGL (ft) | $=1.66$ |

Elev (ft)
Section


## Prelim Check of Offsite Storm Drain PT304+PT403

## Circular

Diameter $(\mathrm{ft}) \quad=3.00$

| Invert Elev (ft) | $=1.00$ |
| :--- | :--- |
| Slope (\%) | $=8.00$ |
| N-Value | $=0.012$ |

Calculations
Compute by:
Known Q (cfs)

Known Q $=117.00$

Highlighted

| Depth (ft) | $=1.63$ |
| :--- | :--- |
| Q (cfs) | $=117.00$ |
| Area (sqft) | $=3.93$ |
| Velocity (ft/s) | $=29.74$ |
| Wetted Perim (ft) | $=4.98$ |
| Crit Depth, Yc (ft) | $=2.95$ |
| Top Width (ft) | $=2.99$ |
| EGL (ft) | $=15.38$ |



## Gateway Heights Street Capcity - Min slope 2.08\%

User-defined

| Invert Elev (ft) | $=0.50$ |
| :--- | :--- |
| Slope (\%) | $=2.08$ |
| N-Value | $=$ Composite |

## Calculations

Compute by:
No. Increments
Q vs Depth
$=10$
(Sta, El, n)-(Sta, El, n)...
( $0.00,1.00$ )-(0.10, $0.50,0.015)-(18.00,0.86,0.015)-(35.90,0.50,0.015)-(36.00,1.00,0.015)$

Highlighted

| Depth (ft) | $=0.50$ |
| :--- | :--- |
| Q (cfs) | $=75.82$ |
| Area (sqft) | $=11.51$ |
| Velocity (ft/s) | $=6.59$ |
| Wetted Perim (ft) | $=36.83$ |
| Crit Depth, Yc (ft) | $=0.50$ |
| Top Width (ft) | $=36.00$ |
| EGL (ft) | $=1.18$ |

Elev (ft)
Section
Deptr


Sta (ft)

## Line B Prelim Design

| Invert Elev Dn (ft) | $=1552.00$ |
| :--- | :--- |
| Pipe Length (ft) | $=268.00$ |
| Slope (\%) | $=7.54$ |
| Invert Elev Up (ft) | $=1572.20$ |
| Rise (in) | $=72.0$ |
| Shape | $=$ Box |
| Span (in) | $=36.0$ |
| No. Barrels | $=2$ |
| n-Value | $=0.012$ |
| Culvert Type | $=$ Flared Wingwalls, |
|  | $\quad$ Top Edge Bevel |
| Culvert Entrance | $=45 D$ wingwall flare d=0.043D |
| Coeff. K,M,c,Y,k | $=0.51,0.667,0.0309,0.8,0.2$ |

## Calculations

| Qmin (cfs) | $=308.00$ |
| :--- | :--- |
| Qmax (cfs) | $=308.00$ |
| Tailwater Elev (ft) | $=(\mathrm{dc}+\mathrm{D}) / 2$ |

Highlighted

| Qtotal (cfs) | $=308.00$ |
| :--- | :--- |
| Qpipe (cfs) | $=308.00$ |
| Qovertop (cfs) | $=0.00$ |
| Veloc Dn (ft/s) | $=9.93$ |
| Veloc Up (ft/s) | $=11.84$ |
| HGL Dn (ft) | $=1557.17$ |
| HGL Up (ft) | $=1576.54$ |
| Hw Elev (ft) | $=1579.25$ |
| Hw/D (ft) | $=1.17$ |
| Flow Regime | $=$ Inlet Control |

Hw Depth (ft)
Profile


## Appendix C



[^7]| Basin Stage-Storage-Outfall Chart |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Depth <br> [ft] |  |  |  |  |  |
| Area [sf] | Vol [acft] | Vol Total <br> [acft] | Q out <br> [cfs]* |  |  |
| Basin B | 0 | 8356 |  |  |  |
|  | 1 | 8356 | 0.058 | 0.058 | 0.7 |
|  | 2 | 8356 | 0.058 | 0.115 | 0.7 |
|  | 3 | 9566 | 0.206 | 0.321 | 0.7 |
| 4 | 10831 | 0.234 | 0.555 | 0.7 |  |
|  | 5 | 12153 | 0.264 | 0.819 | 24.0 |
| 6 | 13532 | 0.265 | 1.084 | 24.0 |  |

0.5 cfs limited by 6 " underdrain or Orafice to match 2 yr 24 hr

| Basin Stage-Storage-Outfall Chart |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Depth <br> [ft] |  |  |  |  |  |
| Area [sf] | Vol [acft] | Vol Total <br> [acft] | Q out <br> [cfs] |  |  |
| Basin A | 0 | 2355 |  |  |  |
|  | 1 | 2355 | 0.016 | 0.016 | 0.5 |
| 2 | 2355 | 0.016 | 0.032 | 0.5 |  |
|  | 3 | 3229 | 0.064 | 0.097 | 0.5 |
| 4 | 4223 | 0.086 | 0.182 | 0.5 |  |
|  | 5 | 5318 | 0.110 | 0.292 | 24.0 |
| 6 | 6422 | 0.111 | 0.402 | 24.0 |  |

0.7 cfs limited by 6" underdrain or Orafice to match 2 yr 24 hr

## Appendix D

PRELIMINARY GRADING PLAN (PEN21-0066)

UNITED ENGINEERING GROUP CA., INC
NOVEMBER 2022

In THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.












## Appendix E




## Appendix I

Project Specific Water Quality Management Plan

## Project Specific Water Quality Management Plan

A Template for Projects located within the Santa Ana Watershed Region of Riverside County

Project Title: Gateway Heights

Development No: PEN21-0066
Design Review/Case No: LWQ21-0014


Prepared for: HengHou Group
Shizao Zheng
1378 West Zhongshan Rd

PreliminaryFinal

Original Date Prepared: March 8, 2021

Revision Date(s): Nov 24, 2021; March 23, 2022;
Oct 24, 2022; Nov 10, 2022

Prepared for Compliance with
Regional Board Order No. R8-2010-0033

Prepared by: Christopher Lenz, P.E., Principal
United Engineering Group CA, Inc. 8885 Haven Avenue, Suite 195
Rancho Cucamonga, CA 91730
(909) 466-9240

## A Brief Introduction

This Project-Specific WQMP Template for the Santa Ana Region has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.


## OWNER＇S CERTIFICATION

This Project－Specific Water Quality Management Plan（WQMP）has been prepared for HengHou Group by United Engineering Group CA，Inc．for the Gateway Heights project，PEN21－0066．

This WQMP is intended to comply with the requirements of City of Moreno Valley Ordinance 827 which includes the requirement for the preparation and implementation of a Project－Specific WQMP．

The undersigned，while owning the property／project described in the preceding paragraph，shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up－to－date conditions on the site．In addition，the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner．This WQMP will be reviewed with the facility operator，facility supervisors，employees，tenants，maintenance and service contractors，or any other party（or parties）having responsibility for implementing portions of this WQMP．At least one copy of this WQMP will be maintained at the project site or project office in perpetuity．The undersigned is authorized to certify and to approve implementation of this WQMP．The undersigned is aware that implementation of this WQMP is enforceable under the City of Moreno Valley Water Quality Ordinance（Municipal Code 8．10）
＂I，the undersigned，certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest．＂


Owner＇s Signature

## 郑士対

Owner＇s Printed Name

11－15－2022
Date

President
Owner＇s Title／Position

## PREPARER＇S CERTIFICATION

＂The selection，sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No．R8－2010－0033 and any subsequent amendments thereto．＂


Christopher F．Len
Preparer＇s Printed Name

11－10－2022
Date

PE／Principal Engineer $\qquad$
Preparer＇s Title／Position
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## Section A: Project and Site Information



## A. 1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a minimum, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Drainage Path
- Impervious Surfaces
- Drainage Infrastructure, Inlets, Overflows
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

## A. 2 Identify Receiving Waters

Using Table A. 1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A. 1 Identification of Receiving Waters
\(\left.$$
\begin{array}{|l|l|l|l|l|}\hline \text { Receiving Waters } & \begin{array}{l}\text { EPA Approved } \\
\text { Impairments }\end{array} & \begin{array}{l}\text { List }\end{array} & \begin{array}{l}\text { Proximity } \\
\text { RARE } \\
\text { Beneficial Uses }\end{array}
$$ <br>

Beneficial Use\end{array}\right]\)| None |
| :--- |
| Box Springs Canyon |
| Noqe |

## A. 3 Additional Permits/Approvals required for the Project:

Table A. 2 Other Applicable Permits

| Agency | Permit Required |  |
| :--- | :--- | :--- |
| State Department of Fish and Game, 1602 Streambed Alteration Agreement | $\boxed{Y}$ | $\square \mathrm{~N}$ |
| State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert. | $\boxed{\mathrm{Y}}$ | $\square \mathrm{N}$ |
| US Army Corps of Engineers, CWA Section 404 Permit | $\boxed{\mathrm{Y}}$ | $\square \mathrm{N}$ |
| US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion | $\square \mathrm{Y}$ | $\boxed{\mathrm{N}}$ |
| Statewide Construction General Permit Coverage | $\boxed{\mathrm{Y}}$ | $\square \mathrm{N}$ |
| Statewide Industrial General Permit Coverage | $\square \mathrm{Y}$ | $\boxed{\mathrm{N}}$ |
| Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP) | $\boxed{\mathrm{Y}}$ | $\square \mathrm{N}$ |
| Other (please list in the space below as required) <br> City of Moreno Valley Grading Permit | $\boxed{\mathrm{Y}}$ | $\square \mathrm{N}$ |

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

## Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section ' $A$ ' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, constraints might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. Opportunities might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

## Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?
Yes. Existing drainage patterns are preserved at the northern edge of the site, and along the southern edge of the site, through avoidance by the development limits, and dedication of a 50' drainage easement along the southern wash.

Did you identify and protect existing vegetation? If so, how? If not, why?
Yes, the 50' setback and avoidance of the wash will preserve existing vegetation.
Did you identify and preserve natural infiltration capacity? If so, how? If not, why?
$n / a$. The site has limited to no infiltration potential.
Did you identify and minimize impervious area? If so, how? If not, why?
Yes. Impervious areas have been minimized by utilizing narrow streets, providing natural open space, developed open space, trails, recreational areas and park areas.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?
Yes, bio retention basins have been incorporated into the design of the project.

## Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C. 1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C. 1 DMA Classifications

| DMA Name or ID | Surface Type(s) ${ }^{1}$ | Area (acres) | DMA Type |
| :--- | :--- | :--- | :--- |
| DMA A | Townhomes, roads, slopes | 4.0 | Type D |
| DMA B | Townhomes, roads, slopes | 10.9 | Type D |
| DMA C | Road | 0.3 | No Treatment Possible |
| DMA D | Hillside | 4.5 | Type A |
| DMA E | Hillside | 12.7 | Type A |
| DMA F | Hillside | 0.6 | Type A |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

${ }^{1}$ Reference Table 2-1 in the WQMP Guidance Document to populate this column

Table C. 2 Type 'A', Self-Treating Areas

| DMA Name or ID | Area (Sq. Ft.) | Stabilization Type | Irrigation Type (if any) |
| :--- | :--- | :--- | :--- |
| DMA D | 194131 | none | none |
| DMA E | 554069 | none | none |
| DMA F | 25195 | Landscaping | Irrigated (Design at Final) |
|  |  |  |  |

Table C. 3 Type 'B', Self-Retaining Areas


Table C. 4 Type 'C', Areas that Drain to Self-Retaining Areas


Table C. 5 Type 'D', Areas Draining to BMPs

| DMA Name or ID | BMP Name or ID |
| :--- | :--- |
| DMA A | BMP A |
| DMA B | BMP B |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

DMA C - A portion of the main entrance to the site (Street A) and Morton Road is not able to be treated. The grades and conditions of the road in this area do not allow for the collection and treatment of the runoff, as the site sits well above grade from Morton Road. Also, the project is at a highpoint in Morton Rd so any acceptance and routing of street flow should be further downstream along Morton Road. The areas around Morton Road, including any future right of way, is also unable to provide for treatment as the grades in the area fall off significantly to the southwest. Runoff from this area will continue in the existing condition, by flowing into the natural channel southwest of the road.

At 0.3 acres, DMA C represents a negligible percentage of the impervious area at less than $5 \%$.

## Section D: Implement LID BMPs

## D. 1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? $\quad \square \mathrm{Y} \quad \boxtimes \mathrm{N}$

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

## Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? $\square \mathrm{Y} \quad$ 【 N

## Infiltration Feasibility

Table D. 1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D. 1 Infiltration Feasibility

| Does the project site... | YES | NO |
| :--- | :--- | :--- |
| ...have any DMAs with a seasonal high groundwater mark shallower than 10 feet? |  | x |
| If Yes, list affected DMAs: |  |  |
| ...have any DMAs located within 100 feet of a water supply well? | x |  |
| If Yes, list affected DMAs: |  |  |
| ...have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater <br> could have a negative impact? | x |  |
| If Yes, list affected DMAs: | ...have measured in-situ infiltration rates of less than 1.6 inches / hour? | x |
| If Yes, list affected DMAs: |  |  |
| ...have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final <br> infiltration surface? | all |  |
| If Yes, list affected DMAs: | x |  |
| ...geotechnical report identify other site-specific factors that would preclude effective and safe infiltration? | x |  |
| Describe here: |  |  |

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

## D. 2 Harvest and Use Assessment

Please check what applies:Reclaimed water will be used for the non-potable water demands for the project.Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).
$\square$ The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

## Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.
Total Area of Irrigated Landscape: 5.4 acres (15.43 acres *35\%)
Type of Landscaping (Conservation Design or Active Turf): Mixed (Active Turf in Park)
Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 10.0 acres (15.43 acres *65\%)
Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 1.05
Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 10.5 acres
Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

| Minimum required irrigated area (Step 4) | Available Irrigated Landscape (Step 1) |
| :--- | :--- |
| 10.5 acres | 5.4 acres |

## Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:
Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: 346
Project Type: Residential Condo Estimate (108 units x 3.2 persons/unit)
Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 10.0 acres (15.43 acres *65\%)
Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 21 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 108
Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.
Minimum number of toilet users: 1,080
Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

| Minimum required Toilet Users (Step 4) | Projected number of toilet users (Step 1) |
| :--- | :--- |
| 1,080 | 346 |

## Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

$$
\mathrm{N} / \mathrm{A}
$$

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.
Average Daily Demand: Projected Average Daily Use (gpd)
Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.
Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 23 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: Enter Value
Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.
Minimum required use: Minimum use required (gpd)
Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

| Minimum required non-potable use (Step 4) | Projected average daily use (Step 1) |
| :--- | :--- |
| Minimum use required (gpd) | Projected Average Daily Use (gpd) |

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D. 3 below.

## D. 3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:
X LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D. 4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

## D. 4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D. 2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.
Table D. 2 LID Prioritization Summary Matrix

| DMA <br> Name/ID | No LID BMP Hierarchy <br> (Alternative <br> Compliance) |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | $\square$ | 2. Harvest and use | 3. Bioretention | 4. Biotreatment | $\square$ |
|  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |
| DMA C | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |
| DMA D | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |
| DMA E | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |
| DMA F | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |
| $\square$ |  |  |  |  |  |

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

DMA C - A portion of the main entrance to the site (Street A) is not able to be treated. The grades required in this area do not allow for the collection and treatment of the runoff, as the site sits well above grade from Morton Road. At 0.3 acres, DMA C represents a negligible percentage of the impervious area at less than $5 \%$.

## D. 5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First, calculate the Design Capture Volume for each LID BMP using the $\mathrm{V}_{\text {BMP }}$ worksheet in Appendix $F$ of the LID BMP Design Handbook. Second, design the LID BMP to meet the required $\mathrm{V}_{\text {BMP }}$ using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D. 3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D. 3 DCV Calculations for LID BMPs

| DMA Type/ID | DMA <br> Area (square feet) | Post- <br> Project <br> Surface <br> Type | Effective Impervious Fraction, $\mathrm{I}_{\mathrm{f}}$ | DMA <br> Runoff <br> Factor | DMA <br> Areas x <br> Runoff <br> Factor | Underground Storage North pumped to BMP 1 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | [A] |  | [B] | [C] | [A] $\times$ [C] |  |  |  |
| A | 174240 | Mlxed | 0.65 | 0.45 | 78265 | Design <br> Storm <br> Depth <br> (in) | Design Capture <br> Volume, V $\mathbf{V M P}$ (cubic feet) | Proposed <br> Volume on Plans (cubic feet) |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | 174240 |  |  |  | 78265 | 0.63 | 4,109 | 17,511 |

[^8][E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6


Note: The final Effective Impervious Fraction, If, for Mixed surface types to be calculated and verified per Section 2.1.1 of the Riverside County Low Impact Development BMP Design Handbook, with final WQMP design, coupled with final building product design.

## Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

X LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- Or -

The following Drainage Management Areas are unable to be addressed using LID BMPs. A sitespecific analysis demonstrating technical infeasibility of LID BMPs has been approved by the CoPermittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

## E. 1 Identify Pollutants of Concern

Utilizing Table A. 1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E. 1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E. 1 Potential Pollutants by Land Use Type

| that apply) | General Pollutant Categories |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Bacterial Indicators | Metals | Nutrients | Pesticides | Toxic <br> Organic <br> Compounds | Sediments | Trash \& Debris | Oil Grease |
| Detached Residential Development | P | N | P | P | N | P | P | P |
| Attached Residential Development | P | N | P | P | N | P | P | $\mathrm{P}^{(2)}$ |
| Commercial/Industrial Development | $P^{(3)}$ | P | $\mathrm{P}^{(1)}$ | $\mathrm{P}^{(1)}$ | $\mathrm{P}^{(5)}$ | $\mathrm{P}^{(1)}$ | P | P |
| Automotive Repair Shops | N | P | N | N | $\mathrm{P}^{(4,5)}$ | N | P | P |
| Restaurants (>5,000 ft²) | P | N | N | N | N | N | P | P |
| Hillside Development ( $>5,000 \mathrm{ft}^{2}$ ) | P | N | P | P | N | P | P | P |
| Parking Lots $\left(>5,000 \mathrm{ft}^{2}\right)$ | $P^{(6)}$ | P | $\mathrm{P}^{(1)}$ | $\mathrm{P}^{(1)}$ | $\mathrm{P}^{(4)}$ | $\mathrm{P}^{(1)}$ | P | P |
| $\square \quad$ Retail Gasoline Outlets | N | P | N | N | P | N | P | P |
| Project Priority Pollutant(s) of Concern | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |

$P=$ Potential
$N=$ Not Potential
${ }^{(1)}$ A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected
${ }^{(2)}$ A potential Pollutant if the project includes uncovered parking areas; otherwise not expected
${ }^{(3)}$ A potential Pollutant is land use involving animal waste
${ }^{(4)}$ Specifically petroleum hydrocarbons
${ }^{(5)}$ Specifically solvents
${ }^{(6)}$ Bacterial indicators are routinely detected in pavement runoff

## E. 2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E. 2 Water Quality Credits

| Qualifying Project Categories | Credit Percentage $^{2}$ |
| :--- | :--- |
| N/A |  |
|  |  |
|  |  |
| Total Credit Percentage $^{1}$ |  |
| ${ }^{1}$ Cannot Exceed $50 \%$ |  |

${ }^{1}$ Cannot Exceed 50\%
${ }^{2}$ Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

## E. 3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E. 3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E. 3 Treatment Control BMP Sizing

| DMA <br> Type/ID | DMA <br> Area <br> (square <br> feet) | Post- <br> Project <br> Surface <br> Type | Effective Impervious Fraction, $\mathrm{I}_{\mathrm{f}}$ | DMA <br> Runoff <br> Factor | DMA <br> Area $x$ <br> Runoff <br> Factor |  | Enter BMP Name / Identifier Here |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | [A] |  | [B] | [C] | [A] x [C] |  |  |  |  |
|  |  |  |  |  |  |  | Minimum |  | Proposed |
|  |  |  |  |  |  |  | Design Capture | Total Storm | Volume or Flow |
|  |  |  |  |  |  | Design | Volume or | Water | on Plans |
|  |  |  |  |  |  | Storm | Design Flow | Credit \% | (cubic |
|  |  |  |  |  |  | Depth <br> (in) | Rate (cubic feet or cfs) | Reduction | feet or cfs) |
|  | $\begin{aligned} & \mathrm{A}_{T} \\ & \Sigma[\mathrm{~A}] \end{aligned}=$ |  |  |  | $\Sigma=[\mathrm{D}]$ | [E] |  |  | [I] |

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] $=43,560$, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E. 2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

## E. 4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- High: equal to or greater than $80 \%$ removal efficiency
- Medium: between $40 \%$ and $80 \%$ removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E. 4 Treatment Control BMP Selection

| Selected Treatment Control BMP <br> Name or ID | Priority Pollutant(s) of <br> Concern to Mitigate ${ }^{2}$ | Removal Efficiency <br> Percentage $^{3}$ |
| :--- | :--- | :--- |
|  |  |  |
|  |  |  |
|  |  |  |

[^9]
## Section F: Hydromodification

## F. 1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption?


If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration ${ }^{1}$ of storm water runoff for the postdevelopment condition is not significantly different from the pre-development condition for a 2 -year return frequency storm (a difference of $5 \%$ or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? $\square$ Y $\square$
If Yes, report results in Table F. 1 below and provide your substantiated hydrologic analysis in Appendix 7.
Table F. 1 Hydrologic Conditions of Concern Summary

| DMA A | $\mathbf{2}$ year - $\mathbf{2 4}$ hour |  |  |
| :--- | :--- | :--- | :--- |
|  | Pre-condition | Post-condition | \% Difference |
| Time of <br> Concentration | INSERT VALUE | INSERT VALUE | INSERT VALUE |
| Volume (Cubic Feet) | INSERT VALUE | INSERT VALUE | INSERT VALUE |
| DMA B | $\mathbf{2}$ year - $\mathbf{2 4}$ hour |  |  |
|  | Pre-condition | Post-condition | \% Difference |
| Time of <br> Concentration | INSERT VALUE | INSERT VALUE | INSERT VALUE |
| Volume (Cubic Feet) | INSERT VALUE | INSERT VALUE | INSERT VALUE |


| PT3 | $\mathbf{2}$ year $\mathbf{- 2 4}$ hour |  |  |
| :--- | :--- | :--- | :--- |
|  | Pre-condition | Post-condition | \% Difference |
| Time of <br> Concentration | INSERT VALUE | INSERT VALUE | INSERT VALUE |
| Volume (Cubic Feet) | INSERT VALUE | INSERT VALUE | INSERT VALUE |

${ }^{1}$ Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? $\square$
If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

## F. 2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:
a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.
b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.
c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than $10 \%$ greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than $110 \%$ of the pre-development 2-year peak flow.

Note: This project has no infiltration potential. It has been designed to detain the post development runoff and discharge it at rates less than the pre-development rates. In compliance with condition C above this project will match the $2 y$ r 24 hr predevelopment runoff rates through storage volume and discharge control. It is assumed that the 6" underdrains or orifice design will be used to limit the peak runoff. Refer to Appendix 7 for detailed output files for pre and post 2yr 24-hr unit hydrographs and for basin sizing information. Summary table is below.

| Moreno Valley 33 - Area A Pre-Development |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |
| 2 year | 5.4 | 0.13 | 2.9 | 0.14 | 2.5 | 0.15 | 0.5 | 0.12 |
| 5 year | 7.8 | 0.20 | 4.1 | 0.23 | 3.6 | 0.24 | 1.0 | 0.25 |
| 10 year | 9.6 | 0.26 | 5.1 | 0.31 | 4.5 | 0.32 | 1.4 | 0.37 |
| 100 year | 16.2 | 0.51 | 8.9 | 0.75 | 7.9 | 0.94 | 3.1 | 1.35 |


| Moreno Valley 33 - Area A Post-Development |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |
| 2 year | 4.6 | 0.12 | 2.4 | 0.18 | 2.1 | 0.23 | 0.7 | 0.40 |
| 5 year | 6.5 | 0.17 | 3.3 | 0.24 | 3.0 | 0.32 | 0.9 | 0.53 |
| 10 year | 8.0 | 0.21 | 4.1 | 0.30 | 3.6 | 0.38 | 1.1 | 0.63 |
| 100 year | 13.1 | 0.37 | 6.8 | 0.55 | 6.1 | 0.69 | 2.3 | 1.17 |


| Moreno Valley 33 - Area A Post-Development Routed |  |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |  |
| 2 year |  |  |  |  |  |  | $0.5^{*}$ | 0.02 |  |
| 100 year | 0.5 | 0.33 | 6.4 | 0.21 | 5.5 | 0.21 | 2.3 | 0.19 |  |

By orafice control or 6" underdrain slope

| Moreno Valley 33 - Area B Pre-Development |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |
| 2 year | 8.2 | 0.18 | 4.1 | 0.20 | 3.5 | 0.21 | 0.7 | 0.18 |
| 5 year | 11.8 | 0.29 | 6.0 | 0.33 | 5.1 | 0.35 | 1.4 | 0.37 |
| 10 year | 14.5 | 0.38 | 7.4 | 0.45 | 6.3 | 0.47 | 2 | 0.54 |
| 100 year | 24.4 | 0.74 | 12.9 | 1.09 | 11.2 | 1.37 | 4.5 | 1.96 |


| Moreno Valley 33 - Area B Post-Development (Area B and C Pre-Development) |  |  |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |  |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |  |  |
| 2 year | 11.4 | 0.31 | 6.4 | 0.48 | 5.6 | 0.64 | 1.8 | 1.09 |  |  |
| 5 year | 16.2 | 0.45 | 8.9 | 0.66 | 7.9 | 0.86 | 2.4 | 1.44 |  |  |
| 10 year | 19.9 | 0.56 | 10.9 | 0.80 | 9.6 | 1.04 | 3.1 | 1.73 |  |  |
| 100 year | 32.7 | 1.01 | 18.2 | 1.5 | 16.2 | 1.89 | 6.2 | 3.18 |  |  |

Moreno Valley 33 - Area B Post-Development Routed

|  | Storm Duration |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |
| 2 year |  |  |  |  |  |  | $0.7^{*}$ | 0.35 |
| 100 year | 18.0 | 0.76 | 15.9 | 0.73 | 13.8 | 0.71 | 6.1 | 0.63 |

*By orafice control or 6" underdrain slope

## Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans such as roofs over and berms around trash and recycling areas - and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8 , review the following procedure to specify Source Control BMPs for your site:

1. Identify Pollutant Sources: Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.
2. Note Locations on Project-Specific WQMP Exhibit: Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.
3. Prepare a Table and Narrative: Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G. 1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. Add additional narrative in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.
4. Identify Operational Source Control BMPs: To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G. 1 Permanent and Operational Source Control Measures

| Potential Sources of Runoff <br> pollutants | Permanent Structural Source <br> Control BMPs | Operational Source Control BMPs <br> On site storm drain inletsMark all inlets with"Only Rain <br> Down the Storm Drain". |
| :---: | :--- | :--- |
| Maintain markings and provide <br> info to owners. <br> Provide stormwater pollution <br> prevention information to new <br> site owners, lessees, or <br> operators. <br> See applicable operational BMPs <br> in Fact Sheet SC-44, "Drainage <br> System Maintenance," in the <br> CASQA Stormwater Quality <br> Handbooks at |  |  |


|  |  | www.cabmphandbooks.com <br> Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains." |
| :---: | :---: | :---: |
| Landscape/Outdoor Pesticides | Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. <br> Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. <br> Consider using pest-resistant plants, especially adjacent to hardscape. <br> To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions. | Maintain with no or minimal pesticides. <br> See applicable operational BMPs in "What you should know for.....Landscape and Gardening" at <br> http://rcflood.org/stormwater/ <br> Provide IPM information to new owners, lessees and operators. |
| Vehicle and Equipment Cleaning | If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced. HOA to discourage onsite washing. | Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at <br> http://rcflood.org/stormwater/ |
| Miscellaneous Drain or Wash Water or Other Sources <br> - Condensate drain lines <br> - Rooftop equipment | Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. |  |


| - Roofing, gutters, and trim. | Rooftop equipment with <br> potential to produce pollutants <br> shall be roofed and/or have <br> secondary containment. <br> Avoid roofing, gutters, and trim <br> made of copper or other <br> unprotected metals that may <br> leach into runoff. |
| :--- | :--- | :--- |

## Section H: Construction Plan Checklist

Populate Table H. 1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H. 1 Construction Plan Cross-reference

| BMP No. or ID | BMP Identifier and Description | Corresponding Plan Sheet(s) |
| :--- | :--- | :--- |
| BMP A | Basin at the southwest corner of site within the street <br> section | Preliminary BMP Siteplan |
| BMP B | Basin at the southwest corner of site north of the <br> entrance | Preliminary BMP Siteplan |
|  |  |  |
|  |  |  |

Note that the updated table - or Construction Plan WQMP Checklist - is only a reference tool to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

## Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geolocating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O\&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

## Maintenance Mechanism: Home Owner or Property Owners Association

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?


Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

# Appendix 1: Maps and Site Plans <br> Location Map, WQMP Site Plan and Receiving Waters Map 

Figure 1- Vicinity Map


$\frac{\text { VICINITY MAP }}{\text { NOT TO SCALE }}$

Figure 2- Receiving Waters Map



Figure 3- WQMP Site Plan


## Appendix 2: Construction Plans <br> Grading and Drainage Plans

PRELIMINARY GRADING PLAN (PEN21-0066)

UNITED ENGINEERING GROUP CA., INC
NOVEMBER 2022

In THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.












## Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

# Subject; Preliminary Infiftration Testing Investigation for the Proposed Single-Family Residential Development, Tentative Tract Map No. 37557, Cthy of Moreno Valley, Riverslde County, California. 

Reference: Sikand Engineering, Coneptual Grading Plan Tract No. 37557, City of Moreno Valley, County of Riverside, State of Californio.

Based on the referenced conceptual grading plan tract no. 37557, the proposed 32.79 -acre development will consist of singlefamily residences with associated roadways, hardscaping, landscaping and an infiltration device. As per discussion with Leslie Frazier of Sikand Engineering, one infiltration basin is proposed at depths of approximately 10 feet to 12 feet.

### 4.0 SUBSURFACE EXPLORATION: XNFILTRATION TESTING

### 4.1 Subsurface Exploration

Subsurface exploration of the subject site consisted of two (2) infiltration test trench locations utilizing a backhoe, on September 4, 2018, within the proposed onsite storm water infiltration BMP locations, at depths ranging from 5 to 10.5 feet below existing grade. Earth materials encountered within the locations were classified in general accordance with the visual manual procedures of the Unified Soil Classification System (USCS). Logs of the infiltration test trenches are presented in Appendix A, and their approximate locations are depicted on the Infiltration Test Location Map (Plate 1).

Prior to the subsurface exploration work, an underground utilities clearance was obtained from Underground Service Alert of Southern California.

### 4.2 Inflitration Testing

On September 4, 2018, one (1) infiltration test was conducted within the proposed area of the infiltration device. The infiltration test trenches were labeled $\Pi-1$ and $\Pi-2$ and are depicted on the Infiltration Test Location Map (Plate 1). The tests were performed as per the referenced Riverside Technical Guidance Manual for Onsite Wastewater Treatment Systems.

Due to the very hard nature of the soil and bedrock, only the 10.5 -foot-deep test trench was dug to the required depth. The 5 -foot test trench was inadequate for testing. An 8 -inch diameter, 12 -inch long, plastic liner was placed within a 6 inch deep excavated test hole. At least 6 inches of clean water was filled within the test hole. From a fixed test point, the drop-in water level, in inches, and the amount of water used was measured and recorded at intervals over a period of at least 6 readings or until the rate for two consecutive readings was within a five percent variation. The field infiltration rates were reduced utilizing a reduction factor per the Porchet Method. The test results are presented in Table 1. The infiltration test data sheets are presented in Appendix A.

### 5.0 FINDINGS

### 5.1 Earth Materials

Based on our review of the data from the in progress geotechnical investigation and current exploration of the earth materials underlying the proposed onsite storm water infiltration BMP area, the materials encountered to the depths explored include undocumented artificial fill, older alluvial fan deposits, and granitic bedrock (tonalite). A description of the earth material soils encountered is described below:

Artificial Fill, Undocumented (Afu): During our subsurface exploration, artificial fill (undocumented) was encountered down to depths ranging from approximately 2.0 feet to 5.5 feet. The artificial fill generally consists of silty sand and clayey silt and is various shades of brown, red and black; very fine to medium grained with some coarse grains; coarse and very coarse rock fragments; dry to damp; medium dense; blocky; contains some pores; roothairs; oxidation staining and traces of concrete.

Older Alluvial Fan Deposits (Qoa); Older alluvial fan deposits encountered on the site during our subsurface exploration, was observed to be at approximately 2.0 feet to 5.5 feet deep, below the undocumented artificial fill. The alluvial fan deposits generally consist of silty sand and is characterized as various shades of brown, green, gray, and red; dry; very dense; very fine to medium grained with coarse grains; pinhole pores; roothairs; and has oxidation staining.

Bedrock: Bonzal Tonalite (Kqdi) - Bedrock of the Peninsular Ranges was present below older alluvial fan deposits in trench IT-2 at a depth of about 6.5 feet. This bedrock consists of quartz diorite and is massive; grayish white with black minerals; dry; hard to very hard; and has oxidation staining.

### 5.2 Groundwater

Groundwater was not encountered during the infiltration testing to depths of up to 10.5 feet. A review of the Califomia Department of Water Resources, Water Data Library 2018 online database indicates groundwater approximately four miles away from the general site area is about 72.9 feet below the existing ground surface at an elevation of approximately 1,638 above mean sea level (Well ID: Station 335628N1171932W001).

### 5.3 Inflltration Testing Results

The shallow infiltration testing rates for design considerations for each of proposed drainage device areas which were tested are presented in the table below.

## Infiltration Desiqn Rates



### 6.0 CONCLUSTONS AND RECOMMENDATIONS

Shallow infiltration testing for the proposed drainage devices indicated a design rate of 0.0 inches/hour, after applying reduction factors shown in Table 1 above, per the Porchet Method, at depths of approximately ten and a half (10.5) feet below the existing ground surface as presented in the above infiltration design rate table, Section 5.3 . The rate is $\mathbf{0 . 0}$ inches/hour represented by testing from infiltration test trench IT-2.

Based on the failing design rate and nature of the onsite material, we recommend the proposed infiltration basin be relocated or using an alternative infiltration design.

### 7.0 PLAN REVIEWS AND CONSTRUCTION SERVICES

This report was prepared for the exclusive use of Shizao Zheng to assist the project civil engineer in the design of the proposed infiltration systems for the proposed development. It is recommended that LGC be engaged to review infiltration device plans, grading plans, foundation plans and the final infiltration design drawings and specifications prior to construction. This is to document that the recommendations contained in this report were properly interpreted and incorporated into the project plans and specifications from a geotechnical standpoint. Plans should be forwarded to the project geotechnical engineer and/or engineering geologist for LGC for review and comments, as deemed necessary. LGC's review of infiltration device plans, grading plans, foundation plans and the final infiltration design drawings and specifications may indicate that additional subsurface exploration, laboratory testing and analysis should be performed to address areas of concern. If LGC is not accorded the opportunity to review these documents, we can not take responsibility for misinterpretation of our recommendations.

If the project plans change significantly (e.g., location and type of infiltration devices), LGC should be retained to review our original design recommendations and applicability to the revised construction. If conditions are encountered during construction that appears to be different from those indicated in this report, this office should be notified immediately. Design and construction revisions may be required.

The preliminary conclusions and recommendations provided in this report are based on review of previous geotechnical reports, infiltration testing, geologic field mapping, and geotechnical/geologic analyses to date. A representative of LGC should observe the interpolated subsurface conditions in the field during construction

We recommend that LGC be retained to provide geotechnical engineering services during future grading, infiltration device excavations, installation of infiltration materials, backfill of infiltration devices, or when an unusual soil condition is encountered at the site. This is to document compliance with the design, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

### 8.0 INVESTIGATION LTMXTATIONS

This report is based upon information provided by the client and the project civil engineer, a limited number of subsurface excavations, field observations and percolation/infiltration tests to which we applied various methods of analysis and interpretation. The materials encountered and tested in the field on the project site are believed representative of the project area, and the conclusions and recommendations contained herein are presented on that basis. However, soil materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions, recommendations, and performance of the proposed storm water infiltration device BMP systems. Fluctuations in
the level of groundwater may occur due to variations in rainfall, irrigation, and the other factors not in evidence at the time measurements were made. If this occurs, the changed conditions must be evaluated by the project geotechnical engineer and engineering geologist and design(s) adjusted as required or alternate design(s) recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field.

The conclusions and opinions contained in this report are based on the results of the described geotechnical evaluations and represent our professional judgment. The findings, conclusions and recommendations contained in this report are to be considered tentative only and subject to confirmation by the undersigned during the construction process. Without this confirmation, this report is to be considered incomplete and LGC or the undersigned professionals assume no responsibility for its use.

The conclusions and opinions contained in this report are valid up to a period of 2 years from the date of this report. Changes in the conditions of a property can and do occur with the passage of time, whether they be because of natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate codes or standards may occur, whether they result from legislation or the broadening of knowiedge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, if any of the above mentioned situations occur, an update of this report should be completed.

This report has not been prepared for use by parties or projects other than those named or designed above. It may not contain sufficient information for other parties or other purposes.

The opportunity to be of service is appreciated. Should you have any questions regarding the content of this report, or should you require additional information, please do not hesitate to contact this office at your earliest convenience.
Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by engineers and geologists practicing in this or other localities. The contents of this report are professional opinions and as such, are not to be considered a guarantee or warranty.

The opportunity to be of service is appreciated. Should you have any questions regarding the content of this report, or should you require additional information, please do not hesitate to contact this office at your earliest convenience.

Respectfully submitted,
LGC Geo-Environmental, Inc.

Robert L. Gregorek, II CEG 1257 Certified Engineering Geologist


AJR/RLG
*
Distribution: (4) Addressee
Attachments: $\quad$ Figure 1 - Site Location Map (Rear of Text)
Appendix A - Infiltration Trench Logs (Rear of Text)
Appendix B - Infiltration Test Results (Rear of Text)
Plate 1 - Infiltration Test Location Map (Pocket Enclosure)

©D 2018 Google Inc., Googla Earth, Aerial Imagery'.

| FIGURE 1 | Project Name | SIKAND-MORENO VALLEY |
| :--- | :--- | :--- | :--- |
| SITE LOCATION MAP | Project No. | G18-1648-20 |
| Geol. $/$ Eng. | RLG |  |

## APPENDIX A

## INFILTRATION TRENCH LOGS





## APPENDIX B

## INFILTRATION TEST RESULTS

| Project: | Sikand-Moreno Valley |  | Job No.: |  | G18-1648-20 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Test Hole No.: | IT-2 |  | Date Excavated: |  | 9/4/2018 |  |  |  |
| Dopth of Test Hole: | 6*/ Pit Depth: 10.5 |  | Soil Classification: |  | Bedrock |  |  |  |
| Check for Sandy Soil Criteria By. JM |  |  | Date of Perc Test: |  | 9/5/2018 |  | Diameter: 8 | inches |
| SANDY SOLL CRITERIA TEST |  |  |  |  |  |  |  |  |
|  | TMEE | Time Interval (Minutes) | Time Interval [Minutes) | $\begin{array}{\|l} \hline \text { Initial } 1 \\ \text { Level (In } \\ \hline \end{array}$ | $\begin{aligned} & \text { Vater } \\ & \text { ches) } \end{aligned}$ | $\begin{gathered} \text { Final Water } \\ \text { Level } \\ \text { (Inches) } \\ \hline \end{gathered}$ | Change in Water Level (Inches) |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

PRESOAK PERIOD

| Date |  |  |  | Time |
| :---: | :---: | :---: | :---: | :---: |
| Interval | Amount of Water Used |  |  |  |
| Start | $9 / 4 / 2018$ | $1: 57 \mathrm{PM}$ | 22 HRS | $43 / 4 \mathrm{Gal}$ |
| Stop | $9 / 5 / 2018$ | $11: 10 \mathrm{AM}$ |  | 4 |




Dated: September 22, 2018
Project No, G18-1648-10

Prepared For:
Shizao Zheng
1378 West Zhorgshan Road Ningbo City, Zhejlang Province China

## Shizao Zheng

1378 West Zhorgshan Road Ningbo City, Zhejiang Province
China

Subject: Preliminary Geotechnical Investigation for the Proposed Single-Family Residential Development, Tentative Tract Map No. 37557, Clty of Moreno Valley, Riverside County,
California.

LGC Geo-Environmental, Inc. (LGC) is pleased to submit herewith our preliminary geotechnical investigation report for the proposed single-family residential development, Tentative Tract Map No. 37557, City of Moreno Valley, Riverside County, California.

This report presents the results of our review of published geologic/geotechnical reports, maps, and aerial photographs relative to the area that includes the site; our field exploration, geologic mapping, and laboratory testing; and geotechnical and geologic judgment, opinions, conclusions and preliminary recommendations associated with the proposed residential development.

Based on the results of the scope of our work and our review of the conceptual grading plan tract map, it is our opinion that the subject site is suitable for the proposed residential development, provided that the recommendations presented herein are incorporated into the design and implemented during grading and construction. LGC should review the final grading plans, as well as any foundation/structural plans when those become available, and revise the recommendations presented herein, if necessary.

LGC is pleased to have been retained to be of service to you during the design stages of this project. Should you have any questions regarding the contents of this report or should you require additional information, please do not hesitate to contact us.

Respectfully submilted,
LGC Geo-Environmental, Inc.


Robert L. Gregorek II, CEG 1257
Certified Engineering Geologist
AJR/RLG/JPN
Distribution: (4) Addressee



John P. Nielsen, GE 641 Geotechnical Engineer

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### 1.0 INTRODUCTION

This report presents the results of LGC Geo-Environmental, Inc.'s (LGC) geotechnical investigation for the proposed single-family residential development, Conceptual Grading Plan Tract Map No. 37557, City of Moreno Valley, Riverside County, California. The purpose of this geotechnical investigation was to evaluate the soil engineering properties of the surface and subsurface soil conditions on the site, and to provide geotechnical recommendations with respect to grading, construction, foundation design and other relevant geotechnical aspects related to the proposed residential development. The referenced conceptual grading plan tract map which was provided to LGC, was utilized as the base map for our Geotechnical Map (Plate 1) of the site.

Our scope of services included:

- A review of available published geologic/geotechnical literature, geologic maps, and aerial photographs pertinent to the site (Appendix A).
- Geologic mapping of the site.
- Subsurface exploration consisting of the excavating, sampling, and logging of ten (10) exploratory trenches, TR-1 through TR-8 and IT-1 through IT-2, to depths ranging from approximately 3.0 to 13.5 feet below the existing ground surface. All of the trenches were excavated using a backhoe. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions on the project site, including classification of site soil, determination of depth to groundwater (if present), and to obtain representative soil samples.
- Laboratory testing of representative soil specimens collected during our subsurface exploration (Appendix C).
- Geotechnical engineering and geologic analyses of the data with respect to the proposed singlefamily development.
- Preparation of General Earthwork and Grading Specifications (Appendix D).
- Preparation of this report presenting our findings, conclusions and preliminary geotechnical design recommendations for the proposed development.


### 1.1 Proposed Construction and Grading

The referenced conceptual grading plan tract map prepared by Sikand Engineering dated June 13, 2018 indicates that the proposed development will consist of 24 single-family residential lots with associated roadways, walk ways, and hardscape, landscape areas and a water quality basin and a debris basin. It is anticipated that the structures will be up to two-stories, with wood/steel frame and masonry wall construction and some masonry block walls. This type of construction provides for relatively moderate to heavy loads imposed on the underlying foundation soil.

The referenced 80-scale tentative tract map indicates proposed cut and fill depths will be generally be approximately 32 and 22 feet, respectively. Proposed maximum cut and fill slope heights are about 55 feet and 22 feet respectively, at slope ratios of $2: 1$ (h:v) or flatter.

### 1.2 Location and Site Description

The site is located north of Jennings Court, west of Morton Road and east of the mountains at the base, in the City of Moreno Valley, in Riverside County, California. The site is irregular in shape and is approximately 32.8 -acres in size. The site is moderately covered with annual weeds and shrubs, some cluster of trees and scatter boulders, mainly at the base of the mountain. The site also contains some scattered trash and debris. The general location and configuration of the site is shown on the Site Location Map (Figure 1).


### 1.3 Topography and Drainage

The topography of the site is undulated with approximately four washes running down the site from the northeast. Elevations range from approximately 2,040 feet above mean sea level ( msl ) in the northeastern portion of the site to approximately 1,588 feet msl in the westem portion of the site.

### 1.4 Existing Improvements and Vegetation

The site has not been previously developed. Vegetation consists of a moderate to dense cover of annual weeds/shrubs

### 1.5 Research of Previous Geological and Geotechnical Data

LGC researched published and unpublished geotechnical reports and geologic data (Appendix A). Pertinent site and geologic information were incorporated into the conclusions and recommendations presented in this report.

### 1.6 Aerial Photograph Analysis

Google Earth Pro aerial imagery (from 1994 to 2018) was evaluated for the subject site and surrounding vicinity. The available information, as it pertains to the geologic and geotechnical issues of the proposed single-family residence, has been incorporated into the conclusions and recommendations presented in this report.

Our review of the aerial photographs indicates that the site has been a vacant property from 1994 to the present.

### 2.0 FIELD INVESTIGATION

### 2.1 Geologic Mapping

Surface geologic mapping of the site and accessible surrounding areas was completed by a geologist from this firm during September 2018, utilizing the referenced Conceptual Grading Plan Tract Map No. 37557 for plotting geologic observations. This information is plotted on the enclosed Geotechnical Map (Plate 1).

### 2.2 Field Exploration

Ten (10) exploratory trenches, TR-1 through TR-8 and IT-1 through IT-2, were excavated with a backhoe on September 4, 2018 and September 6, 2018 to depths of approximately 3.0 to 13.5 feet below the existing ground surface. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions beneath the site, those include classification of site soil and bedrock, determination of groundwater elevations (if present), and the collection of representative soil samples.

Prior to our subsurface work, an underground utilities clearance was obtained from Underground Services Alert of Southern California. At the condlusion of the subsurface exploration, the trenches were backfilled with on-site materials with some compactive effort. Minor settlement of the backfill soil may occur over time.

Earth materials recovered from beneath the site were classified and logged by a geologist from LGC in accordance with the visual-manual procedures of the Unified Soil Classification System. The approximate locations of the exploratory borings and trenches are shown on the Geotechnical Map (Plate 1) and descriptive logs are presented in Appendix B.

Bulk samples of soil associated with the exploratory trenches were collected for laboratory testing. Bulk samples consisted of selected soil and bedrock materials obtained at various depth intervals from the exploratory trenches.

### 2.3 Laboratory Testing

During our subsurface exploration, relatively undisturbed and bulk soil samples were retained for laboratory testing. Laboratory tests were performed on selected representative samples of onsite soil materials and included maximum dry density and optimum water content, expansion index, sulfate content, chloride content, pH, resistivity, and shear strength. A brief description of the laboratory test results and test data are presented in Appendix C.

### 3.0 ETNDTNGS

### 3.1 Regional Geologic Setting

The site is located in the Peninsular Ranges Geomorphic Province of Califormia. The Peninsular Ranges are characterized by steep, elongated valleys that trend west to northwest. Locally the northwesttrending topography is controlled by the Elsinore fault zone, which extends from the San Gabriel River Valley southeasterly to the United States/Mexico border. The Santa Ana Mountains lie along the western side of the Elsinore fault zone, while the Perris Block is located along the eastern side of the fault zone. These mountainous regions are underlain by Pre-Cretaceous, metasedimentary and metavolcanic rocks and Cretaceous plutonic rocks of the Southern California Batholith. Tertiary and Quaternary rocks are generally comprised of non-marine sediments consisting of sandstone, mudstones, conglomerates, and occasional volcanic units. A map of the regional geology is presented on the Regional Geologic Map (Figure 2).

### 3.2 Local Geoloqy and Soil Conditions

Based on our review of available geological and geotechnical literature, current field mapping, exploratory trenches and exploratory borings conducted at the site, it is our understanding that the site is primarily underlain by undocumented artificial fill, older alluvial fan deposits, and Bonzal Tonalite bedrock. Each unit is described in greater detail below and presented within the exploratory trench and boring logs (Appendix B). The approximate locations of the observed geologic units are depicted on the Geotechnical Map (Plate 1).

Artificial Fill, Undocumented (Afu); During our subsurface exploration, artificial fill (undocumented) was encountered down to depths ranging from approximately 2.0 feet to 5.5 feet. The artificial fill generally consists of silty sand and clayey silt and is various shades of brown, red and black; very fine to medium grained with some coarse grains; coarse and very coarse rock fragments; dry to damp; medium dense/firm; contains some pores; roothairs; desiccated; with traces of concrete pieces.

Topsoil (No Map Symbol): Topsoil was present within portions of the site overlying the older alluvial deposits or bedrock. The topsoil consisted of silty sand which was generally very fine to coarse grained, various shades of red and brown, dry to damp, loose to medium dense, desiccated with some pores and roots. These materials were generally 0.5 foot to 2.0 foot thick where explored.

Alluvium (Qal); Alluvium is present within drainage courses on the site and consist of silty sand which is generally very fine to coarse grained, various shades of read and brown, dry to damp, loose to medium dense with some rock fragments, pores, and roots. The alluvium where explored is about 2.0 feet to 7.0 feet deep and could be as much aa 10.0 feet deep.

Older Alluvial Fan Deposits (Qoa): Older alluvial fan deposits encountered on the site during our subsurface exploration, were observed to range from the surface approximately 2.0 feet to 6.5 feet deep to as deep as 12 feet. The older alluvial fan deposits generally consist of silty sand and is

characterized as being various shades of brown, green, gray, and red; dry; medium to very dense; very fine to medium grained with coarse grains; pinhole pores; roothairs; with oxidation staining. Portions of the upper 1.0 foot to 2.0 foot are weathered.

Bedrock: Bonzal Tonalite (Qdi) - Bedrock of the Peninsular Ranges was present at the near surface, but mostly below the topsoil, alluvium and older alluvial fan deposits at depths of about 0.5 feet to 12.0 feet. The bedrock consists of quartz diorite. The bedrock was slightly to moderately weathered; various shades of black, orange, gray, yellow, brown and white; dry to damp; moderately hard to very hard; friable; fine to very coarse grained; with oxidation staining; and manganese staining.

### 3.3 Landslides

Our review of geologic literature did not indicate the presence of landslides on or directly adjacent to the site.

### 3.4 Groundwater

Groundwater was not encountered during the subsurface exploration performed for this report. Our review of the California Department of Water Resources, Water Data Library 2018 online database indicates historical depths of groundwater approximately four miles away from the general site area is about 73 feet below the existing ground surface at an elevation of approximately 1,638 above mean sea level (Well ID: Station 335628N1171932W001).

### 3.5 Caving

Caving was not encountered in the exploratory trenches. Caving may occur within excavations made into the friable portions of the alluvium, older alluvial fan deposits and weathered bedrock.

### 3.6 Surface Water

Surface water runoff relative to project design is the purview of the project civil engineer and should be designed to be directed away from all structures and walls.

### 3.7 Faulting

The geologic structure of the Southern California area is mainly dominated by northwest-trending faults associated with the San Andreas system. Faults, such as the Whittier, Elsinore, San Jacinto and San Andreas, are major faults in this system and are known to be active and may produce moderate to strong ground shaking during an earthquake. In addition, the San Andreas, Elsinore and San Jacinto faults are known to have ruptured the ground surface in historic times.

The following table is comprised of a list of the significant faults located within 20 miles of the proposed project site. We have also included the Maximum Earthquake Magnitude predicted for each of these faults.

TABLE 1
Siqnificant Faults in Proximity of the Project Site

| ABBREVIATED FAULT NAME | APPROXIMATE DISTANCE <br> $(\mathrm{mi})$ | MAXIMUM <br> EARTHQUAKE <br> MAGNITUDE (MW) |
| :--- | :---: | :---: |
| San Jacinto-San Bernardino | 5.2 | 6.7 |
| San Jacinto-San Jacinto Valley | 5.6 | 6.9 |
| San Andreas-San Bernardino | 14.9 | 7.3 |
| San Andreas-Southern | 14.9 | 7.4 |
| Elsinore-Glen Ivy | 18.5 | 6.8 |
| Chino-Central Ave (Elsinore) | 19.0 | 6.7 |
| Cucamonga | 19.4 | 7.0 |

Source: EQFAULT for Windows Version 3.00b
Active, potentially active, or inactive faults are not known to project through the site. The site does not lie within an Alquist-Priolo Earthquake Fault Hazard Zone as defined by the State of California in the Alquist-Priolo Earthquake Fault Hazard Zoning Act or a Riverside County Fault Zone Map. The possibility of damage to structures or site improvements because of ground rupture is considered negligible because active faults are not known to cross the site.

Seismicity
Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the southern California region, which may affect the site, include soil liquefaction and dynamic settlement. Liquefaction is a seismic phenomenon in which loose, saturated, granular soil behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) groundwater within 50 feet of the ground surface 2) low density non-cohesive (granular) soil; and 3) high-intensity ground motion. Studies indicate that saturated, loose to medium dense, near surface cohesionless soil exhibit the highest liquefaction potential, while dry, dense, cohesionless soil and cohesive soil exhibit low to negligible liquefaction potential.

Other secondary seismic effects include shallow ground rupture, seiches, and tsunamis. In general, these secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. A risk assessment of these secondary effects is provided in the following sections.

### 3.9 Settlement Analysis

The results of our subsurface exploration and laboratory testing indicate the site is underlain by approximately 2 feet to 7 feet to possibly up to 10 feet of potentially compressible and/or hydrocollapsible soil, consisting of artificial fill, undocumented, topsoil, alluvium, weathered older alluvial fan deposits and weathered bedrock. These materials exhibit the potential to settle or hydro-consolidate under the surcharge of proposed fill loads and anticipated future structural loads.

In areas where overexcavation to competent underlying older alluvial fan deposits or bedrock is accomplished, total settlement of about 0.50 -inch, and a differential settlement of about 0.25 -inch over a distance of about 40 feet could be anticipated.

### 4.0 CONCLUSTONS AND RECOMMENDATIONS

## 4.1

## General

Based on the results of our current geotechnical investigation, it is our opinion that the proposed residential development, as indicated on the conceptual grading plan tract map, is feasible from a geotechnical and geologic standpoint, provided that the following recommendations are incorporated into the design criteria and project specifications and implemented during site grading and during construction. When actual grading plans for the site and foundation/structural plans for the proposed development are available, a comprehensive plan review should be performed by LGC. Depending on the results, additional recommendations may be necessary to provide updated geotechnical design parameters for both earthwork and foundations. Grading should be conducted in accordance with local codes, the recommendations within this report, and future plan reviews. It is also our opinion that the proposed construction and grading will not adversely impact the geologic stability of adjoining properties.

The following is a summary of the primary geotechnical factors determined from our geotechnical investigation.
a The site is underlain by undocumented artificial fill, topsoil, alluvium, older alluvial fan deposits and bedrock.

- Landslides are not known to impact the site.
- Groundwater are not considered a constraint for the proposed development.
a The potential for liquefaction is considered negligible because of shallow depths to very dense older alluvial fan deposits and hard bedrock.
- Active or potentially active faults are not known to exist on the site.
- Laboratory test results of the upper soil and bedrock indicate a very low expansion potential and negligible potential for soluble sulfate effects on normal concrete and chloride effects on reinforcing steel.
- The majority of the site is underlain by approximately 2 feet to 7 feet to as much as 10 feet locally of undocumented artificial fill, topsoil, alluvium, weathered older alluvial fan deposits and weathered bedrock which may be prone to potential intolerable post-grading settlement and/or hydroconsolidation, under the surcharge of the future proposed structural loads and/or fill loads. These materials should be overexcavated to underlying competent older alluvial fan deposits or bedrock.
- The existing onsite soil from a geotechnical perspective, appear to be suitable material for use as fill, provided those are relatively free from rocks (larger than 12 inches in maximum dimension), construction debris, and organic material. It is anticipated that the onsite soil may be excavated with conventional heavy-duty construction equipment.


### 5.0 GEOLOGIC CONSTDERATIONS

### 5.1 Slopes

Cut slopes and fill slopes to the proposed slope heights and slope ratios of approximately $2: 1(\mathrm{H}: \mathrm{V})$ or flatter and should be grossly and surficially stable.

### 5.2 Faulting

Geologic hazards related to fault rupture are not known or not detected during our field exploration and site reconnaissance to be present at the site.

### 5.3 Groundwater

Adverse effects on the proposed development resulting from groundwater are not anticipated.

### 5.4 Subsidence

In consideration of the anticipated grading, recommended overexcavations, proposed structures and improvements, and subsurface material types and their conditions, unfavorable ground subsidence is not anticipated. This should be confirmed with additional consolidation testing in the older alluvial fan deposits.

### 5.5 Landsliding

Landslides or surface failures were not observed at or directly adjacent to the site. As a result, the probability of the site being affected by landslides is considered nil.

### 5.6 Ground Rupture

Ground rupture because of active faulting is not likely to occur on site because of the absence of known active fault traces on the site. Cracking because of shaking from distant seismic events is not considered a significant hazard, although it is a possibility at any site.

### 5.7 Rock Fall

The potential for rock fall is considered moderate, due to the close proximity of the mountainside. See referenced report in Appendix $A$.

### 5.8 Tsunamis and Seiches

Based on the elevation of the site with respect to sea level and its distance from large open bodies of water, the potentials for seiche and/or tsunami is considered to be negligible.

### 6.0 SEISMIC-DESIGN CONSIDERATIONS

### 6.1 Ground Motions

The site will probably experience ground shaking from moderate to large size earthquakes during the life of the proposed development. Furthermore, it should be recognized that the Southern California region is an area of high seismic risk, and that it is not considered feasible to make structures totally resistant to selsmic-related hazards.

Structures within the site should be designed and constructed to resist the effects of seismic ground motions as provided in the 2016 CBC, Section 1613. The method of design is dependent on the seismic zoning, site characterizations, occupancy category, building configuration, type of structural system, and building height.

The following seismic design parameters, presented in Table 2, were developed based on the CBC 2016 and should be used for the proposed structures. A site coordinate of $33.8066^{\circ} \mathrm{N}, 117.1195^{\circ} \mathrm{W}$ was used to derive the seismic parameters presented below.

TABLE 2
Selsmic Desian Soil Parameters

| SEISMIC DESTGN SOZL PARAMETERS (2016 CBC Section 1613) |  |
| :--- | :---: |
| Site Class Definition ASCE 7; Chapter 20 (Table 20.3-1) | D |
| Mapped Spectral Response Acceleration Parameter Ss (for 0.2 second) (Figure 1613.5.3.(1) | 1.51 |
| Mapped Spectral Response Acceleration Parameter, SI (for 1.0 second) (Figure 1613.5.3.(2) | 0.64 |
| Site Coefficient Fa (short period) [Table 1613.3.3.(1)] | 1.0 |
| Site Coefficient Fv (1-second period) [Table 1613.3.3.(2)] | 1.5 |
| Adjusted Maximum Considered Earthquake (MCE) Spectral Response Acceleration Parameter <br> SNS (short period) (Eq. 16-37) | 1.51 |
| Adjusted Maximum Considered Earthquake (MCE) Spectral Response Acceleration Parameter <br> Sm1 (1-second period) (Eq. 16-38) | 0.96 |
| Design Spectral Response Acceleration Parameter, Sos (short period) (Eq. 16-39) | 1.00 |
| Design Spectral Response Acceleration Parameter, SD1 (1-second period) (Eq. 16-40) | 0.64 |
| Mean Peak Ground Acceleration (PGAm) | 0.59 |

### 6.2 Secondary Seismic Hazards

Secondary effects of seismic activity normally considered as possible hazards to a site include several types of ground failure, as well as induced flooding. Various general types of ground failures which might occur as a consequence of severe ground shaking of the site include liquefaction, landsliding, ground subsidence, ground lurching, and shallow ground rupture. The probability of occurrence of each type of ground failure depends on the severity of the earthquake, distance from faults, topography, subsoil and groundwater conditions, in addition to other factors. Based on the proposed grading and recommended overexcavation of potentially compressible materials within areas of proposed development, the secondary effects of liquefaction and other seismic activity noted above are considered unlikely at the site.

Seismically induced flooding, which might be considered a potential hazard to a site, normally includes flooding because of a tsunami (seismic sea wave), a seiche (i.e., a wave-like oscillation of the surface of water in an enclosed basin that may be initiated by a strong earthquake) or failure of a major reservoir or retention structure upstream of the site. The site is located several miles inland from the nearest coastline of the Pacific Ocean at an elevation in excess of approximately 1630 feet above msl, the potential for seismically induced flooding because of tsunami inundation is considered nonexistent. Enclosed bodies of water do not lie adjacent to the site, the potential for seiche induced flooding at the site is considered nonexistent.

### 7.0 GEOTECHNKCAL DESIGN PARAMETERS

### 7.1 Shrinkage/Bulking and Subsidence

Volumetric changes in earth quantities occur when excavated onsite soil are replaced as properly compacted fill. The following table, Table 3, is an estimate of the shrinkage and bulking factors for the various geologic units present onsite. These estimates are based on in-place densities of the various materials and on the estimated average degree of relative compaction that will be achieved during grading.

TABLE 3
Estimated Shrinkage/Bulking

| GEOLOGIC UNIT | SHRINKAGE PERCENT |
| :---: | :---: |
| Artificial Fill, Undoctumented | $6 \%$ to $15 \%$ |
| Alluvium | $10 \%$ to $15 \%$ |
| Topsoil | $10 \%$ to $15 \%$ |
| Older Alluvial Fan Deposits (Qoa) | $9 \%$ to $13 \%$ |
| GEOLOGIC UNIT | BULKING PERCENT |
| Bedrock: Bonzal Tonalite | $0 \%$ TO $10 \%$ |

Subsidence of the older alluvial fan deposits and bedrock, because of recompaction of exposed soil or bedrock prior to fill placement, and placement of proposed fills, is estimated to be about 0.15 to 0.20 feet.

The above estimates of shrinkage are intended as an aid for project engineers in determining earthwork quantities. However, these estimates should be used with some caution since they are not absolute values. These are preliminary rough estimates which may vary with depth of removal, stripping losses, field conditions at the time of grading, etc. Handling losses, and reduction in volume due to removal of oversized material, are not included in the estimates.

### 7.2 Excavation Characteristics

The following excavation characteristics of the various material types at the site have been developed based on LGC's geologic mapping and experience with these materials in the area and are presented in Table 4 below:

To better determine if rip-ability with conventional equipment is feasible or if alternative excavation methods such as blasting is necessary, we recommend a seismic refraction survey.

### 7.3 Compressible/Collapsible Soil

The results of our laboratory in-situ moisture and density testing indicate that the existing undocumented artificial fill, topsoil, alluvium and weathered portions of the older alluvial fan deposits and bedrock are susceptible to varying degrees of intolerable settlement and/or hydro-consolidation (collapse) when a load is applied, or the soil is saturated. Consequently, these materials should be collectively overexcavated to underlying competent older alluvial fan deposits or bedrock and replaced as engineered compacted fill.

### 8.0 SITE EARTHWORK

### 8.1 General Earthwork and Grading Specifications

Earthwork and grading should be performed in accordance with applicable requirements of the grading code of the County of Riverside and in accordance with the following recommendations prepared by this firm. Grading should also be performed in accordance with the applicable provisions of the attached "Standard Grading Specifications" prepared by LGC (Appendix D), unless specifically revised or amended herein. In case of conflict, the following recommendations shall supersede those included in as part of LGC's General Earthwork and Grading Specifications (Appendix D).

### 8.2 Geotechnical Observations and Testing

Prior to the start of grading, a meeting should be held on the site with the owner or his representative, developer, grading contractor, civil engineer and geotechnical consultant to discuss the work schedule and geotechnical aspects of the grading. Rough grading, which includes clearing, overexcavation, scarification/processing and fill placement, should be accomplished under the full-time observation and testing of the geotechnical consultant. Fills should not be placed without prior approval from the geotechnical consultant.

A representative of the project geotechnical consultant should also be present onsite on a full-time basis during grading operations to document proper placement and compaction of fills, as well as to document excavations and compliance with the other recommendations presented herein.

## 8. 3 Clearing and Grubbing

Weeds/shrubs, grasses, boulders and trees in areas to be graded should be stripped and hauled offsite. Trees to be removed should be grubbed so that the stumps and major-root systems are removed and the organic materials hauled offsite. During site grading, roots, tree branches and other deleterious materials missed during clearing and grubbing operations should be removed from fill sources prior to placement.

The project geotechnical consultant or his qualified representative should be notified at the appropriate times to provide observation and testing services during clearing and grubbing operations to observe and document compliance with the above recommendations. In addition, buried structures, unusual or adverse soil conditions encountered that are not described or anticipated herein should be brought to the immediate attention of the geotechnical consultant. The existing drainage courses must be cleared of organics, debris, and sediment and widened to accommodate compaction equipment.

### 8.4 Private Sewage System Abandonment

Private sewage systems and/or other subsurface structures that may be encountered should be located, removed and/or properly abandoned. Abandonment and/or removal of septic systems that may exist should be in accordance with local codes. Seepage pits, if abandoned in-place, should be pumped clean, backfilled with gravel or clean sand jetted into place, and then capped with 2 feet or more of at least a 2 -sack slurry for a minimum distance of 2 feet outside the edge of the seepage pit. The top of the slurry cap should be at least 10 feet below proposed grade.

### 8.5 Water-Well Capping

Unknown water wells that are encountered within the site, which are to be abandoned, should be abandoned and capped under permit by the appropriate governmental agency from Riverside County. In addition, a minimum 10 -foot thick compacted fill blanket, below proposed grade, should be placed above the previously or newly-capped water wells.

## 8.6

Overexcavation and Ground Preparation
The site is underlain by approximately 2 feet to 7 feet and possibly as much as 10 feet of compressible materials. Existing undocumented artificial fill, topsoil, alluvium and weathered portions of the older alluvial fan deposits and bedrock are considered unsuitable for support of proposed fills, structures, and/or improvements, and should be overexcavated to expose underlying competent older alluvial fan deposits or bedrock. Where overexcavation and grading do not provide 5 feet or more of fill below finished pad-grade within areas for proposed structures, retaining walls, or fence walls, the area should be overexcavated to 5 feet or more below proposed grade or 2 feet or more below the bottom of footings for structures or walls, whichever is deeper. Actual depths of overexcavation should be evaluated upon review of final grading and foundation plans as well as during grading on the basis of observations and testing during grading by the project geotechnical consultant.

Prior to placing engineered fill, the exposed bottom surfaces in each overexcavated area should first be scarified to a depth of approximately 6 inches, watered or air-dried as necessary to achieve a uniform water content near optimum or slightly higher, and then compacted in place to a relative compaction of 90 percent or more (based on American Standard of Testing and Materials [ASTM] Test Method D1557).

The estimated locations, extent, and approximate depths for overexcavation of unsuitable materials are indicated on the enclosed Geotechnical Map (Plate 1). The geotechnical consultant should be provided with appropriate survey staking during grading to document that depths and/or locations of recommended overexcavation are adequate.

Sidewalls for overexcavations greater than 4 feet in height should not be steeper than 1:1 horizontal to vertical ( $\mathrm{h}: \mathrm{v}$ ) and should be periodically slope-boarded during excavation to remove loose surficial debris and facilitate geologic mapping. Flatter excavations may be necessary for stability.

The grading contractor will need to consider appropriate measures necessary to excavate existing improvements adjacent to the site without endangering those because of caving or sloughing.

## 8.7 subdrains

Following overexcavation of the topsoil, alluvium and weathered portions of the older alluvial fan deposits or bedrock, in the existing drainage course of the site a subdrain should be installed where the ultimate depth of fill below proposed grade exceeds approximately 10 feet. Tentative locations of the recommended subdrains should be evaluated once actual grading plans are developed. Actual locations should also be determined by the geotechnical consultant once conditions are exposed during grading. The subdrains will help mitigate potential buildup of hydrostatic pressures below compacted fill due to infiltration of sub-surface and surface waters.

### 8.8 Fill Suitabillity

Soil materials excavated during on-site grading are generally considered suitable for use as compacted fill provided that such soil does not contain significant amounts of trash, vegetation, organic material, construction debris, and oversize material.

### 8.9 Oversized Material

Oversized material that may be encountered during grading, greater than 6 inches, should be reduced in size or removed from the site

### 8.10 Cut/Fill Transitions and Differential Fill Thicknesses

To mitigate distress to structures and walls related to the detrimental effect of differential settlement, the cut portions should be eliminated from cut/fill transition areas in order that the entire structure or wall be founded on a approved uniform material. This should be accomplished by overexcavating the "cut" portions and shallow fill portions 5 feet or more below proposed pad grade or 2 feet below proposed
footings for structures or walls, whichever is deeper and replacing the excavated materials as properly compacted fill. Recommended depths of overexcavation are provided in the following table:

| DEPTH OF FILL ("FIII" portion) | DEPTH OF OVEREXCAVATION ("cut" portion) |
| :---: | :---: |
| Up to 15 feet | 5 feet (minimum) |
| Greater than 15 feet | One-third the maximum thickness of fill placed on the "fill" <br> portion (12 feet maximum) |

### 8.11 Benching

Where compacted fills are to be placed on natural slope surfaces inclining at 5:1 (h:v) or greater, the ground should be excavated to create a series of level benches, which have at least a minimum height of 4 feet, excavated into competent bedrock or existing compacted engineered materials. Typical benching details are described in the attached LGC "Standard Grading Specifications" (Appendix D).

### 8.12 Fill Placement

Fills should be placed in lifts not greater than 6 inches in uncompacted thickness, watered or air-dried as necessary to achieve a uniform water content of at least optimum moisture content, and then compacted in place to relative compaction of 90 percent or more. Fills should be maintained in a relatively level condition. The laboratory maximum dry density and optimum moisture content for each change in soil type should be determined in accordance with ASTM Test Method D1557.

### 8.13 Inclement Weather

Inclement weather may cause rapid erosion during mass grading and/or construction. Proper erosion and drainage control measures should be in-place during periods of inclement weather in accordance with Riverside County and California State requirements.

### 9.0 SLOPE CONSTRUCTION

### 9.1 Slope Stability

Cut slopes and fill slopes at the proposed heights at slope ratios of approximately 2:1 ( $\mathrm{H}: \mathrm{V}$ ) or flatter and should be grossly and surficially stable.

### 9.2 Fill Slopes

Following overexcavation of unsuitable materials, fill slopes and fill over cut slopes should be initiated on a minimum 15 feet wide key excavated into competent older alluvial fan deposits or bedrock if the ground gradient is steeper than $5: 1(\mathrm{H}: \mathrm{V})$ as approved by LGC. The bottom of the fill keys should be tilted at 2 percent back into the slope.

### 9.3 Cut Slopes

Proposed cut slopes may expose low-density, dry and/or cohesionless soil or bedrock with out-of-slope planner features, which will likely require stabilization by overexcavation and replacement with compacted fill.

### 9.4 Temporary Excavations

Temporary excavations varying up to a height of approximately 2 feet to 10 feet below existing grades will be necessary to accommodate the recommended overexcavation of the unsuitable soil. Based on the physical properties of the onsite soil, temporary excavations exceeding 4 feet in height should be cut back at a ratio of $1: 1(\mathrm{~h}: \mathrm{v})$ or flatter, for the duration of the overexcavation and recompaction of unsuitable soil material. Temporary slopes excavated at the above slope configurations are expected to remain stable during grading operations. However, temporary excavations should be observed by a representative of the project geotechnical consultant for any evidence of potential instability. Depending on the results of these observations, revised slope configurations may be necessary.

Other factors which should be considered with respect to the stability of the temporary slopes include construction traffic and storage of materials on or near the tops of the slopes, construction scheduling, presence of nearby walls or structures on adjacent properties, and weather conditions at the time of construction. Applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1970, and the Construction Safety Act should also be followed.

### 10.0 POST-GRADING CONSIDERATIONS

### 10.1 Control of Surface Water and Drainage Control

Positive-drainage devices such as sloping sidewalks, graded-swales, and/or area drains, should be provided to collect and direct water away from the structure and slopes. Neither rain nor excess irrigation water should be allowed to collect or pond against building foundations. Drainage should be directed to adjacent driveways, adjacent streets or storm-drain faculties and maintained at all times. The site is in a semi-arid climate area, from a geotechnical standpoint, thus the ground surface adjacent to the structures should be sloped at a gradient of at least 2 percent for a distance of at least 10 feet. Each graded lot should be further maintained by a swale or drainage path at a gradient of at least 1 percent. Where necessary, drainage paths may be shortened by use of area drains and collector pipes. Planters with open bottoms adjacent to buildings should be avoided. Over watering must be avoided.

### 10.2 Utility Trenches

Utility-trench backfill within roadways, utility easements, under walls, sidewalks, driveways, floor slabs and any other structures or improvements should be mechanical compacted. The onsite soil should generally be suitable as trench backfill provided those are screened of rocks and other material over 3 inches in diameter and organic matter. Trench backfill should be compacted in uniform lifts (generally not exceeding 6 inches to 8 inches in uncompacted thickness) by mechanical means to at least 90 percent relative density (per ASTM Test Method D1557). Density testing, along with probing, should be performed by the project geotechnical consultant or his representative, to document proper compaction.

If trenches are shallow, the use of conventional equipment may result in damage to the utilities. Clean sand, having a sand equivalent (SE) of 30 or greater should be used to bed and shade the utilities. Sand backfill should be densified. The densification may be accomplished by jetting or flooding and then tamping to ensure adequate compaction. A representative from LGC should observe, probe, and test the backfill to verify compliance with the project specifications.

Utility-trench sidewalls deeper than 4 feet should be laid back at a ratio of $1: 1$ (h:v) or flatter or braced. A trench box may be used in lieu of shoring. If shoring is anticipated, LGC should be contacted to provide design parameters.

To avoid point-loads and subsequent distress to clay, cement or plastic pipe, imported sand bedding should be placed 1 -foot or more above pipe in areas where excavated trench materials contain significant cobbles. Sand-bedding materials should be compacted and tested prior to placement of backfill.

Where utility trenches are proposed parallel to building footings (interior and/or exterior trenches), the bottom of the trench should not be located within a 1:1 (h:v) plane projected downward from the outside bottom edge of the adjacent footing.

### 11.0 PREL TMINARY FOUNDATION DESIGN RECOMMENDATIONS

## 1.1 .1

## General

Provided that site grading is performed in accordance with the recommendations of this report, conventional shallow foundations are considered feasible for support of the proposed residential structures. Tentative foundation recommendations are provided herein. However, these recommendations may require modification depending on existing as-graded conditions within the building sites upon completion of grading.

### 11.2 Allowable-Bearing Values

An allowable-bearing value of 2,500 pounds per square foot (psf) may be used for 12 -inch wide or greater continuous footings or 24 -inch square pad footings, founded completely within in competent compacted fill at a depth of 12 -inches or more below the lowest adjacent compacted pad grade. This value may be increased by 20 percent for each additional foot of width and depth, to a value not greater than 3,500 psf. The recommended allowable-bearing value includes both dead and live loads. The bearing capacities should be re-evaluated when loads and footing sizes have been finalized.

### 11.3 Settlement

Based on the general settlement characteristics of compacted fill, the previous overexcavation recommendations in this report and anticipated loading, it is estimated the site would be subjected to a total settlement about 0.50 -inch, and a differential settlement of about 0.25 -inch over a distance of about 30 feet. It is anticipated that the majority of the settlement will occur during construction or shortly thereafter as building loads are applied.

The above settlement estimates are based on the assumption that a actual rough grading plan will be submitted to LGC for review, that additional soil tests may be deemed necessary, that revised settlement prediction may result and that grading will be performed in accordance with the final grading recommendations presented in a supplemental report and that the project geotechnical consultant will observe and/or test the soil conditions in the footing trenches.

### 11.4 Lateral Resistance

Lateral forces on footings should be resisted by passive earth resistance and friction at the bottom of the footing. Foundations should be designed for a passive earth pressure of 330 psf per foot of depth to a maximum value of $3,300 \mathrm{psf}$ and a coefficient of friction of 0.40 . The passive earth pressure incorporates a minimum factor of safety of 1.5 . The above values may be increased by $1 / 3$ when designing for short-duration wind or seismic forces.

The above values are based on footings placed directly against compacted fill. In the case where footing sides are formed, backfill placed against the footings should be compacted to 90 percent or more of maximum dry density as determined by ASTM D1557.

### 11.5 Footing Setbacks from Descending Slopes

Where structures are proposed near the tops of descending graded or natural slopes, the footing setbacks from the slope face should conform to the 2016 CBC, Figure 1808.7.1. The required setback is $\mathrm{H} / 3$ (one-third the slope height) measured along a horizontal line projected from the lower outside face of the footing to the slope face. The footing setbacks should be 5 feet or more where the slope height is 15 feet or less and vary up to 40 feet where the slope height exceeds 15 feet.

### 11.6 Building Clearances from Ascending Slopes

Building setbacks from ascending graded or natural slopes should conform with the 2016 CBC, Figure 1808.7.1, which requires a building clearance of $\mathrm{H} / 2$ (one-half the slope height) varying from 5 to 15 feet. The building clearance is measured along a horizontal line projected from the toe of the slope to the face of the building. A retaining wall may be constructed at the base of the slope to achieve the required building clearance.

### 11.7 Footing Observations

Footing trenches should be observed by the project geotechnical consultant to document that they have been excavated into competent bearing compacted fill soil. The foundation trenches should be observed prior to the placement of forms, reinforcement or concrete. The trenches should be trimmed neat, level and square. Loose, sloughed or moisture-softened soil should be removed prior to concrete placement.

Excavated materials from footing excavations should not be placed in slab-on-ground areas unless the soil are compacted to 90 percent or more of maximum dry density as determined by ASTM D1557.

### 11.8 Expansive Soil Considerations

Results of preliminary laboratory tests by LGC indicate onsite soil materials exhibit expansion potentials of VERY LOW in accordance with 2016 CBC, Chapter 18. Given that generally the expansion index of the onsite soil is VERY LOW, recommendations to mitigate the effects of expansive soil may not be required. However, expansive soil conditions of the near surface finish grade soil should be evaluated and tested for individual building pads on a pad-by-pad basis during and at the completion of rough grading to verify and/or modify the anticipated conditions. The design and construction detalls presented herein are intended to provide recommendations for the levels of expansion potential which may be evident at the completion of rough grading. Furthermore, it should be noted that additional slab thickness, footing sizes and/or reinforcement more stringent than the recommendations that follow should be provided as recommended by the project structural engineer.

### 11.9 Footing/Floor Slabs - Very Low Expansion Potential

The following are our recommendations where foundation soil exhibit VERY LOW expansion potential as classified in accordance with 2016 CBC. For this condition, it is recommended that footings and floors be constructed and reinforced in accordance with the following criteria. However, additional slab thickness, footing sizes and/or reinforcement may be required by the project architect or structural engineer.

## - Footings

- Exterior continuous footings should be founded entirely in compacted engineered fill below the lowest adjacent final exterior pad grade at minimum depths of 12 inches and 18 inches deep for one-story and for two-story construction, respectively. Interior continuous footings may be founded at a depth of 12 inches or greater for one-story and two-story structures. Continuous footings should have a minimum width of 12 inches for one-story and 15 inches for two-story structures.
- Continuous footings should be reinforced with a minimum of two (2) No. 4 bars, one near the top and one near the bottom.
- Interior isolated pad footings should be 24 inches or more square and founded at a depth of 12 inches or more for one-story and two-story structures and 18 -inches or more for threestory and four-story structures, below the lowest adjacent grade. Footings should be reinforced in accordance with the structural engineer's recommendation.
- Exterior pad footings should be 24 inches or more square and founded at a depth of 18 inches or more below the lowest adjacent grade. Isolated exterior footings should be connected with grade beams. Footings should be reinforced in accordance with the structural engineer's recommendations.
- Floor Slabs
- Concrete floor slabs should be 4 inches or more thick and reinforced with No. 3 bars spaced 24 inches or less on-centers, both ways. Slab reinforcement should be supported on concrete chairs or bricks so that the desired placement is near mid-depth.
- Concrete floors should be underlain with a moisture-vapor retarder consisting of 15 -mil thick vapor barrier. Laps within the membrane should be sealed and overlapped 12 inches. Two inches or more of clean sand should be placed above and below the membrane to promote uniform curing of the concrete.
- Prior to placing concrete, subgrade soil should be thoroughly moistened to approximately $100 \%$ of optimum water content to promote uniform curing of the concrete and reduce the development of shrinkage cracks. The moisture content should penetrate to a minimum depth of 12 inches.


### 12.0 RETATNING WALLS

### 12.1 Lateral Earth Pressures and Retaining Wall Design Parameters

Conventional footings for retaining walls founded entirely in properly compacted fill should be embedded at least 18 inches below lowest adjacent grade. At this depth, an allowable uniform bearing capacity of 2,500 psf may be assumed for retaining walls founded in competent compacted fill.

The following are lateral earth pressures are recommended for retaining walls up to 10 feet high that may be proposed. The recommended lateral pressures for approved on-site or import soil (with an expansion index of $\mathbf{2 0}$ or less and an angle of internal friction (phi) of at least $\mathbf{3 6}$ degrees) for level or sloping backfill are presented in Table 5. Onsite soil should be screened of rocks and other material over 3 inches in diameter.

TABLE 5
Lateral Earth Pressures

| CONDITIONS | EQUIVALENT FLUTD WEIGHT (pCf) |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Level Backfill (up to 6 feet) | Level BackiIII Dynamic ( $>6$ feet to 10 feet) | 2:1 Backfill Ascending (up to 6 feet) | 2:1 Backfill Ascending-Dynamic ( $>6$ feet to 10 feet) |
| Active | 35 | 55 | 50 | 70 |
| At-Rest | 55 | 75 | 80 | 100 |
| Passive | 330 | 330 | 190 | 190 |

The friction coefficient of 0.40 may be used at the concrete footing and soil interface for sliding resistance. Wall footings should be designed in accordance with structural considerations.

Embedded structural walls should be designed to resist the lateral earth pressures. Restrained structural walls should be designed for at rest conditions. The magnitude of those pressures depends on the amount of deformation that the wall can yield under load. If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for "active" pressure. If the wall cannot yield under the applied load, the shear strength of the retained soil cannot be mobilized and the earth pressure will be higher. Such walls should be designed for "at-rest" conditions. If a structure moves toward the soil, the resulting resistance developed by the soil is the "passive" resistance.

The equivalent fluid pressure values assume free-draining conditions and a soil expansion index of $\mathbf{2 0}$ or less. If conditions other than those assumed above are anticipated, revised equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer.

Surcharge loading effects from the adjacent structures should be evaluated by the geotechnical and structural engineers.

### 12.2 Footing Embedments

The base of retaining wall footings constructed on level ground should be founded at a depth of 18 inches or more below the lowest adjacent final grade. Where retaining walls are proposed on or within 15 feet from the top of an adjacent descending fill slopes, the footings should be deepened such that a horizontal clearance of $\mathrm{H} / 3$ or more (one-third the slope height) is maintained between the outside bottom edges of the footings and the face of the slope but not to exceed 15 feet nor be less than 5 feet. The above recommended footing setbacks are preliminary and may be revised based on site specific soil conditions. Footing or pier excavations should be observed by the project geotechnical representative to document that the footing trenches have been excavated into competent bearing soil and to the embedments recommended above. These observations should be performed prior to placing forms or reinforcing steel.

### 12.3 Drainage

All retaining wall structures should be provided with appropriate wall drainage and appropriately waterproofed. Outlet pipes should be sloped to drain to a suitable outlet. It should be noted that that recommended wall drains does not provide protection against seepage through the face of the wall and/or efflorescence. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed to reduce this potential.

Weep holes or open vertical masonry joints should be provided in retaining walls 3 feet or less in height to reduce the likelihood of entrapment of water in the backfill. Weep holes, if used, should be 3 inches or more in diameter and provided at intervals of 6 feet or less along the wall. Open vertical masonry joints, if used, should be provided at 32 -inch or less intervals. A continuous gravel fill, 12 inches by 12 inches, should be placed behind the weep holes or open masonry joints. The gravel should be wrapped in filter fabric to reduce infiltration of fines and subsequent clogging of the gravel. Filter fabric may consist of Mirafi 140 N or equivalent.

In lieu of weep holes or open joints, for retaining walls less than 3 feet, a perforated pipe and gravel subdrain may be used. Perforated pipe should consist of 4-inch or more diameter PVC Schedule 40 or ABS SDR-35, with the perforations laid down. The pipe should be embedded in 1.5 cubic feet per foot of 0.75 or 1.5 -inch open graded gravel wrapped in Mirafi 140 N filter fabric.

Retaining walls greater than 3 feet high should be provided with a continuous backdrain for the mean full height of the wall. This drain could consist of geosynthetic drainage composite, such as Miradrain 6000 or equivalent, or a permeable drain material, placed against the entire backside of the wall. If a permeable drain material is used, the backdrain should be 1 or more feet thick. Caltrans Class II permeable material or open graded gravel or crushed stone may be used as permeable drain material. If gravel or crushed stone is used, it should have less than 5 percent material passing the No. 200 sieve. The drain should be
separated from the backfill with a geofabric. The upper 1-foot of the backdrain should be covered with compacted fill. A drainage pipe consisting of 4 -inch diameter perforated pipe (described above) surrounded by 1 cubic foot per foot of gravel or crushed rock wrapped in a filter fabric should be provided along the back of the wall. The pipe should be placed with perforations down, sloped at 2 percent or more to discharge towards an appropriate outlet through a solid pipe. The pipe should outlet away from structures and slopes. The outside portions of retaining walls supporting backfill should be coated with an approved waterproofing compound to inhibit infiltration of moisture through the walls.

### 12.4 Temporary Excavations

Retaining walls should be constructed and backfilled as soon as possible after backcuts are excavated. Prolonged exposure of backcut slopes may result in localized slope instability. To facilitate retaining wall construction, the lower 4 feet of temporary slopes may be cut vertical and the upper portions exceeding a height of 4 feet should be cut back at a gradient of $1: 1$ (h:v) or flatter for the duration of construction. Temporary slopes should be observed by the project geotechnical consultant for evidence of potential instability. Depending on the results of these observations, flatter slopes may be necessary. The potential effects of various parameters such as weather, heavy equipment travel, storage near the tops of the temporary excavations and construction scheduling should also be considered in the stability of temporary slopes. Water should not be permilted to drain towards the slope. Surcharges from equipment, spoil piles, etc., should not be allowed within 10 feet of the top of the slope.

All excavations should be made in accordance with Cal/OSHA. Excavation safety is the sole responsibility of the contractor.

### 12.5 Retaining Wall Backfill

The retaining wall backfill soil (with an expansion index of 20 or less and an angle of internal friction of at least 36 degree) should be placed in 6 to 8 inch loose lifts, moisture-conditioned or air-dried as necessary to achieve near optimum water conditions, and compacted to at least 90 percent relative density (based on ASTM Test Methods D2922 and D3017).

### 13.0 MASONRY GARDEN WALLS

### 13.1 Construction on Level Ground

Where masonry screen walls or garden walls are proposed on level ground and 5 feet or more from the tops of descending slopes, the footings for these walls may be founded at a depth of 18 inches or more below the lowest adjacent final grade. These footings should also be reinforced with two No. 4 bars, one top and one bottom and in accordance with the structural engineer's recommendations.

### 13.2 Construction Joints

In order to mitigate the potential for unsightly cracking related to the effects of differential settlement, positive separations (construction joints) should be provided in the walls at horizontal intervals of approximately 25 feet and at each corner. The separations should be provided in the blocks only and not extend through the footings. The footings should be placed monolithically with continuous rebar to serve as effective "grade beams" along the full lengths of the walls.

### 14.0 CONCRETE FLATWORK

### 14.1 Nonstructural Concrete Flatwork

Concrete flatwork (such as walkways, driveways, patios, bicycle trails, etc.) has a high potential for cracking because of changes in soil volume related to soil-moisture fluctuations. To reduce the potential for excessive cracking and lifting, concrete should be designed in accordance with the minimum guidelines outlined in Table 6. These guidelines will reduce the potential for irregular cracking and promote cracking along construction joints, but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress.

TABLE 6
Minimun Recommendations for Nonstructural Concrete Flatwork Over Very Low Expansive Soll

|  | Private Sidewalks | Private Drives | Patios/ Entryways | City Sidewalk Curb and Gutters |
| :---: | :---: | :---: | :---: | :---: |
| Minimum Thickness (In.) | 4 (nominal) | 4(full) | 4 (full) | City/Agency Standard |
| Presaturation | Presoak to 12 inches | Presoak to 12 inches | Presoak to 12 inches | City/Agency Standard |
| Reinforcement | - | No. 3 at 24 inches on centers | No. 3 at 24 inches on centers | City/Agency Standard |
| Thickened Edge | - | $8^{\prime \prime} \times 8^{\prime \prime}$ | $8^{\prime \prime} \times 8^{\prime \prime}$ | City/Agency Standard |
| Crack Control | Saw cut or deep open tool joint to a minimum of $1 / 3$ the concrete thickness | Saw cut or deep open tool joint to a minimum of $1 / 3$ the concrete thickness | Saw cut or deep open tool joint to a minimum of $1 / 3$ the concrete thickness | City/Agency Standard |
| Maximum Joint Spacing | 5 feet | 10 feet or quarter cut whichever is closer | 6 feet | City/Agency Standard |

### 14.2 Joint Spacing

To reduce the potential for unsightly cracking, concrete sidewalks and patio type slabs should be provided with construction or expansion joints every 6 feet or less. Concrete driveway slabs should be provided with construction or expansion joints every 10 feet or less, with an aspect ratio of 1.2, to provide rectangular shaped joint patterns.

### 14.3 Subgrade Preparation

As a further measure to reduce cracking of concrete flatwork, the upper 12 inches of subgrade soil below concrete-flatwork areas should first be compacted to a relative density of 90 percent of more and then thoroughly wetted to achieve a moisture content that is equal to or slightly greater than optimum moisture content. This moisture should extend to a depth of 12 inches or more below subgrade and maintained in the soil during placement of concrete. Pre-watering of the subgrade will promote uniform curing of the concrete and reduce the potential for the development of shrinkage cracks. A representative of the project geotechnical consultant should observe and document the density and moisture content of subgrade soil and depth of moisture penetration prior to placing concrete.

### 15.0 PLANTERS

Area drains should be extended into planters that are located within 5 feet of building walls, foundations, retaining walls and masonry garden walls to reduce excessive infiltration of water into the underlying foundation soil. The surface of the ground in these areas should be sloped at a gradient of 2 percent or more away from the walls and foundations. Drip-irrigation systems are also recommended to reduce ovenvatering and subsequent saturation of the adjacent foundation soil.

### 16.0 SOIL CORROSTVITY

### 16.1 Corrosivity to Concrete and Metal

The National Association of Corrosion Engineers (NACE) defines corrosion as "a deterioration of a substance or its properties because of a reaction with its environment". From a geotechnical viewpoint, the "environment" is the prevailing foundation soil and the "substances" are the reinforced concrete foundations or various buried metallic elements such as rebar, piles, pipes, etc., which are in direct contact with or within close vicinity of the foundation soil.

In general, soil environments that are detrimental to concrete have high concentrations of soluble sulfates. ACI 318R-05, Table 4.3.1 provides specific guidelines for the concrete mix design based on different amount of soluble sulfate content. The minimum amount of chloride ions in the soil environment that are corrosive to steel, either in the form of reinforcement protected by concrete cover, or plain steel substructures such as steel pipes or piles, is 500 ppm per California Test 532 and ACI 318R-05, Table 4.4.1.

The corrosion potential of the onsite materials was evaluated for its effect on steel and concrete. The corrosion potential was evaluated using the results of laboratory tests on representative samples obtained during our field exploration. Laboratory testing was performed to evaluate pH , minimum electrical resistivity and chloride and soluble sulfate content. Based on testing performed during this investigation within the project site, the onsite soil are classified as having a negligible sulfate exposure condition in accordance with ACI 318R-05, Table 4.3.1, and negligible chloride exposure condition in accordance with ACI 318R-05, Table 4.4.1. Based on laboratory testing of on-site soil it is also our opinion that onsite soil should be considered highly corrosive to buried metals due to the low resistivity. Metal piping should be corrosion-protected or consideration should be given to using plastic piping instead of metal or plastic sleeving around the metal pipe.

Despite the minimum recommendation above, LGC is not a corrosion-engineering firm. Therefore, we recommend that you consult with a competent corrosion engineer and conduct additional testing (if required) to evaluate the actual corrosion potential of the site and to provide recommendations to reduce the corrosion potential with respect to the proposed improvements. The recommendations of the corrosion engineer may supersede the above requirements.

These recommendations are based on the current and previous samples of the subsurface soil or bedrock. The initiation of grading at the site could blend various soil types and import soil may be used locally. These changes made to the foundation soil could alter sulfate-content levels. Accordingly, it is recommended that additional testing be performed at the completion of grading.

### 17.0 PLAN REVIEWS AND CONSTRUCTION SERVICES

This report is a preliminary geotechnical investigation prepared for the exclusive use of Mr. Shizao Zheng to assist the project engineer and architect in the design of the proposed development. It is recommended that LGC be engaged to review the actual grading plans, foundation plans and final design drawings and specifications prior to construction. This is to document that the recommendations contained in this report have
been properly interpreted and/or are incorporated into the project specifications. LGC's review of such plans and those that might result from the recommended reviews may indicate that additional subsurface exploration, laboratory testing and analysis should be performed to address areas of concern. If LGC is not accorded the opportunity to review those documents, LGC cannot take responsibility for misinterpretation of our recommendations.

We recommend that LGC be retained to provide geotechnical engineering services during both the rough grading and construction phases of the work. This is to document compliance with the design, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

If the project plans change significantly (e.g., building loads or type of structures or grading), LGC should be retained to review our original design recommendations and applicability to the revised construction. If conditions are encountered during construction that appear to be different than those indicated in this report, this office should be notified immediately. Design and construction revisions may be required.

### 18.0 LTMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by engineers and geologists practicing in this or similar localities. The professional opinions contained herein were derived in accordance with current standards of practice for preliminary reports. Other warranties, expressed or implied, are not made or implied as to the conclusions and professional advice included in this report. The soil samples taken and submitted for laboratory testing, the observations made and the in-situ field testing performed are believed representative of the entire project; however, soil and geologic conditions can vary in characteristics between excavations, both laterally and vertically and may be different than our preliminary findings. If this occurs, the changed conditions must be evaluated by the project geotechnical engineer and engineering geologist and design adjustments may be required recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the project engineers and incorporated into the plans, and that necessary steps are taken to assure that the contractor and/or subcontractor properly implements the recommendations in the field during construction. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

The conclusions and opinions contained in this report are based on the results of our scope of work and represent our professional judgment. The findings, conclusions and recommendations presented in this report are to be considered preliminary only and subject to confirmation by LGC during the construction process. Without this confirmation, this report is to be considered incomplete; and LGC will not assume any responsibility for its use.

The conclusions and opinions contained in this report are valid up to a period of 2 years from the date of this report. Changes in the conditions of a property can and do occur with the passage of time, whether those be because of natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate codes or standards may occur, whether those result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside LGC's control. Therefore, pending such changes made or if the scope of this project changes, an update of this report should be completed.

This report was not prepared for use by parties or projects other than those named or designed above and is otherwise considered insufficient for other parties or other purposes.

## APPENDIXA

## REFERENCES AND AERIAL PHOTOGRAPHS



## APPENDDXX $A$

## References Reviewed

Blake, T.F., 1998, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, Prepared by California Division of Mines and Geology.

California Department of Water Resources, Water Data Library, Groundwater Levels for Station 335628N1171932W001, accessed September 14, 2018.

California Division of Mines and Geology, 2000, "Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region", CD 2000-003.

Dibble, Thomas W., 2003, Geologic Map of The Riverside East/South $1 / 2$ of San Bemardino South Quadrangles, San Bernardino and Riverside County, California.

Greensfelder, R.W., 1974, Maximum Credible Rock Accelerations from Earthquakes in California, CDMG, MS-23.
EQFAULT, Seismic Hazard Analysis, (33.9582, -117.2955), accessed September 17, 2018.
Hart, Earl W., and William, A. Bryant, 1997, Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Map, Special Publication 42, Revised 1997, Supplements 1 and 2 added 1999.

Hayes, Walter W., 1980, Procedures for Estimating Earthquake Engineering, edited by R.W. Weigel.
Riverside County Open Data, http://data-countyofriverside.opendata.arogis.com, Natural Hazards, Faults, accessed June 14, 2018.

Riverside County Open Data, http://data-countyofriverside.opendata.arcgis.com, Natural Hazards, Fault Zones, accessed June 14, 2018.

Riverside County Open Data, http://data-countyofriverside.opendata.arcgis.com, Natural Hazards, Liquefaction, accessed June 14, 2018.

Sikand Engineering, Conceptual Grading Plan Tract No. 37557, Scale $1^{\prime \prime}=80^{\prime}$, Sheet 2 of 2. Dated June 13, 2018.

Sikand Engineering, Preliminary Grading Plan Tract No. 37557, Scale $1^{\prime \prime}=80^{\prime}$, Sheet 2 of 2. Dated June 13, 2018.

Soil Exploration Company, Inc., Rockfall Potential, Tentative Tract Map 33626, Amended Map No. 1 City of Moreno Valley, California plot dated 2/19/2007.

Southern California Earthquake Center, University of Southem California, Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines For Analyzing and Mitigating Liquefaction Hazards in California, March 1999.

## Aerial Photographs Reviewed

| SOURCE | FLKGHT DATE |
| :---: | :---: |
| Google Earth Pro. | $2 / 2018$ |
| Google Earth Pro. | $3 / 2017$ |
| Google Earth Pro. | $10 / 2016$ |
| Google Earth Pro. | $2 / 2016$ |
| Google Earth Pro. | $4 / 2014$ |
| Google Earth Pro. | $11 / 2013$ |
| Google Earth Pro. | $11 / 2012$ |
| Google Earth Pro. | $6 / 2012$ |
| Google Earth Pro. | $3 / 2011$ |
| Google Earth Pro. | $11 / 2009$ |
| Google Earth Pro. | $6 / 2009$ |
| Google Earth Pro. | $6 / 2008$ |
| Google Earth Pro. | $12 / 2006$ |
| Google Earth Pro. | $8 / 2006$ |
| Google Earth Pro. | $1 / 2006$ |
| Google Earth Pro. | $12 / 2005$ |
| Google Earth Pro. | $10 / 2005$ |
| Google Earth Pro. | $12 / 2004$ |
| Google Earth Pro. | $1 / 2004$ |
| Google Earth Pro. | $12 / 2003$ |
| Google Earth Pro. | $11 / 2003$ |
| Google Earth Pro. | $12 / 2002$ |
| Google Earth Pro. | $6 / 2002$ |
| Google Earth Pro. | $6 / 1994$ |
|  |  |

## APPENDIX B

## EXPLORATORY TRENCH LOGS














## APPENDTXB

Field Exploration

## B-1

## General

Geologic mapping of the site was performed by LGC's personnel. The locations of the exploratory excavations were chosen to obtain site and trench specific subsurface information needed to achieve the objective for this investigation.

A visual survey was conducted to verify that the proposed excavations would not encounter any subsurface utility lines. Underground utilities were not encountered during the field exploratory program.

## B-2 Excavailon and Sampling

Surface geologic mapping of the site and accessible surrounding areas was completed by a geologist from this firm during September 2018, utilizing the referenced Conceptual Grading Plan Tract Map No. 37557 for plotting geologic units. This information is plotted on the enclosed Geotechnical Map (Plate 1).

Ten (10) exploratory trenches, TR-1 through TR-8 and $\Pi-1$ through $\Pi-2$, were excavated with a backhoe on September 4, 2018 and September 6, 2018 to depths of approximately 3.0 to 13.5 feet below the existing ground surface. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions at the subject site, which consisted of classification of site soil, determination of groundwater elevations (if present), and collection of representative soil and bedrock samples.

Prior to our subsurface work, an underground utilities clearance was obtained from Underground Service Alert of Southern California. At the conclusion of the subsurface investigation, test pits were backfilled with native materials. Minor settlement of the backfill soil may occur over time.

During our subsurface investigation, representative bulk samples were retained for laboratory testing. Laboratory testing was performed on selected representative samples of onsite soil and/or bedrock materials and included maximum dry density and optimum water content, expansion index, sulfate content, chloride content, pH, resistivity, grain size analysis, and direct shear. A discussion of the tests performed and a summary of the results are presented in Appendix C. Moisture and density test results are presented on the trench logs which are presented on the following pages.

## B-3 Miscellaneous

The trench logs describe the earth materials encountered, sampling method used, and the results of field and laboratory tests. The logs also show the test pit number, date of completion, and the name of the logger. A geologist logged the trenches in accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) ASTM D2488-93. The boundaries between soil types shown on the logs are approximate and the transition between different soil layers may be gradual. The logs of the trenches are presented on the following pages.

## APPENDIX C

## LABORATORY TESTING PROCEDURES AND TEST RESULTS



## APPENDXX C

## Laboratony Testing Procedures and Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the soil. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Soll Classification: Soil were classified according the Unified Soil Classification System (USCS) in accordance with ASTM Test Methods D2487 and D2488. The soil classifications (or group symbol) are shown on the laboratory test data, and boring logs.

Maximum Dry Density Tests: The maximum dry density and optimum water content of typical materials were determined in accordance with ASTM test method D1557. The test results are presented in the table below:

| SAMPLE <br> LOCATION | SAMPLE DESCRIPTION <br> (USCS) | MAXXMUM DRY DENSTTY <br> (\% by weight) | OPTIMUM WATER <br> CONTENT (\%) |
| :---: | :---: | :---: | :---: |
| $\Pi-1 @ 0-2^{\prime}$ | Silty SAND/Clayey SILT (SM/ML) | 135.9 | 7.0 |
| TR-4 @ $2-4^{\prime}$ | Bedrock; Quartz Diorite | 133.2 | 7.0 |
| TR-8@ $4-6^{\prime}$ | Silty SAND/Clayey SILT (SM/ML) | 128.3 | 9.0 |

Expansion Index: The expansion potential of a selected sample was evaluated by the Expansion Index Test, U.B.C. Standard No. 18-2 and/or ASTM test method D4829. Specimens are molded under a given compactive energy at or near the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1 -inch thick by 4 -inch diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below:

| SAMPLE <br> LOCATION | SAMPLE <br> DESCRIPTION(USCS) | EXPANSTON <br> INDEX | EXPANSTON <br> POTENTIAL* |
| :---: | :---: | :---: | :---: |
| TR-8@4-6' | Silty SAND/Clayey SILT (SM/ML) | 19 | Very Low |

*Per ASTM D4829
Soluble Sulfates: The soluble sulfate content of selected samples was determined by standard geotechnical methods (CTM 417). The soluble sulfate content is used to determine the appropriate cement type and maximum water-cement ratios. The test results are presented in the table below:

| SAMPLE <br> LOCATION | SAMPLE | SULFATE CONTENT | SULFATE <br> EXPOSUURE |
| :---: | :---: | :---: | :---: |
| TR-8@ 4-6' | Silty SAND/Clayey SILT (SM/ML) | Non-Detect | Negligible |

*Per ACI 318R-05 Table 4.3.1
Chloride Content: Chloride content was tested with CTM 422. The results are presented below:

| SAMPLE LOCATION | SAMPLE DESCRIPTION (USCS) | CHLORIDE CONTENT (Ppm) |
| :---: | :---: | :---: |
| TR-8@4-6' | Silty SAND/Clayey SILT (SM/ML) | 128 |

Minimum Resistivily and pH Tests: Minimum resistivity and pH tests were performed with CTM 643. The results are presented in the table below:

| SAMPLE <br> LOCATION | SAMPLE | DHH | MINIMUM RESISTIVITY <br> (ohm-Cm) |
| :---: | :---: | :---: | :---: |
| TR-8@ $4-6^{\prime}$ | Silly SAND/Clayey SILT (SM/ML) | 7.5 | 1,100 |

Direct Shear: Direct shear tests were performed on selected remolded samples, which were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads, a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of less than 0.001 to 0.5 inch per minute (depending upon the soil type). The graphical test results are presented in the table below:

| SAMPLE LOCATION | SAMPLE DESCRTPTION | ANGLE OF XNTERNAL <br> FRICTION (degrees) | COHESTON <br> (psf) |
| :---: | :---: | :---: | :---: |
| TR-8@ $4 \cdot 6^{\prime}$ | Silty SAND/Clayey SILT (SM/ML) | 36 | 20 |

## APPENDIX D

## GENERAL EARTHWORK AND GRADING SPECIFICATIONS



## APPENDIX D

General Earthwork and Grading Specifications

### 1.0 General

1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).
1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owmer, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.
1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, molsture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of dally earthwork contemplated for the site prior to commencement of grading.

The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory
conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

### 2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 10 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.
2.2 Processing: Existing ground that has been dedared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soil are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.
2.3 Overexcavation: In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.
2.4 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than $5: 1$ shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.
2.5 Eva/uation/Acceptance of Fill Areas: All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.
3.1 General: Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soil of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soll to achieve satisfactory fill material.
3.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.
3.3 Import: If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours ( 2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

### 4.0 Fill Placement and Compaction

4.1 Fill Lavers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.
4.2 Fill Moisture Condifioning: Fill soil shall be watered, dried back, blended, and/or mixed, as necessary to attain relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-91).
4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-91). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.
4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-91.
4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soil shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).
4.6 Frequency of Compaction Testing: Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soil embankment. In addition, as a
guideline, at least one (1) test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

### 4.7 Compaction Test Locations:

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two (2) grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

### 5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s) and grading plan. The Geotechnical Consultant may recommend additional subdrain and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.


## CANYON \& STREET SUBDRAINS



TYPICAL BUTTRESS/ STABILIZATION FILL DETAIL



## OVERSIZE <br> ROCK DISPOSAL

FILL SLOPE


## CUT-OVER-FILL SLOPE


*CUT FACE SHOULD BE CONSTRUCTED PRIOR TO FILL PLACEMENT

Note: Natural slopes steeper than 5:1 (h:v) must be benched.

## KEYING AND BENCHING

# Appendix 4: Historical Site Conditions None Provided at this time 

# Appendix 5: LID Infeasibility 

LID Technical Infeasibility Analysis
See pages 11 thru 16 of the Preliminary Project Specific WQMP.
Per project geotechnical report and infiltration report, the site does not meet minimum infiltration rate of $1.6 \mathrm{in} / \mathrm{hr}$. Thus, infiltration is not a feasible treatment option.

Per Section D. 2 Harvest and Use is not a possibility as the site does not meet minimum requirements for landscape or toilet use.

DMA C - A portion of the main entrance to the site (Street A) and Morton Road is not able to be treated. The grades and conditions of the road in this area do not allow for the collection and treatment of the runoff, as the site sits well above grade from Morton Road. Also, the project is at a highpoint in Morton Rd so any acceptance and routing of street flow should be further downstream along Morton Road. The areas around Morton Road, including any future right of way, is also unable to provide for treatment as the grades in the area fall off significantly to the southwest. Runoff from this area will continue in the existing condition, by flowing into the natural channel southwest of the road.

At 0.3 acres, DMA C represents a negligible percentage of the impervious area at less than $5 \%$.

## Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation




Notes:


Notes:



# Appendix 7: Hydromodification 

Supporting Detail Relating to Hydrologic Conditions of Concern

```
        U n i t H y d roggraph A n aly y i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33preb242.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
---
            Gateway Heights
            Predevlopment Conditions
            Unit Hydrograph Runoff
            Area B
            ----------------------------------------------------------------
            Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
            Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) =
0.013 Sq. Mi.
            Length along longest watercourse = 1083.00(Ft.)
            Length along longest watercourse measured to centroid = 476.00
(Ft.)
            Length along longest watercourse = 0.205 Mi.
            Length along longest watercourse measured to centroid = 0.090
Mi.
            Difference in elevation = 110.00(Ft.)
            Slope along watercourse = 536.2881 Ft./Mi.
            Average Manning's 'N' = 0.040
            Lag time = 0.064 Hr.
            Lag time = 3.83 Min.
            25% of lag time = 0.96 Min.
            40% of lag time = 1.53 Min.
            Unit time = 5.00 Min.
            Duration of storm = 24 Hour(s)
            User Entered Base Flow = 0.00(CFS)
            2 YEAR Area rainfall data:
                    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective

Rain value

| Unit | Time | Pattern | Storm Rain | Loss rat | n. / Hr) | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | (In/Hr) |
| 1 | 0.08 | 0.07 | 0.015 | $0.352)$ | 0.014 | 0.002 |
| 2 | 0.17 | 0.07 | 0.015 | $0.350)$ | 0.014 | 0.002 |
| 3 | 0.25 | 0.07 | 0.015 | $0.349)$ | 0.014 | 0.002 |
| 4 | 0.33 | 0.10 | 0.023 | $0.348)$ | 0.021 | 0.002 |
| 5 | 0.42 | 0.10 | 0.023 | ( 0.346) | 0.021 | 0.002 |
| 6 | 0.50 | 0.10 | 0.023 | ( 0.345) | 0.021 | 0.002 |
| 7 | 0.58 | 0.10 | 0.023 | ( 0.344) | 0.021 | 0.002 |
| 8 | 0.67 | 0.10 | 0.023 | ( 0.342) | 0.021 | 0.002 |
| 9 | 0.75 | 0.10 | 0.023 | $0.341)$ | 0.021 | 0.002 |
| 10 | 0.83 | 0.13 | 0.031 | ( 0.340) | 0.028 | 0.003 |
| 11 | 0.92 | 0.13 | 0.031 | ( 0.338) | 0.028 | 0.003 |
| 12 | 1.00 | 0.13 | 0.031 | ( 0.337) | 0.028 | 0.003 |
| 13 | 1.08 | 0.10 | 0.023 | ( 0.336) | 0.021 | 0.002 |
| 14 | 1.17 | 0.10 | 0.023 | ( 0.334) | 0.021 | 0.002 |
| 15 | 1.25 | 0.10 | 0.023 | ( 0.333) | 0.021 | 0.002 |
| 16 | 1.33 | 0.10 | 0.023 | $0.332)$ | 0.021 | 0.002 |
| 17 | 1.42 | 0.10 | 0.023 | ( 0.330) | 0.021 | 0.002 |
| 18 | 1.50 | 0.10 | 0.023 | ( 0.329) | 0.021 | 0.002 |
| 19 | 1.58 | 0.10 | 0.023 | ( 0.328) | 0.021 | 0.002 |
| 20 | 1.67 | 0.10 | 0.023 | ( 0.326) | 0.021 | 0.002 |
| 21 | 1.75 | 0.10 | 0.023 | ( 0.325) | 0.021 | 0.002 |
| 22 | 1.83 | 0.13 | 0.031 | ( 0.324) | 0.028 | 0.003 |
| 23 | 1.92 | 0.13 | 0.031 | $0.322)$ | 0.028 | 0.003 |
| 24 | 2.00 | 0.13 | 0.031 | ( 0.321) | 0.028 | 0.003 |
| 25 | 2.08 | 0.13 | 0.031 | ( 0.320) | 0.028 | 0.003 |
| 26 | 2.17 | 0.13 | 0.031 | ( 0.318) | 0.028 | 0.003 |
| 27 | 2.25 | 0.13 | 0.031 | ( 0.317) | 0.028 | 0.003 |
| 28 | 2.33 | 0.13 | 0.031 | ( 0.316) | 0.028 | 0.003 |
| 29 | 2.42 | 0.13 | 0.031 | ( 0.315) | 0.028 | 0.003 |
| 30 | 2.50 | 0.13 | 0.031 | $0.313)$ | 0.028 | 0.003 |
| 31 | 2.58 | 0.17 | 0.039 | ( 0.312) | 0.035 | 0.004 |
| 32 | 2.67 | 0.17 | 0.039 | ( 0.311) | 0.035 | 0.004 |
| 33 | 2.75 | 0.17 | 0.039 | ( 0.310) | 0.035 | 0.004 |
| 34 | 2.83 | 0.17 | 0.039 | ( 0.308) | 0.035 | 0.004 |
| 35 | 2.92 | 0.17 | 0.039 | ( 0.307) | 0.035 | 0.004 |
| 36 | 3.00 | 0.17 | 0.039 | ( 0.306) | 0.035 | 0.004 |
| 37 | 3.08 | 0.17 | 0.039 | $0.304)$ | 0.035 | 0.004 |
| 38 | 3.17 | 0.17 | 0.039 | ( 0.303) | 0.035 | 0.004 |
| 39 | 3.25 | 0.17 | 0.039 | ( 0.302) | 0.035 | 0.004 |
| 40 | 3.33 | 0.17 | 0.039 | ( 0.301) | 0.035 | 0.004 |
| 41 | 3.42 | 0.17 | 0.039 | ( 0.299) | 0.035 | 0.004 |
| 42 | 3.50 | 0.17 | 0.039 | ( 0.298) | 0.035 | 0.004 |
| 43 | 3.58 | 0.17 | 0.039 | ( 0.297) | 0.035 | 0.004 |
| 44 | 3.67 | 0.17 | 0.039 | (0.296) | 0.035 | 0.004 |
| 45 | 3.75 | 0.17 | 0.039 | ( 0.294) | 0.035 | 0.004 |
| 46 | 3.83 | 0.20 | 0.046 | ( 0.293) | 0.042 | 0.005 |
| 47 | 3.92 | 0.20 | 0.046 | ( 0.292) | 0.042 | 0.005 |
| 48 | 4.00 | 0.20 | 0.046 | ( 0.291) | 0.042 | 0.005 |
| 49 | 4.08 | 0.20 | 0.046 | ( 0.289) | 0.042 | 0.005 |
| 50 | 4.17 | 0.20 | 0.046 | ( 0.288) | 0.042 | 0.005 |
| 51 | 4.25 | 0.20 | 0.046 | ( 0.287) | 0.042 | 0.005 |
| 52 | 4.33 | 0.23 | 0.054 | ( 0.286) | 0.049 | 0.005 |
| 53 | 4.42 | 0.23 | 0.054 | ( 0.285) | 0.049 | 0.005 |
| 54 | 4.50 | 0.23 | 0.054 | ( 0.283) | 0.049 | 0.005 |
| 55 | 4.58 | 0.23 | 0.054 | ( 0.282) | 0.049 | 0.005 |
| 56 | 4.67 | 0.23 | 0.054 | ( 0.281) | 0.049 | 0.005 |


| 57 | 4.75 | 0.23 | 0.054 | 0.280) | 0.049 | 0.005 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 58 | 4.83 | 0.27 | 0.062 | $0.278)$ | 0.056 | 0.006 |
| 59 | 4.92 | 0.27 | 0.062 | 0.277) | 0.056 | 0.006 |
| 60 | 5.00 | 0.27 | 0.062 | $0.276)$ | 0.056 | 0.006 |
| 61 | 5.08 | 0.20 | 0.046 | $0.275)$ | 0.042 | 0.005 |
| 62 | 5.17 | 0.20 | 0.046 | $0.274)$ | 0.042 | 0.005 |
| 63 | 5.25 | 0.20 | 0.046 | $0.272)$ | 0.042 | 0.005 |
| 64 | 5.33 | 0.23 | 0.054 | 0.271) | 0.049 | 0.005 |
| 65 | 5.42 | 0.23 | 0.054 | 0.270) | 0.049 | 0.005 |
| 66 | 5.50 | 0.23 | 0.054 | $0.269)$ | 0.049 | 0.005 |
| 67 | 5.58 | 0.27 | 0.062 | $0.268)$ | 0.056 | 0.006 |
| 68 | 5.67 | 0.27 | 0.062 | $0.267)$ | 0.056 | 0.006 |
| 69 | 5.75 | 0.27 | 0.062 | $0.265)$ | 0.056 | 0.006 |
| 70 | 5.83 | 0.27 | 0.062 | $0.264)$ | 0.056 | 0.006 |
| 71 | 5.92 | 0.27 | 0.062 | $0.263)$ | 0.056 | 0.006 |
| 72 | 6.00 | 0.27 | 0.062 | $0.262)$ | 0.056 | 0.006 |
| 73 | 6.08 | 0.30 | 0.069 | 0.261) | 0.063 | 0.007 |
| 74 | 6.17 | 0.30 | 0.069 | 0.260) | 0.063 | 0.007 |
| 75 | 6.25 | 0.30 | 0.069 | $0.258)$ | 0.063 | 0.007 |
| 76 | 6.33 | 0.30 | 0.069 | $0.257)$ | 0.063 | 0.007 |
| 77 | 6.42 | 0.30 | 0.069 | $0.256)$ | 0.063 | 0.007 |
| 78 | 6.50 | 0.30 | 0.069 | $0.255)$ | 0.063 | 0.007 |
| 79 | 6.58 | 0.33 | 0.077 | $0.254)$ | 0.069 | 0.008 |
| 80 | 6.67 | 0.33 | 0.077 | $0.253)$ | 0.069 | 0.008 |
| 81 | 6.75 | 0.33 | 0.077 | $0.252)$ | 0.069 | 0.008 |
| 82 | 6.83 | 0.33 | 0.077 | 0.250) | 0.069 | 0.008 |
| 83 | 6.92 | 0.33 | 0.077 | $0.249)$ | 0.069 | 0.008 |
| 84 | 7.00 | 0.33 | 0.077 | $0.248)$ | 0.069 | 0.008 |
| 85 | 7.08 | 0.33 | 0.077 | $0.247)$ | 0.069 | 0.008 |
| 86 | 7.17 | 0.33 | 0.077 | $0.246)$ | 0.069 | 0.008 |
| 87 | 7.25 | 0.33 | 0.077 | $0.245)$ | 0.069 | 0.008 |
| 88 | 7.33 | 0.37 | 0.085 | $0.244)$ | 0.076 | 0.008 |
| 89 | 7.42 | 0.37 | 0.085 | $0.243)$ | 0.076 | 0.008 |
| 90 | 7.50 | 0.37 | 0.085 | $0.241)$ | 0.076 | 0.008 |
| 91 | 7.58 | 0.40 | 0.093 | 0.240) | 0.083 | 0.009 |
| 92 | 7.67 | 0.40 | 0.093 | $0.239)$ | 0.083 | 0.009 |
| 93 | 7.75 | 0.40 | 0.093 | $0.238)$ | 0.083 | 0.009 |
| 94 | 7.83 | 0.43 | 0.100 | 0.237) | 0.090 | 0.010 |
| 95 | 7.92 | 0.43 | 0.100 | $0.236)$ | 0.090 | 0.010 |
| 96 | 8.00 | 0.43 | 0.100 | $0.235)$ | 0.090 | 0.010 |
| 97 | 8.08 | 0.50 | 0.116 | $0.234)$ | 0.104 | 0.012 |
| 98 | 8.17 | 0.50 | 0.116 | $0.233)$ | 0.104 | 0.012 |
| 99 | 8.25 | 0.50 | 0.116 | $0.232)$ | 0.104 | 0.012 |
| 100 | 8.33 | 0.50 | 0.116 | 0.230) | 0.104 | 0.012 |
| 101 | 8.42 | 0.50 | 0.116 | $0.229)$ | 0.104 | 0.012 |
| 102 | 8.50 | 0.50 | 0.116 | $0.228)$ | 0.104 | 0.012 |
| 103 | 8.58 | 0.53 | 0.124 | $0.227)$ | 0.111 | 0.012 |
| 104 | 8.67 | 0.53 | 0.124 | $0.226)$ | 0.111 | 0.012 |
| 105 | 8.75 | 0.53 | 0.124 | $0.225)$ | 0.111 | 0.012 |
| 106 | 8.83 | 0.57 | 0.131 | $0.224)$ | 0.118 | 0.013 |
| 107 | 8.92 | 0.57 | 0.131 | $0.223)$ | 0.118 | 0.013 |
| 108 | 9.00 | 0.57 | 0.131 | $0.222)$ | 0.118 | 0.013 |
| 109 | 9.08 | 0.63 | 0.147 | $0.221)$ | 0.132 | 0.015 |
| 110 | 9.17 | 0.63 | 0.147 | 0.220) | 0.132 | 0.015 |
| 111 | 9.25 | 0.63 | 0.147 | $0.219)$ | 0.132 | 0.015 |
| 112 | 9.33 | 0.67 | 0.154 | $0.218)$ | 0.139 | 0.015 |
| 113 | 9.42 | 0.67 | 0.154 | 0.217) | 0.139 | 0.015 |
| 114 | 9.50 | 0.67 | 0.154 | $0.216)$ | 0.139 | 0.015 |
| 115 | 9.58 | 0.70 | 0.162 | $0.215)$ | 0.146 | 0.016 |
| 116 | 9.67 | 0.70 | 0.162 | $0.214)$ | 0.146 | 0.016 |


| 117 | 9.75 | 0.70 | 0.162 | $0.213)$ | 0.146 | 0.016 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 118 | 9.83 | 0.73 | 0.170 | $0.212)$ | 0.153 | 0.017 |
| 119 | 9.92 | 0.73 | 0.170 | 0.211) | 0.153 | 0.017 |
| 120 | 10.00 | 0.73 | 0.170 | 0.210) | 0.153 | 0.017 |
| 121 | 10.08 | 0.50 | 0.116 | $0.208)$ | 0.104 | 0.012 |
| 122 | 10.17 | 0.50 | 0.116 | $0.207)$ | 0.104 | 0.012 |
| 123 | 10.25 | 0.50 | 0.116 | $0.206)$ | 0.104 | 0.012 |
| 124 | 10.33 | 0.50 | 0.116 | $0.205)$ | 0.104 | 0.012 |
| 125 | 10.42 | 0.50 | 0.116 | $0.204)$ | 0.104 | 0.012 |
| 126 | 10.50 | 0.50 | 0.116 | $0.203)$ | 0.104 | 0.012 |
| 127 | 10.58 | 0.67 | 0.154 | $0.202)$ | 0.139 | 0.015 |
| 128 | 10.67 | 0.67 | 0.154 | 0.201) | 0.139 | 0.015 |
| 129 | 10.75 | 0.67 | 0.154 | 0.201) | 0.139 | 0.015 |
| 130 | 10.83 | 0.67 | 0.154 | 0.200) | 0.139 | 0.015 |
| 131 | 10.92 | 0.67 | 0.154 | $0.199)$ | 0.139 | 0.015 |
| 132 | 11.00 | 0.67 | 0.154 | $0.198)$ | 0.139 | 0.015 |
| 133 | 11.08 | 0.63 | 0.147 | $0.197)$ | 0.132 | 0.015 |
| 134 | 11.17 | 0.63 | 0.147 | $0.196)$ | 0.132 | 0.015 |
| 135 | 11.25 | 0.63 | 0.147 | $0.195)$ | 0.132 | 0.015 |
| 136 | 11.33 | 0.63 | 0.147 | $0.194)$ | 0.132 | 0.015 |
| 137 | 11.42 | 0.63 | 0.147 | $0.193)$ | 0.132 | 0.015 |
| 138 | 11.50 | 0.63 | 0.147 | $0.192)$ | 0.132 | 0.015 |
| 139 | 11.58 | 0.57 | 0.131 | $0.191)$ | 0.118 | 0.013 |
| 140 | 11.67 | 0.57 | 0.131 | 0.190) | 0.118 | 0.013 |
| 141 | 11.75 | 0.57 | 0.131 | $0.189)$ | 0.118 | 0.013 |
| 142 | 11.83 | 0.60 | 0.139 | $0.188)$ | 0.125 | 0.014 |
| 143 | 11.92 | 0.60 | 0.139 | $0.187)$ | 0.125 | 0.014 |
| 144 | 12.00 | 0.60 | 0.139 | $0.186)$ | 0.125 | 0.014 |
| 145 | 12.08 | 0.83 | 0.193 | $0.185)$ | 0.174 | 0.019 |
| 146 | 12.17 | 0.83 | 0.193 | $0.184)$ | 0.174 | 0.019 |
| 147 | 12.25 | 0.83 | 0.193 | $0.183)$ | 0.174 | 0.019 |
| 148 | 12.33 | 0.87 | 0.201 | $0.182)$ | 0.181 | 0.020 |
| 149 | 12.42 | 0.87 | 0.201 | $0.182)$ | 0.181 | 0.020 |
| 150 | 12.50 | 0.87 | 0.201 | 0.181 | 0.181) | 0.020 |
| 151 | 12.58 | 0.93 | 0.216 | 0.180 | $0.195)$ | 0.036 |
| 152 | 12.67 | 0.93 | 0.216 | 0.179 | $0.195)$ | 0.037 |
| 153 | 12.75 | 0.93 | 0.216 | 0.178 | $0.195)$ | 0.038 |
| 154 | 12.83 | 0.97 | 0.224 | 0.177 | 0.201) | 0.047 |
| 155 | 12.92 | 0.97 | 0.224 | 0.176 | 0.201) | 0.048 |
| 156 | 13.00 | 0.97 | 0.224 | 0.175 | $0.201)$ | 0.049 |
| 157 | 13.08 | 1.13 | 0.262 | 0.174 | $0.236)$ | 0.088 |
| 158 | 13.17 | 1.13 | 0.262 | 0.173 | $0.236)$ | 0.089 |
| 159 | 13.25 | 1.13 | 0.262 | 0.173 | $0.236)$ | 0.090 |
| 160 | 13.33 | 1.13 | 0.262 | 0.172 | $0.236)$ | 0.091 |
| 161 | 13.42 | 1.13 | 0.262 | 0.171 | $0.236)$ | 0.092 |
| 162 | 13.50 | 1.13 | 0.262 | 0.170 | $0.236)$ | 0.093 |
| 163 | 13.58 | 0.77 | 0.178 | $0.169)$ | 0.160 | 0.018 |
| 164 | 13.67 | 0.77 | 0.178 | $0.168)$ | 0.160 | 0.018 |
| 165 | 13.75 | 0.77 | 0.178 | 0.167) | 0.160 | 0.018 |
| 166 | 13.83 | 0.77 | 0.178 | $0.166)$ | 0.160 | 0.018 |
| 167 | 13.92 | 0.77 | 0.178 | $0.166)$ | 0.160 | 0.018 |
| 168 | 14.00 | 0.77 | 0.178 | $0.165)$ | 0.160 | 0.018 |
| 169 | 14.08 | 0.90 | 0.208 | 0.164 | 0.188) | 0.044 |
| 170 | 14.17 | 0.90 | 0.208 | 0.163 | $0.188)$ | 0.045 |
| 171 | 14.25 | 0.90 | 0.208 | 0.162 | $0.188)$ | 0.046 |
| 172 | 14.33 | 0.87 | 0.201 | 0.161 | 0.181) | 0.039 |
| 173 | 14.42 | 0.87 | 0.201 | 0.161 | 0.181) | 0.040 |
| 174 | 14.50 | 0.87 | 0.201 | 0.160 | $0.181)$ | 0.041 |
| 175 | 14.58 | 0.87 | 0.201 | 0.159 | 0.181) | 0.042 |
| 176 | 14.67 | 0.87 | 0.201 | 0.158 | 0.181) | 0.043 |


| 177 | 14.75 | 0.87 | 0.201 | 0.157 | $0.181)$ | 0.043 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 178 | 14.83 | 0.83 | 0.193 | 0.157 | $0.174)$ | 0.036 |
| 179 | 14.92 | 0.83 | 0.193 | 0.156 | $0.174)$ | 0.037 |
| 180 | 15.00 | 0.83 | 0.193 | 0.155 | $0.174)$ | 0.038 |
| 181 | 15.08 | 0.80 | 0.185 | 0.154 | 0.167) | 0.031 |
| 182 | 15.17 | 0.80 | 0.185 | 0.153 | $0.167)$ | 0.032 |
| 183 | 15.25 | 0.80 | 0.185 | 0.153 | $0.167)$ | 0.033 |
| 184 | 15.33 | 0.77 | 0.178 | 0.152 | 0.160) | 0.026 |
| 185 | 15.42 | 0.77 | 0.178 | 0.151 | 0.160) | 0.027 |
| 186 | 15.50 | 0.77 | 0.178 | 0.150 | $0.160)$ | 0.027 |
| 187 | 15.58 | 0.63 | 0.147 | $0.149)$ | 0.132 | 0.015 |
| 188 | 15.67 | 0.63 | 0.147 | $0.149)$ | 0.132 | 0.015 |
| 189 | 15.75 | 0.63 | 0.147 | $0.148)$ | 0.132 | 0.015 |
| 190 | 15.83 | 0.63 | 0.147 | $0.147)$ | 0.132 | 0.015 |
| 191 | 15.92 | 0.63 | 0.147 | $0.146)$ | 0.132 | 0.015 |
| 192 | 16.00 | 0.63 | 0.147 | $0.146)$ | 0.132 | 0.015 |
| 193 | 16.08 | 0.13 | 0.031 | $0.145)$ | 0.028 | 0.003 |
| 194 | 16.17 | 0.13 | 0.031 | $0.144)$ | 0.028 | 0.003 |
| 195 | 16.25 | 0.13 | 0.031 | $0.143)$ | 0.028 | 0.003 |
| 196 | 16.33 | 0.13 | 0.031 | $0.143)$ | 0.028 | 0.003 |
| 197 | 16.42 | 0.13 | 0.031 | $0.142)$ | 0.028 | 0.003 |
| 198 | 16.50 | 0.13 | 0.031 | $0.141)$ | 0.028 | 0.003 |
| 199 | 16.58 | 0.10 | 0.023 | 0.141) | 0.021 | 0.002 |
| 200 | 16.67 | 0.10 | 0.023 | 0.140) | 0.021 | 0.002 |
| 201 | 16.75 | 0.10 | 0.023 | $0.139)$ | 0.021 | 0.002 |
| 202 | 16.83 | 0.10 | 0.023 | 0.138) | 0.021 | 0.002 |
| 203 | 16.92 | 0.10 | 0.023 | 0.138) | 0.021 | 0.002 |
| 204 | 17.00 | 0.10 | 0.023 | $0.137)$ | 0.021 | 0.002 |
| 205 | 17.08 | 0.17 | 0.039 | $0.136)$ | 0.035 | 0.004 |
| 206 | 17.17 | 0.17 | 0.039 | 0.136) | 0.035 | 0.004 |
| 207 | 17.25 | 0.17 | 0.039 | 0.135) | 0.035 | 0.004 |
| 208 | 17.33 | 0.17 | 0.039 | $0.134)$ | 0.035 | 0.004 |
| 209 | 17.42 | 0.17 | 0.039 | $0.134)$ | 0.035 | 0.004 |
| 210 | 17.50 | 0.17 | 0.039 | 0.133) | 0.035 | 0.004 |
| 211 | 17.58 | 0.17 | 0.039 | $0.132)$ | 0.035 | 0.004 |
| 212 | 17.67 | 0.17 | 0.039 | $0.132)$ | 0.035 | 0.004 |
| 213 | 17.75 | 0.17 | 0.039 | 0.131) | 0.035 | 0.004 |
| 214 | 17.83 | 0.13 | 0.031 | 0.130) | 0.028 | 0.003 |
| 215 | 17.92 | 0.13 | 0.031 | 0.130) | 0.028 | 0.003 |
| 216 | 18.00 | 0.13 | 0.031 | $0.129)$ | 0.028 | 0.003 |
| 217 | 18.08 | 0.13 | 0.031 | 0.128) | 0.028 | 0.003 |
| 218 | 18.17 | 0.13 | 0.031 | $0.128)$ | 0.028 | 0.003 |
| 219 | 18.25 | 0.13 | 0.031 | $0.127)$ | 0.028 | 0.003 |
| 220 | 18.33 | 0.13 | 0.031 | 0.127) | 0.028 | 0.003 |
| 221 | 18.42 | 0.13 | 0.031 | $0.126)$ | 0.028 | 0.003 |
| 222 | 18.50 | 0.13 | 0.031 | $0.125)$ | 0.028 | 0.003 |
| 223 | 18.58 | 0.10 | 0.023 | $0.125)$ | 0.021 | 0.002 |
| 224 | 18.67 | 0.10 | 0.023 | $0.124)$ | 0.021 | 0.002 |
| 225 | 18.75 | 0.10 | 0.023 | $0.124)$ | 0.021 | 0.002 |
| 226 | 18.83 | 0.07 | 0.015 | $0.123)$ | 0.014 | 0.002 |
| 227 | 18.92 | 0.07 | 0.015 | 0.122) | 0.014 | 0.002 |
| 228 | 19.00 | 0.07 | 0.015 | $0.122)$ | 0.014 | 0.002 |
| 229 | 19.08 | 0.10 | 0.023 | 0.121) | 0.021 | 0.002 |
| 230 | 19.17 | 0.10 | 0.023 | 0.121) | 0.021 | 0.002 |
| 231 | 19.25 | 0.10 | 0.023 | 0.120) | 0.021 | 0.002 |
| 232 | 19.33 | 0.13 | 0.031 | $0.119)$ | 0.028 | 0.003 |
| 233 | 19.42 | 0.13 | 0.031 | $0.119)$ | 0.028 | 0.003 |
| 234 | 19.50 | 0.13 | 0.031 | 0.118) | 0.028 | 0.003 |
| 235 | 19.58 | 0.10 | 0.023 | $0.118)$ | 0.021 | 0.002 |
| 236 | 19.67 | 0.10 | 0.023 | $0.117)$ | 0.021 | 0.002 |


| 237 | 19.75 | 0.10 | 0.023 | 0.117) | 0.021 | 0.002 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 238 | 19.83 | 0.07 | 0.015 | $0.116)$ | 0.014 | 0.002 |  |
| 239 | 19.92 | 0.07 | 0.015 | $0.116)$ | 0.014 | 0.002 |  |
| 240 | 20.00 | 0.07 | 0.015 | 0.115) | 0.014 | 0.002 |  |
| 241 | 20.08 | 0.10 | 0.023 | $0.115)$ | 0.021 | 0.002 |  |
| 242 | 20.17 | 0.10 | 0.023 | $0.114)$ | 0.021 | 0.002 |  |
| 243 | 20.25 | 0.10 | 0.023 | $0.114)$ | 0.021 | 0.002 |  |
| 244 | 20.33 | 0.10 | 0.023 | $0.113)$ | 0.021 | 0.002 |  |
| 245 | 20.42 | 0.10 | 0.023 | 0.113) | 0.021 | 0.002 |  |
| 246 | 20.50 | 0.10 | 0.023 | $0.112)$ | 0.021 | 0.002 |  |
| 247 | 20.58 | 0.10 | 0.023 | 0.112) | 0.021 | 0.002 |  |
| 248 | 20.67 | 0.10 | 0.023 | 0.111) | 0.021 | 0.002 |  |
| 249 | 20.75 | 0.10 | 0.023 | 0.111) | 0.021 | 0.002 |  |
| 250 | 20.83 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |  |
| 251 | 20.92 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |  |
| 252 | 21.00 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 | 10 <br> 0 <br> 0 |
| 253 | 21.08 | 0.10 | 0.023 | $0.109)$ | 0.021 | 0.002 |  |
| 254 | 21.17 | 0.10 | 0.023 | $0.109)$ | 0.021 | 0.002 |  |
| 255 | 21.25 | 0.10 | 0.023 | $0.108)$ | 0.021 | 0.002 |  |
| 256 | 21.33 | 0.07 | 0.015 | $0.108)$ | 0.014 | 0.002 | - |
| 257 | 21.42 | 0.07 | 0.015 | $0.107)$ | 0.014 | 0.002 | - |
| 258 | 21.50 | 0.07 | 0.015 | $0.107)$ | 0.014 | 0.002 | - |
| 259 | 21.58 | 0.10 | 0.023 | 0.107) | 0.021 | 0.002 |  |
| 260 | 21.67 | 0.10 | 0.023 | $0.106)$ | 0.021 | 0.002 |  |
| 261 | 21.75 | 0.10 | 0.023 | $0.106)$ | 0.021 | 0.002 |  |
| 262 | 21.83 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 | 㐫 |
| 263 | 21.92 | 0.07 | 0.015 | 0.105) | 0.014 | 0.002 |  |
| 264 | 22.00 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 |  |
| 265 | 22.08 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |  |
| 266 | 22.17 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |  |
| 267 | 22.25 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 | \% |
| 268 | 22.33 | 0.07 | 0.015 | $0.103)$ | 0.014 | 0.002 | $\bigcirc$ |
| 269 | 22.42 | 0.07 | 0.015 | $0.103)$ | 0.014 | 0.002 | - |
| 270 | 22.50 | 0.07 | 0.015 | 0.103) | 0.014 | 0.002 |  |
| 271 | 22.58 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 | - |
| 272 | 22.67 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 |  |
| 273 | 22.75 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 | $\stackrel{\text { ¢ }}{ }$ |
| 274 | 22.83 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 |  |
| 275 | 22.92 | 0.07 | 0.015 | 0.101) | 0.014 | 0.002 | 응 |
| 276 | 23.00 | 0.07 | 0.015 | 0.101) | 0.014 | 0.002 | ¢ |
| 277 | 23.08 | 0.07 | 0.015 | 0.101) | 0.014 | 0.002 | $\stackrel{\square}{\square}$ |
| 278 | 23.17 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |  |
| 279 | 23.25 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 | E |
| 280 | 23.33 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |  |
| 281 | 23.42 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 | O |
| 282 | 23.50 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 | ¢ |
| 283 | 23.58 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |  |
| 284 | 23.67 | 0.07 | 0.015 | 0.100) | 0.014 | 0.002 |  |
| 285 | 23.75 | 0.07 | 0.015 | $0.099)$ | 0.014 | 0.002 |  |
| 286 | 23.83 | 0.07 | 0.015 | $0.099)$ | 0.014 | 0.002 |  |
| 287 | 23.92 | 0.07 | 0.015 | $0.099)$ | 0.014 | 0.002 |  |
| 288 | 24.00 | 0.07 | 0.015 | $0.099)$ | 0.014 | 0.002 |  |
| (Loss Rate Not Used) |  |  |  |  |  |  |  |
| Flood volume = Effective rainfall 0.26(In) |  |  |  |  |  |  |  |
|  | times areaTotal soil loss $=$ $\begin{gathered}\text { c }\end{gathered}$ |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Total soil loss $=1.117(\mathrm{Ac.Ft})$ |  |  |  |  |  |  |
|  | Total rainfall $=1.93($ In $)$ |  |  |  |  |  |  |
|  | Flood volume $=\quad 7649.5$ Cubic Feet |  |  |  |  |  |  |

Total soil loss $=\quad 48677.0$ Cubic Feet


| 1+45 | 0.0026 | 0.02 | Q | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+50 | 0.0027 | 0.02 | Q | \| | \| |
| 1+55 | 0.0029 | 0.02 | Q | \| | \| |
| 2+ 0 | 0.0031 | 0.02 | Q | \| | \| |
| 2+ 5 | 0.0032 | 0.02 | Q | \| | \| |
| 2+10 | 0.0034 | 0.03 | Q | \| | \| |
| 2+15 | 0.0036 | 0.03 | Q | \| | \| |
| 2+20 | 0.0037 | 0.03 | Q | \| | \| |
| 2+25 | 0.0039 | 0.03 | Q | \| | \| |
| 2+30 | 0.0041 | 0.03 | Q | \| | \| |
| 2+35 | 0.0043 | 0.03 | Q | \| | \| |
| 2+40 | 0.0045 | 0.03 | QV | \| | \| |
| 2+45 | 0.0047 | 0.03 | QV | \| | \| |
| 2+50 | 0.0049 | 0.03 | QV | । | \| |
| 2+55 | 0.0051 | 0.03 | QV | \| | \| |
| 3+ 0 | 0.0053 | 0.03 | QV | \| | \| |
| 3+ 5 | 0.0056 | 0.03 | QV | \| | \| |
| 3+10 | 0.0058 | 0.03 | QV | । | \| |
| 3+15 | 0.0060 | 0.03 | QV | । | \| |
| 3+20 | 0.0062 | 0.03 | QV | \| | \| |
| 3+25 | 0.0064 | 0.03 | QV | \| | \| |
| 3+30 | 0.0066 | 0.03 | QV | \| | \| |
| 3+35 | 0.0068 | 0.03 | QV | । | \| |
| 3+40 | 0.0071 | 0.03 | QV | \| | \| |
| 3+45 | 0.0073 | 0.03 | QV | \| | \| |
| 3+50 | 0.0075 | 0.03 | QV | \| | \| |
| 3+55 | 0.0078 | 0.04 | QV | । | 1 |
| 4+ 0 | 0.0080 | 0.04 | QV | I | \| |
| 4+ 5 | 0.0083 | 0.04 | QV | 1 | \| |
| 4+10 | 0.0085 | 0.04 | QV | \| | \| |


| 4+15 | 0.0088 | 0.04 | Q |  | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4+20 | 0.0091 | 0.04 | Q |  | \| | \| |
| 4+25 | 0.0094 | 0.04 | Q |  | \| | \| |
| 4+30 | 0.0096 | 0.04 | Q | V | \| | \| |
| 4+35 | 0.0100 | 0.04 | Q | $\checkmark$ | \| | \| |
| 4+40 | 0.0103 | 0.04 | Q | $\checkmark$ | \| | \| |
| 4+45 | 0.0106 | 0.04 | Q | $\checkmark$ | \| | \| |
| 4+50 | 0.0109 | 0.05 | Q | $\checkmark$ | \| | \| |
| 4+55 | 0.0112 | 0.05 | Q | $\checkmark$ | \| | \| |
| 5+ 0 | 0.0115 | 0.05 | Q | $\checkmark$ | \| | \| |
| 5+ 5 | 0.0119 | 0.05 | Q | $\checkmark$ | \| | \| |
| 5+10 | 0.0121 | 0.04 | Q | $\checkmark$ | \| | \| |
| 5+15 | 0.0124 | 0.04 | Q | $\checkmark$ | \| | \| |
| 5+20 | 0.0127 | 0.04 | Q | $\checkmark$ | \| | \| |
| 5+25 | 0.0130 | 0.04 | Q | $\checkmark$ | \| | \| |
| 5+30 | 0.0133 | 0.04 | Q | $v$ | \| | \| |
| 5+35 | 0.0136 | 0.05 | Q | V | \| | \| |
| 5+40 | 0.0139 | 0.05 | Q | V | \| | \| |
| 5+45 | 0.0143 | 0.05 | Q | V | \| | \| |
| 5+50 | 0.0146 | 0.05 | Q | V | \| | \| |
| 5+55 | 0.0149 | 0.05 | Q | V | \| | \| |
| 6+ 0 | 0.0153 | 0.05 | Q | V | \| | \| |
| 6+ 5 | 0.0156 | 0.05 | Q | V | \| | \| |
| 6+10 | 0.0160 | 0.06 | Q | $v$ | I | \| |
| 6+15 | 0.0164 | 0.06 | Q | V | \| | \| |
| 6+20 | 0.0168 | 0.06 | Q | V | \| | \| |
| 6+25 | 0.0172 | 0.06 | Q | V | \| | I |
| 6+30 | 0.0176 | 0.06 | Q | V | \| | \| |
| 6+35 | 0.0180 | 0.06 | Q | V | \| | \| |
| 6+40 | 0.0184 | 0.06 | Q | V | । | \| |


| 6+45 | 0.0188 | 0.06 | Q | v | I | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+50 | 0.0193 | 0.06 | Q | v |  | \| |
| 6+55 | 0.0197 | 0.06 | Q | v |  | \| |
| 7+ 0 | 0.0201 | 0.06 | Q | V |  | \| |
| 7+ 5 | 0.0206 | 0.06 | Q | V |  | \| |
| 7+10 | 0.0210 | 0.06 | Q | V | \| | \| |
| 7+15 | 0.0214 | 0.06 | Q | V | \| | \| |
| 7+20 | 0.0219 | 0.06 | Q | V |  | \| |
| 7+25 | 0.0223 | 0.07 | Q | V |  | \| |
| 7+30 | 0.0228 | 0.07 | Q | v | \| | \| |
| 7+35 | 0.0233 | 0.07 | Q | v | \| | \| |
| 7+40 | 0.0238 | 0.07 | Q | v |  | \| |
| 7+45 | 0.0243 | 0.07 | Q | V |  | \| |
| 7+50 | 0.0248 | 0.08 | Q | V | \| | \| |
| 7+55 | 0.0254 | 0.08 | Q | v |  | \| |
| 8+ 0 | 0.0259 | 0.08 | Q | V |  | \| |
| 8+ 5 | 0.0265 | 0.08 | Q | V |  | \| |
| 8+10 | 0.0271 | 0.09 | Q | V | \| | \| |
| 8+15 | 0.0278 | 0.09 | Q | v |  | \| |
| 8+20 | 0.0284 | 0.09 | Q | v |  | \| |
| 8+25 | 0.0291 | 0.09 | Q | V |  | \| |
| 8+30 | 0.0297 | 0.09 | Q | V |  | \| |
| 8+35 | 0.0304 | 0.10 | Q | V | \| | \| |
| 8+40 | 0.0311 | 0.10 | Q | V |  | \| |
| 8+45 | 0.0318 | 0.10 | Q | V |  | \| |
| 8+50 | 0.0325 | 0.10 | Q | V | \| | \| |
| 8+55 | 0.0332 | 0.11 | Q | V |  | 1 |
| 9+ 0 | 0.0339 | 0.11 | Q | V |  | \| |
| 9+ 5 | 0.0347 | 0.11 | Q | V |  | \| |
| 9+10 | 0.0355 | 0.12 | Q |  |  | \| |


| 9+15 | 0.0363 | 0.12 | Q | V I | । |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 9+20 | 0.0371 | 0.12 | Q | V I | 1 |
| 9+25 | 0.0380 | 0.12 | Q | V \| | \| |
| 9+30 | 0.0388 | 0.12 | Q | V I | \| |
| 9+35 | 0.0397 | 0.13 | Q | V1 | 1 |
| 9+40 | 0.0406 | 0.13 | Q | V\| | \| |
| 9+45 | 0.0415 | 0.13 | Q | v 1 | \| |
| 9+50 | 0.0424 | 0.13 | Q | VI | \| |
| 9+55 | 0.0433 | 0.14 | Q | VI | \| |
| 10+ 0 | 0.0443 | 0.14 | Q | v | 1 |
| 10+ 5 | 0.0452 | 0.13 | Q | V | \| |
| 10+10 | 0.0459 | 0.10 | Q | v | \| |
| 10+15 | 0.0465 | 0.10 | Q | V | \| |
| 10+20 | 0.0472 | 0.09 | Q | V | \| |
| 10+25 | 0.0478 | 0.09 | Q | V | \| |
| 10+30 | 0.0485 | 0.09 | Q | IV | \| |
| 10+35 | 0.0492 | 0.10 | Q | IV | \| |
| 10+40 | 0.0500 | 0.12 | Q | \|V | \| |
| 10+45 | 0.0508 | 0.12 | Q | \|V | \| |
| 10+50 | 0.0517 | 0.12 | Q | IV |  |
| 10+55 | 0.0526 | 0.13 | Q | IV | I |
| 11+ 0 | 0.0534 | 0.13 | Q | \| V | \| |
| 11+ 5 | 0.0543 | 0.12 | Q | \| V | \| |
| 11+10 | 0.0551 | 0.12 | Q | \\| V |  |
| 11+15 | 0.0559 | 0.12 | Q | \| V | \| |
| 11+20 | 0.0567 | 0.12 | Q | \| V | \| |
| 11+25 | 0.0576 | 0.12 | Q | \\| V | \| |
| 11+30 | 0.0584 | 0.12 | Q | \\| V |  |
| 11+35 | 0.0592 | 0.12 | Q | 1 V | \| |
| 11+40 | 0.0599 | 0.11 | Q | \\| V |  |




| 16+45 | 0.1645 | 0.02 | Q |  |  | \| | V |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 16+50 | 0.1646 | 0.02 | Q |  |  |  | V |  |
| 16+55 | 0.1647 | 0.02 | Q |  |  |  | V |  |
| 17+ 0 | 0.1649 | 0.02 | Q |  |  | \| | V |  |
| 17+ 5 | 0.1650 | 0.02 | Q |  |  | \| | V |  |
| 17+10 | 0.1652 | 0.03 | Q |  |  | \| | V |  |
| 17+15 | 0.1654 | 0.03 | Q |  |  | 1 | V |  |
| 17+20 | 0.1656 | 0.03 | Q |  |  | 1 | V |  |
| 17+25 | 0.1659 | 0.03 | Q |  | \| | \| | V | $\stackrel{18}{7}$ |
| 17+30 | 0.1661 | 0.03 | Q |  | \| | \| | V | $\stackrel{\sim}{\sim}$ |
| 17+35 | 0.1663 | 0.03 | Q |  | \| | \| | V | - |
| 17+40 | 0.1665 | 0.03 | Q |  | \| | 1 | V | - |
| 17+45 | 0.1667 | 0.03 | Q |  | \| | \| | V | - |
| 17+50 | 0.1669 | 0.03 | Q |  | \| | 1 | V | $\sum_{0}^{0}$ |
| 17+55 | 0.1671 | 0.03 | Q |  | 1 | 1 | V | OV |
| 18+ 0 | 0.1673 | 0.03 | Q |  | \| | \| | V | + |
| 18+ 5 | 0.1675 | 0.03 | Q |  | \| | \| | V | - |
| 18+10 | 0.1676 | 0.03 | Q |  | \| | \| | V | ¢ |
| 18+15 | 0.1678 | 0.03 | Q |  | \| | 1 | V | - |
| 18+20 | 0.1680 | 0.03 | Q |  | \| | \| | V | 응 |
| $18+25$ | 0.1681 | 0.03 | Q |  | 1 | 1 | V | ت |
| 18+30 | 0.1683 | 0.03 | Q |  | 1 | \| | V | E |
| 18+35 | 0.1685 | 0.02 | Q |  | 1 | 1 | V | 年 |
| 18+40 | 0.1686 | 0.02 | Q |  | \| | \| | V |  |
| 18+45 | 0.1688 | 0.02 | Q |  | \| | \| | V |  |
| 18+50 | 0.1689 | 0.02 | Q |  | \| | \| | V |  |
| 18+55 | 0.1690 | 0.01 | Q |  | \| | \| | V |  |
| 19+ 0 | 0.1691 | 0.01 | Q |  | 1 | I | V |  |
| 19+ 5 | 0.1692 | 0.01 | Q |  | 1 | \| | V |  |
| 19+10 | 0.1693 | 0.02 | Q |  | \| | \| | V |  |





```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33prea242.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Existing Condition
    Unit Hydrograph Runoff
    Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) =
0.009 Sq. Mi.
    Length along longest watercourse = 852.00(Ft.)
    Length along longest watercourse measured to centroid = 341.00
(Ft.)
    Length along longest watercourse = 0.161 Mi.
    Length along longest watercourse measured to centroid = 0.065
Mi.
    Difference in elevation = 75.00(Ft.)
    Slope along watercourse = 464.7887 Ft./Mi.
    Average Manning's 'N' = 0.040
    Lag time = 0.053 Hr.
    Lag time = 3.17 Min.
    25% of lag time = 0.79 Min.
    40% of lag time = 1.27 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time ( Hr. ) | Pattern Percent | Storm Rain ( $\mathrm{In} / \mathrm{Hr}$ ) | Loss rate(In./Hr) |  | Effective(In/Hr ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Max | Low |  |
| 1 | 0.08 | 0.07 | 0.015 | $0.352)$ | 0.014 | 0.002 |
| 2 | 0.17 | 0.07 | 0.015 | 0.350 ) | 0.014 | 0.002 |
| 3 | 0.25 | 0.07 | 0.015 | 0.349 ) | 0.014 | 0.002 |
| 4 | 0.33 | 0.10 | 0.023 | $0.348)$ | 0.021 | 0.002 |
| 5 | 0.42 | 0.10 | 0.023 | $0.346)$ | 0.021 | 0.002 |
| 6 | 0.50 | 0.10 | 0.023 | ( 0.345) | 0.021 | 0.002 |
| 7 | 0.58 | 0.10 | 0.023 | $0.344)$ | 0.021 | 0.002 |
| 8 | 0.67 | 0.10 | 0.023 | $0.342)$ | 0.021 | 0.002 |
| 9 | 0.75 | 0.10 | 0.023 | ( 0.341) | 0.021 | 0.002 |
| 10 | 0.83 | 0.13 | 0.031 | ( 0.340) | 0.028 | 0.003 |
| 11 | 0.92 | 0.13 | 0.031 | ( 0.338) | 0.028 | 0.003 |
| 12 | 1.00 | 0.13 | 0.031 | ( 0.337) | 0.028 | 0.003 |
| 13 | 1.08 | 0.10 | 0.023 | ( 0.336) | 0.021 | 0.002 |
| 14 | 1.17 | 0.10 | 0.023 | ( 0.334) | 0.021 | 0.002 |
| 15 | 1.25 | 0.10 | 0.023 | ( 0.333) | 0.021 | 0.002 |
| 16 | 1.33 | 0.10 | 0.023 | ( 0.332) | 0.021 | 0.002 |
| 17 | 1.42 | 0.10 | 0.023 | ( 0.330) | 0.021 | 0.002 |
| 18 | 1.50 | 0.10 | 0.023 | $0.329)$ | 0.021 | 0.002 |
| 19 | 1.58 | 0.10 | 0.023 | ( 0.328) | 0.021 | 0.002 |
| 20 | 1.67 | 0.10 | 0.023 | ( 0.326) | 0.021 | 0.002 |
| 21 | 1.75 | 0.10 | 0.023 | $0.325)$ | 0.021 | 0.002 |
| 22 | 1.83 | 0.13 | 0.031 | ( 0.324) | 0.028 | 0.003 |
| 23 | 1.92 | 0.13 | 0.031 | $0.322)$ | 0.028 | 0.003 |
| 24 | 2.00 | 0.13 | 0.031 | ( 0.321) | 0.028 | 0.003 |
| 25 | 2.08 | 0.13 | 0.031 | $0.320)$ | 0.028 | 0.003 |
| 26 | 2.17 | 0.13 | 0.031 | ( 0.318) | 0.028 | 0.003 |
| 27 | 2.25 | 0.13 | 0.031 | ( 0.317) | 0.028 | 0.003 |
| 28 | 2.33 | 0.13 | 0.031 | ( 0.316) | 0.028 | 0.003 |
| 29 | 2.42 | 0.13 | 0.031 | ( 0.315) | 0.028 | 0.003 |
| 30 | 2.50 | 0.13 | 0.031 | ( 0.313) | 0.028 | 0.003 |
| 31 | 2.58 | 0.17 | 0.039 | ( 0.312) | 0.035 | 0.004 |
| 32 | 2.67 | 0.17 | 0.039 | ( 0.311) | 0.035 | 0.004 |
| 33 | 2.75 | 0.17 | 0.039 | ( 0.310) | 0.035 | 0.004 |
| 34 | 2.83 | 0.17 | 0.039 | ( 0.308) | 0.035 | 0.004 |
| 35 | 2.92 | 0.17 | 0.039 | ( 0.307) | 0.035 | 0.004 |
| 36 | 3.00 | 0.17 | 0.039 | ( 0.306) | 0.035 | 0.004 |
| 37 | 3.08 | 0.17 | 0.039 | ( 0.304) | 0.035 | 0.004 |
| 38 | 3.17 | 0.17 | 0.039 | ( 0.303) | 0.035 | 0.004 |
| 39 | 3.25 | 0.17 | 0.039 | ( 0.302) | 0.035 | 0.004 |
| 40 | 3.33 | 0.17 | 0.039 | ( 0.301) | 0.035 | 0.004 |
| 41 | 3.42 | 0.17 | 0.039 | ( 0.299) | 0.035 | 0.004 |
| 42 | 3.50 | 0.17 | 0.039 | ( 0.298) | 0.035 | 0.004 |
| 43 | 3.58 | 0.17 | 0.039 | ( 0.297) | 0.035 | 0.004 |
| 44 | 3.67 | 0.17 | 0.039 | ( 0.296) | 0.035 | 0.004 |
| 45 | 3.75 | 0.17 | 0.039 | ( 0.294) | 0.035 | 0.004 |
| 46 | 3.83 | 0.20 | 0.046 | ( 0.293) | 0.042 | 0.005 |
| 47 | 3.92 | 0.20 | 0.046 | ( 0.292) | 0.042 | 0.005 |
| 48 | 4.00 | 0.20 | 0.046 | ( 0.291) | 0.042 | 0.005 |
| 49 | 4.08 | 0.20 | 0.046 | ( 0.289) | 0.042 | 0.005 |
| 50 | 4.17 | 0.20 | 0.046 | ( 0.288) | 0.042 | 0.005 |
| 51 | 4.25 | 0.20 | 0.046 | ( 0.287) | 0.042 | 0.005 |
| 52 | 4.33 | 0.23 | 0.054 | ( 0.286) | 0.049 | 0.005 |
| 53 | 4.42 | 0.23 | 0.054 | ( 0.285) | 0.049 | 0.005 |
| 54 | 4.50 | 0.23 | 0.054 | ( 0.283) | 0.049 | 0.005 |
| 55 | 4.58 | 0.23 | 0.054 | ( 0.282) | 0.049 | 0.005 |
| 56 | 4.67 | 0.23 | 0.054 | ( 0.281) | 0.049 | 0.005 |
| 57 | 4.75 | 0.23 | 0.054 | ( 0.280) | 0.049 | 0.005 |


| 58 | 4.83 | 0.27 | 0.062 | 0.278) | 0.056 | 0.006 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 59 | 4.92 | 0.27 | 0.062 | $0.277)$ | 0.056 | 0.006 |
| 60 | 5.00 | 0.27 | 0.062 | $0.276)$ | 0.056 | 0.006 |
| 61 | 5.08 | 0.20 | 0.046 | $0.275)$ | 0.042 | 0.005 |
| 62 | 5.17 | 0.20 | 0.046 | $0.274)$ | 0.042 | 0.005 |
| 63 | 5.25 | 0.20 | 0.046 | $0.272)$ | 0.042 | 0.005 |
| 64 | 5.33 | 0.23 | 0.054 | 0.271) | 0.049 | 0.005 |
| 65 | 5.42 | 0.23 | 0.054 | 0.270) | 0.049 | 0.005 |
| 66 | 5.50 | 0.23 | 0.054 | $0.269)$ | 0.049 | 0.005 |
| 67 | 5.58 | 0.27 | 0.062 | $0.268)$ | 0.056 | 0.006 |
| 68 | 5.67 | 0.27 | 0.062 | 0.267) | 0.056 | 0.006 |
| 69 | 5.75 | 0.27 | 0.062 | $0.265)$ | 0.056 | 0.006 |
| 70 | 5.83 | 0.27 | 0.062 | $0.264)$ | 0.056 | 0.006 |
| 71 | 5.92 | 0.27 | 0.062 | $0.263)$ | 0.056 | 0.006 |
| 72 | 6.00 | 0.27 | 0.062 | $0.262)$ | 0.056 | 0.006 |
| 73 | 6.08 | 0.30 | 0.069 | 0.261) | 0.063 | 0.007 |
| 74 | 6.17 | 0.30 | 0.069 | 0.260) | 0.063 | 0.007 |
| 75 | 6.25 | 0.30 | 0.069 | 0.258) | 0.063 | 0.007 |
| 76 | 6.33 | 0.30 | 0.069 | 0.257) | 0.063 | 0.007 |
| 77 | 6.42 | 0.30 | 0.069 | $0.256)$ | 0.063 | 0.007 |
| 78 | 6.50 | 0.30 | 0.069 | $0.255)$ | 0.063 | 0.007 |
| 79 | 6.58 | 0.33 | 0.077 | $0.254)$ | 0.069 | 0.008 |
| 80 | 6.67 | 0.33 | 0.077 | $0.253)$ | 0.069 | 0.008 |
| 81 | 6.75 | 0.33 | 0.077 | $0.252)$ | 0.069 | 0.008 |
| 82 | 6.83 | 0.33 | 0.077 | 0.250) | 0.069 | 0.008 |
| 83 | 6.92 | 0.33 | 0.077 | $0.249)$ | 0.069 | 0.008 |
| 84 | 7.00 | 0.33 | 0.077 | $0.248)$ | 0.069 | 0.008 |
| 85 | 7.08 | 0.33 | 0.077 | 0.247) | 0.069 | 0.008 |
| 86 | 7.17 | 0.33 | 0.077 | $0.246)$ | 0.069 | 0.008 |
| 87 | 7.25 | 0.33 | 0.077 | $0.245)$ | 0.069 | 0.008 |
| 88 | 7.33 | 0.37 | 0.085 | $0.244)$ | 0.076 | 0.008 |
| 89 | 7.42 | 0.37 | 0.085 | $0.243)$ | 0.076 | 0.008 |
| 90 | 7.50 | 0.37 | 0.085 | 0.241) | 0.076 | 0.008 |
| 91 | 7.58 | 0.40 | 0.093 | 0.240) | 0.083 | 0.009 |
| 92 | 7.67 | 0.40 | 0.093 | $0.239)$ | 0.083 | 0.009 |
| 93 | 7.75 | 0.40 | 0.093 | $0.238)$ | 0.083 | 0.009 |
| 94 | 7.83 | 0.43 | 0.100 | $0.237)$ | 0.090 | 0.010 |
| 95 | 7.92 | 0.43 | 0.100 | $0.236)$ | 0.090 | 0.010 |
| 96 | 8.00 | 0.43 | 0.100 | $0.235)$ | 0.090 | 0.010 |
| 97 | 8.08 | 0.50 | 0.116 | $0.234)$ | 0.104 | 0.012 |
| 98 | 8.17 | 0.50 | 0.116 | $0.233)$ | 0.104 | 0.012 |
| 99 | 8.25 | 0.50 | 0.116 | $0.232)$ | 0.104 | 0.012 |
| 100 | 8.33 | 0.50 | 0.116 | 0.230) | 0.104 | 0.012 |
| 101 | 8.42 | 0.50 | 0.116 | $0.229)$ | 0.104 | 0.012 |
| 102 | 8.50 | 0.50 | 0.116 | $0.228)$ | 0.104 | 0.012 |
| 103 | 8.58 | 0.53 | 0.124 | 0.227) | 0.111 | 0.012 |
| 104 | 8.67 | 0.53 | 0.124 | $0.226)$ | 0.111 | 0.012 |
| 105 | 8.75 | 0.53 | 0.124 | $0.225)$ | 0.111 | 0.012 |
| 106 | 8.83 | 0.57 | 0.131 | $0.224)$ | 0.118 | 0.013 |
| 107 | 8.92 | 0.57 | 0.131 | $0.223)$ | 0.118 | 0.013 |
| 108 | 9.00 | 0.57 | 0.131 | $0.222)$ | 0.118 | 0.013 |
| 109 | 9.08 | 0.63 | 0.147 | 0.221) | 0.132 | 0.015 |
| 110 | 9.17 | 0.63 | 0.147 | 0.220) | 0.132 | 0.015 |
| 111 | 9.25 | 0.63 | 0.147 | $0.219)$ | 0.132 | 0.015 |
| 112 | 9.33 | 0.67 | 0.154 | $0.218)$ | 0.139 | 0.015 |
| 113 | 9.42 | 0.67 | 0.154 | $0.217)$ | 0.139 | 0.015 |
| 114 | 9.50 | 0.67 | 0.154 | $0.216)$ | 0.139 | 0.015 |
| 115 | 9.58 | 0.70 | 0.162 | $0.215)$ | 0.146 | 0.016 |
| 116 | 9.67 | 0.70 | 0.162 | $0.214)$ | 0.146 | 0.016 |
| 117 | 9.75 | 0.70 | 0.162 | $0.213)$ | 0.146 | 0.016 |


| 118 | 9.83 | 0.73 | 0.170 | $0.212)$ | 0.153 | 0.017 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 119 | 9.92 | 0.73 | 0.170 | 0.211) | 0.153 | 0.017 |
| 120 | 10.00 | 0.73 | 0.170 | 0.210) | 0.153 | 0.017 |
| 121 | 10.08 | 0.50 | 0.116 | $0.208)$ | 0.104 | 0.012 |
| 122 | 10.17 | 0.50 | 0.116 | $0.207)$ | 0.104 | 0.012 |
| 123 | 10.25 | 0.50 | 0.116 | $0.206)$ | 0.104 | 0.012 |
| 124 | 10.33 | 0.50 | 0.116 | $0.205)$ | 0.104 | 0.012 |
| 125 | 10.42 | 0.50 | 0.116 | $0.204)$ | 0.104 | 0.012 |
| 126 | 10.50 | 0.50 | 0.116 | $0.203)$ | 0.104 | 0.012 |
| 127 | 10.58 | 0.67 | 0.154 | $0.202)$ | 0.139 | 0.015 |
| 128 | 10.67 | 0.67 | 0.154 | $0.201)$ | 0.139 | 0.015 |
| 129 | 10.75 | 0.67 | 0.154 | 0.201) | 0.139 | 0.015 |
| 130 | 10.83 | 0.67 | 0.154 | 0.200) | 0.139 | 0.015 |
| 131 | 10.92 | 0.67 | 0.154 | $0.199)$ | 0.139 | 0.015 |
| 132 | 11.00 | 0.67 | 0.154 | $0.198)$ | 0.139 | 0.015 |
| 133 | 11.08 | 0.63 | 0.147 | $0.197)$ | 0.132 | 0.015 |
| 134 | 11.17 | 0.63 | 0.147 | $0.196)$ | 0.132 | 0.015 |
| 135 | 11.25 | 0.63 | 0.147 | $0.195)$ | 0.132 | 0.015 |
| 136 | 11.33 | 0.63 | 0.147 | $0.194)$ | 0.132 | 0.015 |
| 137 | 11.42 | 0.63 | 0.147 | $0.193)$ | 0.132 | 0.015 |
| 138 | 11.50 | 0.63 | 0.147 | $0.192)$ | 0.132 | 0.015 |
| 139 | 11.58 | 0.57 | 0.131 | $0.191)$ | 0.118 | 0.013 |
| 140 | 11.67 | 0.57 | 0.131 | 0.190) | 0.118 | 0.013 |
| 141 | 11.75 | 0.57 | 0.131 | $0.189)$ | 0.118 | 0.013 |
| 142 | 11.83 | 0.60 | 0.139 | $0.188)$ | 0.125 | 0.014 |
| 143 | 11.92 | 0.60 | 0.139 | $0.187)$ | 0.125 | 0.014 |
| 144 | 12.00 | 0.60 | 0.139 | $0.186)$ | 0.125 | 0.014 |
| 145 | 12.08 | 0.83 | 0.193 | 0.185) | 0.174 | 0.019 |
| 146 | 12.17 | 0.83 | 0.193 | $0.184)$ | 0.174 | 0.019 |
| 147 | 12.25 | 0.83 | 0.193 | $0.183)$ | 0.174 | 0.019 |
| 148 | 12.33 | 0.87 | 0.201 | $0.182)$ | 0.181 | 0.020 |
| 149 | 12.42 | 0.87 | 0.201 | $0.182)$ | 0.181 | 0.020 |
| 150 | 12.50 | 0.87 | 0.201 | 0.181 | $0.181)$ | 0.020 |
| 151 | 12.58 | 0.93 | 0.216 | 0.180 | $0.195)$ | 0.036 |
| 152 | 12.67 | 0.93 | 0.216 | 0.179 | $0.195)$ | 0.037 |
| 153 | 12.75 | 0.93 | 0.216 | 0.178 | $0.195)$ | 0.038 |
| 154 | 12.83 | 0.97 | 0.224 | 0.177 | $0.201)$ | 0.047 |
| 155 | 12.92 | 0.97 | 0.224 | 0.176 | $0.201)$ | 0.048 |
| 156 | 13.00 | 0.97 | 0.224 | 0.175 | 0.201) | 0.049 |
| 157 | 13.08 | 1.13 | 0.262 | 0.174 | $0.236)$ | 0.088 |
| 158 | 13.17 | 1.13 | 0.262 | 0.173 | $0.236)$ | 0.089 |
| 159 | 13.25 | 1.13 | 0.262 | 0.173 | $0.236)$ | 0.090 |
| 160 | 13.33 | 1.13 | 0.262 | 0.172 | $0.236)$ | 0.091 |
| 161 | 13.42 | 1.13 | 0.262 | 0.171 | $0.236)$ | 0.092 |
| 162 | 13.50 | 1.13 | 0.262 | 0.170 | $0.236)$ | 0.093 |
| 163 | 13.58 | 0.77 | 0.178 | $0.169)$ | 0.160 | 0.018 |
| 164 | 13.67 | 0.77 | 0.178 | 0.168) | 0.160 | 0.018 |
| 165 | 13.75 | 0.77 | 0.178 | $0.167)$ | 0.160 | 0.018 |
| 166 | 13.83 | 0.77 | 0.178 | $0.166)$ | 0.160 | 0.018 |
| 167 | 13.92 | 0.77 | 0.178 | $0.166)$ | 0.160 | 0.018 |
| 168 | 14.00 | 0.77 | 0.178 | $0.165)$ | 0.160 | 0.018 |
| 169 | 14.08 | 0.90 | 0.208 | 0.164 | $0.188)$ | 0.044 |
| 170 | 14.17 | 0.90 | 0.208 | 0.163 | $0.188)$ | 0.045 |
| 171 | 14.25 | 0.90 | 0.208 | 0.162 | $0.188)$ | 0.046 |
| 172 | 14.33 | 0.87 | 0.201 | 0.161 | $0.181)$ | 0.039 |
| 173 | 14.42 | 0.87 | 0.201 | 0.161 | 0.181) | 0.040 |
| 174 | 14.50 | 0.87 | 0.201 | 0.160 | 0.181) | 0.041 |
| 175 | 14.58 | 0.87 | 0.201 | 0.159 | $0.181)$ | 0.042 |
| 176 | 14.67 | 0.87 | 0.201 | 0.158 | 0.181) | 0.043 |
| 177 | 14.75 | 0.87 | 0.201 | 0.157 | 0.181) | 0.043 |


| 178 | 14.83 | 0.83 | 0.193 | 0.157 | $0.174)$ | 0.036 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 179 | 14.92 | 0.83 | 0.193 | 0.156 | $0.174)$ | 0.037 |
| 180 | 15.00 | 0.83 | 0.193 | 0.155 | $0.174)$ | 0.038 |
| 181 | 15.08 | 0.80 | 0.185 | 0.154 | $0.167)$ | 0.031 |
| 182 | 15.17 | 0.80 | 0.185 | 0.153 | 0.167) | 0.032 |
| 183 | 15.25 | 0.80 | 0.185 | 0.153 | $0.167)$ | 0.033 |
| 184 | 15.33 | 0.77 | 0.178 | 0.152 | 0.160) | 0.026 |
| 185 | 15.42 | 0.77 | 0.178 | 0.151 | 0.160) | 0.027 |
| 186 | 15.50 | 0.77 | 0.178 | 0.150 | $0.160)$ | 0.027 |
| 187 | 15.58 | 0.63 | 0.147 | $0.149)$ | 0.132 | 0.015 |
| 188 | 15.67 | 0.63 | 0.147 | $0.149)$ | 0.132 | 0.015 |
| 189 | 15.75 | 0.63 | 0.147 | $0.148)$ | 0.132 | 0.015 |
| 190 | 15.83 | 0.63 | 0.147 | 0.147) | 0.132 | 0.015 |
| 191 | 15.92 | 0.63 | 0.147 | $0.146)$ | 0.132 | 0.015 |
| 192 | 16.00 | 0.63 | 0.147 | $0.146)$ | 0.132 | 0.015 |
| 193 | 16.08 | 0.13 | 0.031 | $0.145)$ | 0.028 | 0.003 |
| 194 | 16.17 | 0.13 | 0.031 | $0.144)$ | 0.028 | 0.003 |
| 195 | 16.25 | 0.13 | 0.031 | 0.143) | 0.028 | 0.003 |
| 196 | 16.33 | 0.13 | 0.031 | $0.143)$ | 0.028 | 0.003 |
| 197 | 16.42 | 0.13 | 0.031 | $0.142)$ | 0.028 | 0.003 |
| 198 | 16.50 | 0.13 | 0.031 | 0.141) | 0.028 | 0.003 |
| 199 | 16.58 | 0.10 | 0.023 | 0.141) | 0.021 | 0.002 |
| 200 | 16.67 | 0.10 | 0.023 | 0.140) | 0.021 | 0.002 |
| 201 | 16.75 | 0.10 | 0.023 | 0.139) | 0.021 | 0.002 |
| 202 | 16.83 | 0.10 | 0.023 | 0.138) | 0.021 | 0.002 |
| 203 | 16.92 | 0.10 | 0.023 | 0.138) | 0.021 | 0.002 |
| 204 | 17.00 | 0.10 | 0.023 | 0.137) | 0.021 | 0.002 |
| 205 | 17.08 | 0.17 | 0.039 | $0.136)$ | 0.035 | 0.004 |
| 206 | 17.17 | 0.17 | 0.039 | $0.136)$ | 0.035 | 0.004 |
| 207 | 17.25 | 0.17 | 0.039 | $0.135)$ | 0.035 | 0.004 |
| 208 | 17.33 | 0.17 | 0.039 | $0.134)$ | 0.035 | 0.004 |
| 209 | 17.42 | 0.17 | 0.039 | $0.134)$ | 0.035 | 0.004 |
| 210 | 17.50 | 0.17 | 0.039 | $0.133)$ | 0.035 | 0.004 |
| 211 | 17.58 | 0.17 | 0.039 | 0.132) | 0.035 | 0.004 |
| 212 | 17.67 | 0.17 | 0.039 | $0.132)$ | 0.035 | 0.004 |
| 213 | 17.75 | 0.17 | 0.039 | 0.131) | 0.035 | 0.004 |
| 214 | 17.83 | 0.13 | 0.031 | 0.130) | 0.028 | 0.003 |
| 215 | 17.92 | 0.13 | 0.031 | 0.130) | 0.028 | 0.003 |
| 216 | 18.00 | 0.13 | 0.031 | 0.129) | 0.028 | 0.003 |
| 217 | 18.08 | 0.13 | 0.031 | $0.128)$ | 0.028 | 0.003 |
| 218 | 18.17 | 0.13 | 0.031 | 0.128) | 0.028 | 0.003 |
| 219 | 18.25 | 0.13 | 0.031 | 0.127) | 0.028 | 0.003 |
| 220 | 18.33 | 0.13 | 0.031 | 0.127) | 0.028 | 0.003 |
| 221 | 18.42 | 0.13 | 0.031 | $0.126)$ | 0.028 | 0.003 |
| 222 | 18.50 | 0.13 | 0.031 | 0.125) | 0.028 | 0.003 |
| 223 | 18.58 | 0.10 | 0.023 | 0.125) | 0.021 | 0.002 |
| 224 | 18.67 | 0.10 | 0.023 | $0.124)$ | 0.021 | 0.002 |
| 225 | 18.75 | 0.10 | 0.023 | $0.124)$ | 0.021 | 0.002 |
| 226 | 18.83 | 0.07 | 0.015 | $0.123)$ | 0.014 | 0.002 |
| 227 | 18.92 | 0.07 | 0.015 | $0.122)$ | 0.014 | 0.002 |
| 228 | 19.00 | 0.07 | 0.015 | $0.122)$ | 0.014 | 0.002 |
| 229 | 19.08 | 0.10 | 0.023 | 0.121) | 0.021 | 0.002 |
| 230 | 19.17 | 0.10 | 0.023 | 0.121) | 0.021 | 0.002 |
| 231 | 19.25 | 0.10 | 0.023 | 0.120) | 0.021 | 0.002 |
| 232 | 19.33 | 0.13 | 0.031 | $0.119)$ | 0.028 | 0.003 |
| 233 | 19.42 | 0.13 | 0.031 | $0.119)$ | 0.028 | 0.003 |
| 234 | 19.50 | 0.13 | 0.031 | 0.118) | 0.028 | 0.003 |
| 235 | 19.58 | 0.10 | 0.023 | 0.118) | 0.021 | 0.002 |
| 236 | 19.67 | 0.10 | 0.023 | 0.117) | 0.021 | 0.002 |
| 237 | 19.75 | 0.10 | 0.023 | 0.117) | 0.021 | 0.002 |


| 238 | 19.83 | 0.07 | 0.015 | $0.116)$ | 0.014 | 0.002 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 239 | 19.92 | 0.07 | 0.015 | $0.116)$ | 0.014 | 0.002 |
| 240 | 20.00 | 0.07 | 0.015 | $0.115)$ | 0.014 | 0.002 |
| 241 | 20.08 | 0.10 | 0.023 | $0.115)$ | 0.021 | 0.002 |
| 242 | 20.17 | 0.10 | 0.023 | $0.114)$ | 0.021 | 0.002 |
| 243 | 20.25 | 0.10 | 0.023 | $0.114)$ | 0.021 | 0.002 |
| 244 | 20.33 | 0.10 | 0.023 | $0.113)$ | 0.021 | 0.002 |
| 245 | 20.42 | 0.10 | 0.023 | $0.113)$ | 0.021 | 0.002 |
| 246 | 20.50 | 0.10 | 0.023 | 0.112) | 0.021 | 0.002 |
| 247 | 20.58 | 0.10 | 0.023 | $0.112)$ | 0.021 | 0.002 |
| 248 | 20.67 | 0.10 | 0.023 | 0.111) | 0.021 | 0.002 |
| 249 | 20.75 | 0.10 | 0.023 | 0.111) | 0.021 | 0.002 |
| 250 | 20.83 | 0.07 | 0.015 | $0.110)$ | 0.014 | 0.002 |
| 251 | 20.92 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |
| 252 | 21.00 | 0.07 | 0.015 | 0.110) | 0.014 | 0.002 |
| 253 | 21.08 | 0.10 | 0.023 | 0.109) | 0.021 | 0.002 |
| 254 | 21.17 | 0.10 | 0.023 | $0.109)$ | 0.021 | 0.002 |
| 255 | 21.25 | 0.10 | 0.023 | $0.108)$ | 0.021 | 0.002 |
| 256 | 21.33 | 0.07 | 0.015 | $0.108)$ | 0.014 | 0.002 |
| 257 | 21.42 | 0.07 | 0.015 | $0.107)$ | 0.014 | 0.002 |
| 258 | 21.50 | 0.07 | 0.015 | $0.107)$ | 0.014 | 0.002 |
| 259 | 21.58 | 0.10 | 0.023 | $0.107)$ | 0.021 | 0.002 |
| 260 | 21.67 | 0.10 | 0.023 | $0.106)$ | 0.021 | 0.002 |
| 261 | 21.75 | 0.10 | 0.023 | $0.106)$ | 0.021 | 0.002 |
| 262 | 21.83 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 |
| 263 | 21.92 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 |
| 264 | 22.00 | 0.07 | 0.015 | $0.105)$ | 0.014 | 0.002 |
| 265 | 22.08 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 266 | 22.17 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 267 | 22.25 | 0.10 | 0.023 | $0.104)$ | 0.021 | 0.002 |
| 268 | 22.33 | 0.07 | 0.015 | $0.103)$ | 0.014 | 0.002 |
| 269 | 22.42 | 0.07 | 0.015 | $0.103)$ | 0.014 | 0.002 |
| 270 | 22.50 | 0.07 | 0.015 | $0.103)$ | 0.014 | 0.002 |
| 271 | 22.58 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 |
| 272 | 22.67 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 |
| 273 | 22.75 | 0.07 | 0.015 | 0.102) | 0.014 | 0.002 |
| 274 | 22.83 | 0.07 | 0.015 | $0.102)$ | 0.014 | 0.002 |
| 275 | 22.92 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |
| 276 | 23.00 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |
| 277 | 23.08 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |
| 278 | 23.17 | 0.07 | 0.015 | $0.101)$ | 0.014 | 0.002 |
| 279 | 23.25 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 280 | 23.33 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 281 | 23.42 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 282 | 23.50 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 283 | 23.58 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 284 | 23.67 | 0.07 | 0.015 | $0.100)$ | 0.014 | 0.002 |
| 285 | 23.75 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 286 | 23.83 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 287 | 23.92 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| 288 | 24.00 | 0.07 | 0.015 | 0.099) | 0.014 | 0.002 |
| Sum = (Loss Rate Not Used) Sum = 3.1 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Flood volume $=$ Effective rainfall 0.26(In) |  |  |  |  |  |  |
|  | times area 5.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft) |  |  |  |  |  |
| Total soil loss $=1.67(\mathrm{In})$ |  |  |  |  |  |  |
|  | Total soil loss $=0.769$ (Ac.Ft) |  |  |  |  |  |
|  | Total rainfall = 1.93(In) |  |  |  |  |  |
|  | Flood volume $=\quad 5261.5$ Cubic Feet |  |  |  |  |  |
|  | Total soil loss $=\quad 33480.7$ Cubic Feet |  |  |  |  |  |

$$
\text { Peak flow rate of this hydrograph }=
$$

0.512 (CFS)

$\begin{array}{llllll}\text { Time (h+m) Volume Ac.Ft } & \text { Q(CFS) } 0 & 2.5 & 5.0 & 7.5\end{array}$ 10.0
---------------------------------------------------------------------------I
$0+50.0000 \quad 0.00 \mathrm{Q} \quad|\quad|$

| 1+50 | 0.0019 | 0.01 | Q | \| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+55 | 0.0020 | 0.02 | Q | 1 | \| |
| 2+ 0 | 0.0021 | 0.02 | Q | \| | \| |
| 2+ 5 | 0.0022 | 0.02 | Q | 1 | 1 |
| 2+10 | 0.0024 | 0.02 | Q | 1 | 1 |
| 2+15 | 0.0025 | 0.02 | Q | 1 | 1 |
| 2+20 | 0.0026 | 0.02 | Q | 1 | 1 |
| 2+25 | 0.0027 | 0.02 | Q | 1 | I |
| 2+30 | 0.0028 | 0.02 | Q | 1 | I |
| 2+35 | 0.0030 | 0.02 | Q | 1 | 1 |
| 2+40 | 0.0031 | 0.02 | QV | \| | \| |
| 2+45 | 0.0033 | 0.02 | QV | 1 | I |
| 2+50 | 0.0034 | 0.02 | QV | 1 | 1 |
| 2+55 | 0.0036 | 0.02 | QV | 1 | 1 |
| $3+0$ | 0.0037 | 0.02 | QV | 1 | 1 |
| $3+5$ | 0.0038 | 0.02 | QV | 1 | I |
| 3+10 | 0.0040 | 0.02 | QV | 1 | 1 |
| 3+15 | 0.0041 | 0.02 | QV | \| | I |
| $3+20$ | 0.0043 | 0.02 | QV | 1 | 1 |
| 3+25 | 0.0044 | 0.02 | QV | \| | 1 |
| 3+30 | 0.0046 | 0.02 | QV | 1 | 1 |
| 3+35 | 0.0047 | 0.02 | QV | 1 | 1 |
| $3+40$ | 0.0049 | 0.02 | QV | 1 | 1 |
| $3+45$ | 0.0050 | 0.02 | QV | \| | 1 |
| 3+50 | 0.0052 | 0.02 | QV | 1 | 1 |
| 3+55 | 0.0054 | 0.03 | QV | 1 | 1 |
| 4+ 0 | 0.0055 | 0.03 | QV | 1 | 1 |
| 4+ 5 | 0.0057 | 0.03 | QV | 1 | 1 |
| 4+10 | 0.0059 | 0.03 | QV | 1 | I |
| 4+15 | 0.0061 | 0.03 | Q V | 1 | 1 |


| $4+20$ | 0.0063 | 0.03 | Q V |
| :--- | :--- | :--- | :--- |
| $4+25$ | 0.0065 | 0.03 | Q V |
| $4+30$ | 0.0067 | 0.03 | Q V |
| $4+35$ | 0.0069 | 0.03 | Q V |
| $4+40$ | 0.0071 | 0.03 | Q V |
| $4+45$ | 0.0073 | 0.03 | Q V |
| $4+50$ | 0.0075 | 0.03 | Q V |
| $4+55$ | 0.0077 | 0.03 | $Q ~ V$ |

6+50
$6+55$
7+ 0
7+ 5
7+10
7+15
7+20
7+25
7+30
7+35
$7+40$
7+45
7+50
7+55
$8+0$
8+ 5
8+10
$8+15$
$8+20$
$8+25$
$8+30$
$8+35$
$8+40$
$8+45$
$8+50$
$8+55$
9+ 0
9+ 5
$9+10$
9+15
0.0245
0.0251
0.08 Q
0.08
$Q$

| $9+20$ | 0.0256 | 0.08 | Q | v \\| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 9+25 | 0.0262 | 0.09 | Q | v \\| | \| |
| 9+30 | 0.0268 | 0.09 | Q | v \\| | \| |
| 9+35 | 0.0274 | 0.09 | Q | v1 | 1 |
| 9+40 | 0.0280 | 0.09 | Q | v1 | \\| |
| $9+45$ | 0.0286 | 0.09 | Q | v | 1 |
| $9+50$ | 0.0293 | 0.09 | Q | v1 | 1 |
| 9+55 | 0.0299 | 0.09 | Q | v | 1 |
| 10+ 0 | 0.0306 | 0.09 | Q | v | 1 |
| 10+ 5 | 0.0312 | 0.08 | Q | V | 1 |
| 10+10 | 0.0316 | 0.07 | Q | v | 1 |
| 10+15 | 0.0321 | 0.07 | Q | v | 1 |
| 10+20 | 0.0325 | 0.06 | Q | v | 1 |
| 10+25 | 0.0330 | 0.06 | Q | V | 1 |
| 10+30 | 0.0334 | 0.06 | Q | IV | 1 |
| 10+35 | 0.0339 | 0.07 | Q | IV | 1 |
| 10+40 | 0.0345 | 0.08 | Q | IV | 1 |
| 10+45 | 0.0351 | 0.09 | Q | IV | 1 |
| 10+50 | 0.0357 | 0.09 | Q | IV | 1 |
| 10+55 | 0.0363 | 0.09 | Q | \\| V | 1 |
| 11+ 0 | 0.0369 | 0.09 | Q | \\| V | 1 |
| 11+ 5 | 0.0374 | 0.08 | Q | \\| V | 1 |
| 11+10 | 0.0380 | 0.08 | Q | \\| V | 1 |
| 11+15 | 0.0386 | 0.08 | Q | \\| V | 1 |
| 11+20 | 0.0391 | 0.08 | Q | \\| V | 1 |
| 11+25 | 0.0397 | 0.08 | Q |  | 1 |
| 11+30 | 0.0403 | 0.08 | Q |  | 1 |
| 11+35 | 0.0408 | 0.08 | Q |  | \| |
| 11+40 | 0.0413 | 0.07 | Q | 1 V | 1 |
| 11+45 | 0.0418 | 0.07 | Q | \\| V | \| |


| $11+50$ | 0.0423 | 0.07 | Q |
| :--- | :--- | :--- | :--- |
| $11+55$ | 0.0429 | 0.08 | Q |
| $12+0$ | 0.0434 | 0.08 | Q |
| $12+5$ | 0.0440 | 0.09 | Q |
| $12+10$ | 0.0447 | 0.10 | Q |
| $12+15$ | 0.0454 | 0.11 | Q |
| $12+20$ | 0.0462 | 0.11 | Q |

$12+25$
|
$12+30$
$12+35$
$12+40$
|
$12+45$
$12+50$
12+55
|
13+ 0
$13+5$
|
13+10
$13+15$
|
13+20
$13+25$
|
$13+30$
|
$13+35$
$13+40$
$13+45$
$13+50$
$13+55$
$14+0$
$14+5$
$14+10$
$14+15$
0.0868

| $14+20$ | 0.0885 | 0.24 | Q |
| :--- | :--- | :--- | :--- |
| $14+25$ | 0.0901 | 0.23 | Q |
| $14+30$ | 0.0916 | 0.23 | Q |
| $14+35$ | 0.0932 | 0.23 | Q |
| $14+40$ | 0.0948 | 0.23 | Q |
| $14+45$ | 0.0964 | 0.24 | Q |
| $14+50$ | 0.0980 | 0.23 | Q |


| 16+50 | 0.1132 | 0.01 | Q |
| :---: | :---: | :---: | :---: |
| 16+55 | 0.1133 | 0.01 | Q |
| 17+ 0 | 0.1134 | 0.01 | Q |
| 17+ 5 | 0.1135 | 0.02 | Q |
| 17+10 | 0.1137 | 0.02 | Q |
| 17+15 | 0.1138 | 0.02 | Q |


| 19+20 | 0.1166 | 0.01 | Q | \\| | 1 | । | v |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19+25 | 0.1167 | 0.02 | Q | I | 1 | I | v |
| 19+30 | 0.1169 | 0.02 | Q | 1 | 1 | I | v |
| 19+35 | 0.1170 | 0.02 | Q | \| | 1 | \| | v |
| 19+40 | 0.1171 | 0.01 | Q | 1 | 1 | I | V |
| 19+45 | 0.1172 | 0.01 | Q | 1 | 1 | I | $v$ |
| 19+50 | 0.1172 | 0.01 | Q | 1 | 1 | \| | v |
| 19+55 | 0.1173 | 0.01 | Q | I | \| | \| | V |
| 20+ 0 | 0.1174 | 0.01 | Q | , | 1 | \| | V |
| 20+ 5 | 0.1174 | 0.01 | Q | 1 | 1 | । | v |
| 20+10 | 0.1175 | 0.01 | Q | 1 | 1 | \| | v |
| 20+15 | 0.1176 | 0.01 | Q | 1 | । | 1 | v |
| 20+20 | 0.1177 | 0.01 | Q | \| | \| | \| | v |
| 20+25 | 0.1178 | 0.01 | Q | I | 1 | \| |  |
| 20+30 | 0.1179 | 0.01 | Q | I | I | \| |  |
| 20+35 | 0.1180 | 0.01 | Q | I | I | \| |  |
| 20+40 | 0.1180 | 0.01 | Q | , | 1 | \| |  |
| 20+45 | 0.1181 | 0.01 | Q | I | \| | \| |  |
| 20+50 | 0.1182 | 0.01 | Q | , | \| | \| |  |
| 20+55 | 0.1183 | 0.01 | Q | \| | , | \| |  |
| 21+ 0 | 0.1183 | 0.01 | Q | \| | 1 | \| |  |
| 21+ 5 | 0.1184 | 0.01 | Q | , | , | \| |  |
| 21+10 | 0.1185 | 0.01 | Q | , | , |  |  |
| 21+15 | 0.1186 | 0.01 | Q | \| | \| | \| |  |
| 21+20 | 0.1187 | 0.01 | Q | 1 | 1 | \| |  |
| 21+25 | 0.1187 | 0.01 | Q | \| | , | \| |  |
| 21+30 | 0.1188 | 0.01 | Q | , | , | \| |  |
| 21+35 | 0.1188 | 0.01 | Q | \| | \| | \| |  |
| 21+40 | 0.1189 | 0.01 | Q | \| | \| | \| |  |
| 21+45 | 0.1190 | 0.01 | Q | \| | 1 | \| |  |



|  |  | V |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{array}{llll}24+20 & 0.1208 & 0.00 & \text { Q \| }\end{array}$ |  |  |  |  |  |  |  |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post242.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area B
--
    Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) =
0.017 Sq. Mi.
    Length along longest watercourse = 1380.00(Ft.)
    Length along longest watercourse measured to centroid = 828.00
(Ft.)
    Length along longest watercourse = 0.261 Mi.
    Length along longest watercourse measured to centroid = 0.157
Mi.
    Difference in elevation = 52.00(Ft.)
    Slope along watercourse = 198.9565 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.039 Hr.
    Lag time = 2.35 Min.
    25% of lag time = 0.59 Min.
    40% of lag time = 0.94 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

| Unit | Time | Pattern | Storm Rain | Loss rate(In./Hr) |  | Effective |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ( Hr.$)$ | Percent | (In/Hr) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| 1 | 0.08 | 0.07 | 0.015 | ( 0.274) | 0.006 | 0.010 |
| 2 | 0.17 | 0.07 | 0.015 | ( 0.273) | 0.006 | 0.010 |
| 3 | 0.25 | 0.07 | 0.015 | ( 0.272) | 0.006 | 0.010 |
| 4 | 0.33 | 0.10 | 0.023 | ( 0.271) | 0.009 | 0.014 |
| 5 | 0.42 | 0.10 | 0.023 | ( 0.270) | 0.009 | 0.014 |
| 6 | 0.50 | 0.10 | 0.023 | ( 0.269) | 0.009 | 0.014 |
| 7 | 0.58 | 0.10 | 0.023 | ( 0.268) | 0.009 | 0.014 |
| 8 | 0.67 | 0.10 | 0.023 | ( 0.267) | 0.009 | 0.014 |
| 9 | 0.75 | 0.10 | 0.023 | ( 0.266) | 0.009 | 0.014 |
| 10 | 0.83 | 0.13 | 0.031 | ( 0.265) | 0.012 | 0.019 |
| 11 | 0.92 | 0.13 | 0.031 | ( 0.264) | 0.012 | 0.019 |
| 12 | 1.00 | 0.13 | 0.031 | ( 0.263) | 0.012 | 0.019 |
| 13 | 1.08 | 0.10 | 0.023 | ( 0.262) | 0.009 | 0.014 |
| 14 | 1.17 | 0.10 | 0.023 | ( 0.261) | 0.009 | 0.014 |
| 15 | 1.25 | 0.10 | 0.023 | ( 0.260) | 0.009 | 0.014 |
| 16 | 1.33 | 0.10 | 0.023 | ( 0.259) | 0.009 | 0.014 |
| 17 | 1.42 | 0.10 | 0.023 | (0.258) | 0.009 | 0.014 |
| 18 | 1.50 | 0.10 | 0.023 | ( 0.257) | 0.009 | 0.014 |
| 19 | 1.58 | 0.10 | 0.023 | ( 0.255) | 0.009 | 0.014 |
| 20 | 1.67 | 0.10 | 0.023 | ( 0.254) | 0.009 | 0.014 |
| 21 | 1.75 | 0.10 | 0.023 | ( 0.253) | 0.009 | 0.014 |
| 22 | 1.83 | 0.13 | 0.031 | ( 0.252) | 0.012 | 0.019 |
| 23 | 1.92 | 0.13 | 0.031 | ( 0.251) | 0.012 | 0.019 |
| 24 | 2.00 | 0.13 | 0.031 | ( 0.250) | 0.012 | 0.019 |
| 25 | 2.08 | 0.13 | 0.031 | ( 0.249) | 0.012 | 0.019 |
| 26 | 2.17 | 0.13 | 0.031 | ( 0.248) | 0.012 | 0.019 |
| 27 | 2.25 | 0.13 | 0.031 | ( 0.247) | 0.012 | 0.019 |
| 28 | 2.33 | 0.13 | 0.031 | ( 0.246) | 0.012 | 0.019 |
| 29 | 2.42 | 0.13 | 0.031 | ( 0.245) | 0.012 | 0.019 |
| 30 | 2.50 | 0.13 | 0.031 | ( 0.244) | 0.012 | 0.019 |
| 31 | 2.58 | 0.17 | 0.039 | ( 0.243) | 0.015 | 0.024 |
| 32 | 2.67 | 0.17 | 0.039 | ( 0.242) | 0.015 | 0.024 |
| 33 | 2.75 | 0.17 | 0.039 | ( 0.241) | 0.015 | 0.024 |
| 34 | 2.83 | 0.17 | 0.039 | ( 0.240) | 0.015 | 0.024 |
| 35 | 2.92 | 0.17 | 0.039 | ( 0.239) | 0.015 | 0.024 |
| 36 | 3.00 | 0.17 | 0.039 | ( 0.238) | 0.015 | 0.024 |
| 37 | 3.08 | 0.17 | 0.039 | ( 0.237) | 0.015 | 0.024 |
| 38 | 3.17 | 0.17 | 0.039 | ( 0.236) | 0.015 | 0.024 |
| 39 | 3.25 | 0.17 | 0.039 | ( 0.235) | 0.015 | 0.024 |
| 40 | 3.33 | 0.17 | 0.039 | ( 0.234) | 0.015 | 0.024 |
| 41 | 3.42 | 0.17 | 0.039 | ( 0.233) | 0.015 | 0.024 |
| 42 | 3.50 | 0.17 | 0.039 | ( 0.232) | 0.015 | 0.024 |
| 43 | 3.58 | 0.17 | 0.039 | ( 0.232) | 0.015 | 0.024 |
| 44 | 3.67 | 0.17 | 0.039 | ( 0.231) | 0.015 | 0.024 |
| 45 | 3.75 | 0.17 | 0.039 | ( 0.230) | 0.015 | 0.024 |
| 46 | 3.83 | 0.20 | 0.046 | ( 0.229) | 0.018 | 0.029 |
| 47 | 3.92 | 0.20 | 0.046 | ( 0.228) | 0.018 | 0.029 |
| 48 | 4.00 | 0.20 | 0.046 | ( 0.227) | 0.018 | 0.029 |
| 49 | 4.08 | 0.20 | 0.046 | ( 0.226) | 0.018 | 0.029 |
| 50 | 4.17 | 0.20 | 0.046 | ( 0.225) | 0.018 | 0.029 |
| 51 | 4.25 | 0.20 | 0.046 | ( 0.224) | 0.018 | 0.029 |
| 52 | 4.33 | 0.23 | 0.054 | ( 0.223) | 0.021 | 0.034 |
| 53 | 4.42 | 0.23 | 0.054 | ( 0.222) | 0.021 | 0.034 |
| 54 | 4.50 | 0.23 | 0.054 | ( 0.221) | 0.021 | 0.034 |
| 55 | 4.58 | 0.23 | 0.054 | ( 0.220) | 0.021 | 0.034 |
| 56 | 4.67 | 0.23 | 0.054 | ( 0.219) | 0.021 | 0.034 |
| 57 | 4.75 | 0.23 | 0.054 | ( 0.218) | 0.021 | 0.034 |
| 58 | 4.83 | 0.27 | 0.062 | ( 0.217) | 0.023 | 0.038 |


| 59 | 4.92 | 0.27 | 0.062 | 0.216) | 0.023 | 0.038 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 60 | 5.00 | 0.27 | 0.062 | $0.215)$ | 0.023 | 0.038 |
| 61 | 5.08 | 0.20 | 0.046 | $0.214)$ | 0.018 | 0.029 |
| 62 | 5.17 | 0.20 | 0.046 | 0.213) | 0.018 | 0.029 |
| 63 | 5.25 | 0.20 | 0.046 | 0.212) | 0.018 | 0.029 |
| 64 | 5.33 | 0.23 | 0.054 | $0.212)$ | 0.021 | 0.034 |
| 65 | 5.42 | 0.23 | 0.054 | 0.211) | 0.021 | 0.034 |
| 66 | 5.50 | 0.23 | 0.054 | 0.210) | 0.021 | 0.034 |
| 67 | 5.58 | 0.27 | 0.062 | $0.209)$ | 0.023 | 0.038 |
| 68 | 5.67 | 0.27 | 0.062 | $0.208)$ | 0.023 | 0.038 |
| 69 | 5.75 | 0.27 | 0.062 | 0.207) | 0.023 | 0.038 |
| 70 | 5.83 | 0.27 | 0.062 | 0.206) | 0.023 | 0.038 |
| 71 | 5.92 | 0.27 | 0.062 | $0.205)$ | 0.023 | 0.038 |
| 72 | 6.00 | 0.27 | 0.062 | $0.204)$ | 0.023 | 0.038 |
| 73 | 6.08 | 0.30 | 0.069 | $0.203)$ | 0.026 | 0.043 |
| 74 | 6.17 | 0.30 | 0.069 | 0.202) | 0.026 | 0.043 |
| 75 | 6.25 | 0.30 | 0.069 | $0.202)$ | 0.026 | 0.043 |
| 76 | 6.33 | 0.30 | 0.069 | 0.201) | 0.026 | 0.043 |
| 77 | 6.42 | 0.30 | 0.069 | 0.200) | 0.026 | 0.043 |
| 78 | 6.50 | 0.30 | 0.069 | $0.199)$ | 0.026 | 0.043 |
| 79 | 6.58 | 0.33 | 0.077 | 0.198) | 0.029 | 0.048 |
| 80 | 6.67 | 0.33 | 0.077 | $0.197)$ | 0.029 | 0.048 |
| 81 | 6.75 | 0.33 | 0.077 | 0.196) | 0.029 | 0.048 |
| 82 | 6.83 | 0.33 | 0.077 | $0.195)$ | 0.029 | 0.048 |
| 83 | 6.92 | 0.33 | 0.077 | $0.194)$ | 0.029 | 0.048 |
| 84 | 7.00 | 0.33 | 0.077 | 0.193) | 0.029 | 0.048 |
| 85 | 7.08 | 0.33 | 0.077 | $0.193)$ | 0.029 | 0.048 |
| 86 | 7.17 | 0.33 | 0.077 | $0.192)$ | 0.029 | 0.048 |
| 87 | 7.25 | 0.33 | 0.077 | 0.191) | 0.029 | 0.048 |
| 88 | 7.33 | 0.37 | 0.085 | 0.190) | 0.032 | 0.053 |
| 89 | 7.42 | 0.37 | 0.085 | $0.189)$ | 0.032 | 0.053 |
| 90 | 7.50 | 0.37 | 0.085 | $0.188)$ | 0.032 | 0.053 |
| 91 | 7.58 | 0.40 | 0.093 | 0.187) | 0.035 | 0.057 |
| 92 | 7.67 | 0.40 | 0.093 | 0.187) | 0.035 | 0.057 |
| 93 | 7.75 | 0.40 | 0.093 | 0.186) | 0.035 | 0.057 |
| 94 | 7.83 | 0.43 | 0.100 | $0.185)$ | 0.038 | 0.062 |
| 95 | 7.92 | 0.43 | 0.100 | $0.184)$ | 0.038 | 0.062 |
| 96 | 8.00 | 0.43 | 0.100 | $0.183)$ | 0.038 | 0.062 |
| 97 | 8.08 | 0.50 | 0.116 | $0.182)$ | 0.044 | 0.072 |
| 98 | 8.17 | 0.50 | 0.116 | 0.181) | 0.044 | 0.072 |
| 99 | 8.25 | 0.50 | 0.116 | 0.181) | 0.044 | 0.072 |
| 100 | 8.33 | 0.50 | 0.116 | 0.180) | 0.044 | 0.072 |
| 101 | 8.42 | 0.50 | 0.116 | 0.179) | 0.044 | 0.072 |
| 102 | 8.50 | 0.50 | 0.116 | 0.178) | 0.044 | 0.072 |
| 103 | 8.58 | 0.53 | 0.124 | 0.177) | 0.047 | 0.077 |
| 104 | 8.67 | 0.53 | 0.124 | 0.176) | 0.047 | 0.077 |
| 105 | 8.75 | 0.53 | 0.124 | 0.176) | 0.047 | 0.077 |
| 106 | 8.83 | 0.57 | 0.131 | $0.175)$ | 0.050 | 0.081 |
| 107 | 8.92 | 0.57 | 0.131 | $0.174)$ | 0.050 | 0.081 |
| 108 | 9.00 | 0.57 | 0.131 | $0.173)$ | 0.050 | 0.081 |
| 109 | 9.08 | 0.63 | 0.147 | 0.172) | 0.056 | 0.091 |
| 110 | 9.17 | 0.63 | 0.147 | 0.171) | 0.056 | 0.091 |
| 111 | 9.25 | 0.63 | 0.147 | 0.171) | 0.056 | 0.091 |
| 112 | 9.33 | 0.67 | 0.154 | 0.170) | 0.059 | 0.096 |
| 113 | 9.42 | 0.67 | 0.154 | 0.169) | 0.059 | 0.096 |
| 114 | 9.50 | 0.67 | 0.154 | 0.168) | 0.059 | 0.096 |
| 115 | 9.58 | 0.70 | 0.162 | 0.167) | 0.062 | 0.101 |
| 116 | 9.67 | 0.70 | 0.162 | 0.167) | 0.062 | 0.101 |
| 117 | 9.75 | 0.70 | 0.162 | 0.166) | 0.062 | 0.101 |
| 118 | 9.83 | 0.73 | 0.170 | $0.165)$ | 0.065 | 0.105 |


| 119 | 9.92 | 0.73 | 0.170 | $0.164)$ | 0.065 | 0.105 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 120 | 10.00 | 0.73 | 0.170 | 0.163) | 0.065 | 0.105 |
| 121 | 10.08 | 0.50 | 0.116 | $0.163)$ | 0.044 | 0.072 |
| 122 | 10.17 | 0.50 | 0.116 | $0.162)$ | 0.044 | 0.072 |
| 123 | 10.25 | 0.50 | 0.116 | 0.161) | 0.044 | 0.072 |
| 124 | 10.33 | 0.50 | 0.116 | 0.160) | 0.044 | 0.072 |
| 125 | 10.42 | 0.50 | 0.116 | $0.159)$ | 0.044 | 0.072 |
| 126 | 10.50 | 0.50 | 0.116 | $0.159)$ | 0.044 | 0.072 |
| 127 | 10.58 | 0.67 | 0.154 | 0.158) | 0.059 | 0.096 |
| 128 | 10.67 | 0.67 | 0.154 | 0.157) | 0.059 | 0.096 |
| 129 | 10.75 | 0.67 | 0.154 | $0.156)$ | 0.059 | 0.096 |
| 130 | 10.83 | 0.67 | 0.154 | $0.156)$ | 0.059 | 0.096 |
| 131 | 10.92 | 0.67 | 0.154 | $0.155)$ | 0.059 | 0.096 |
| 132 | 11.00 | 0.67 | 0.154 | $0.154)$ | 0.059 | 0.096 |
| 133 | 11.08 | 0.63 | 0.147 | $0.153)$ | 0.056 | 0.091 |
| 134 | 11.17 | 0.63 | 0.147 | $0.153)$ | 0.056 | 0.091 |
| 135 | 11.25 | 0.63 | 0.147 | $0.152)$ | 0.056 | 0.091 |
| 136 | 11.33 | 0.63 | 0.147 | 0.151) | 0.056 | 0.091 |
| 137 | 11.42 | 0.63 | 0.147 | 0.150) | 0.056 | 0.091 |
| 138 | 11.50 | 0.63 | 0.147 | 0.150) | 0.056 | 0.091 |
| 139 | 11.58 | 0.57 | 0.131 | $0.149)$ | 0.050 | 0.081 |
| 140 | 11.67 | 0.57 | 0.131 | $0.148)$ | 0.050 | 0.081 |
| 141 | 11.75 | 0.57 | 0.131 | 0.147) | 0.050 | 0.081 |
| 142 | 11.83 | 0.60 | 0.139 | 0.147) | 0.053 | 0.086 |
| 143 | 11.92 | 0.60 | 0.139 | $0.146)$ | 0.053 | 0.086 |
| 144 | 12.00 | 0.60 | 0.139 | $0.145)$ | 0.053 | 0.086 |
| 145 | 12.08 | 0.83 | 0.193 | $0.144)$ | 0.073 | 0.120 |
| 146 | 12.17 | 0.83 | 0.193 | $0.144)$ | 0.073 | 0.120 |
| 147 | 12.25 | 0.83 | 0.193 | $0.143)$ | 0.073 | 0.120 |
| 148 | 12.33 | 0.87 | 0.201 | $0.142)$ | 0.076 | 0.124 |
| 149 | 12.42 | 0.87 | 0.201 | $0.142)$ | 0.076 | 0.124 |
| 150 | 12.50 | 0.87 | 0.201 | 0.141) | 0.076 | 0.124 |
| 151 | 12.58 | 0.93 | 0.216 | 0.140) | 0.082 | 0.134 |
| 152 | 12.67 | 0.93 | 0.216 | 0.139) | 0.082 | 0.134 |
| 153 | 12.75 | 0.93 | 0.216 | 0.139) | 0.082 | 0.134 |
| 154 | 12.83 | 0.97 | 0.224 | $0.138)$ | 0.085 | 0.139 |
| 155 | 12.92 | 0.97 | 0.224 | 0.137) | 0.085 | 0.139 |
| 156 | 13.00 | 0.97 | 0.224 | 0.137) | 0.085 | 0.139 |
| 157 | 13.08 | 1.13 | 0.262 | $0.136)$ | 0.100 | 0.163 |
| 158 | 13.17 | 1.13 | 0.262 | $0.135)$ | 0.100 | 0.163 |
| 159 | 13.25 | 1.13 | 0.262 | $0.135)$ | 0.100 | 0.163 |
| 160 | 13.33 | 1.13 | 0.262 | $0.134)$ | 0.100 | 0.163 |
| 161 | 13.42 | 1.13 | 0.262 | $0.133)$ | 0.100 | 0.163 |
| 162 | 13.50 | 1.13 | 0.262 | $0.133)$ | 0.100 | 0.163 |
| 163 | 13.58 | 0.77 | 0.178 | 0.132) | 0.067 | 0.110 |
| 164 | 13.67 | 0.77 | 0.178 | 0.131) | 0.067 | 0.110 |
| 165 | 13.75 | 0.77 | 0.178 | 0.130) | 0.067 | 0.110 |
| 166 | 13.83 | 0.77 | 0.178 | 0.130) | 0.067 | 0.110 |
| 167 | 13.92 | 0.77 | 0.178 | $0.129)$ | 0.067 | 0.110 |
| 168 | 14.00 | 0.77 | 0.178 | $0.129)$ | 0.067 | 0.110 |
| 169 | 14.08 | 0.90 | 0.208 | $0.128)$ | 0.079 | 0.129 |
| 170 | 14.17 | 0.90 | 0.208 | 0.127) | 0.079 | 0.129 |
| 171 | 14.25 | 0.90 | 0.208 | 0.127) | 0.079 | 0.129 |
| 172 | 14.33 | 0.87 | 0.201 | $0.126)$ | 0.076 | 0.124 |
| 173 | 14.42 | 0.87 | 0.201 | $0.125)$ | 0.076 | 0.124 |
| 174 | 14.50 | 0.87 | 0.201 | $0.125)$ | 0.076 | 0.124 |
| 175 | 14.58 | 0.87 | 0.201 | $0.124)$ | 0.076 | 0.124 |
| 176 | 14.67 | 0.87 | 0.201 | 0.123) | 0.076 | 0.124 |
| 177 | 14.75 | 0.87 | 0.201 | $0.123)$ | 0.076 | 0.124 |
| 178 | 14.83 | 0.83 | 0.193 | $0.122)$ | 0.073 | 0.120 |


| 179 | 14.92 | 0.83 | 0.193 | 0.121) | 0.073 | 0.120 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 180 | 15.00 | 0.83 | 0.193 | 0.121) | 0.073 | 0.120 |
| 181 | 15.08 | 0.80 | 0.185 | 0.120) | 0.070 | 0.115 |
| 182 | 15.17 | 0.80 | 0.185 | 0.120) | 0.070 | 0.115 |
| 183 | 15.25 | 0.80 | 0.185 | $0.119)$ | 0.070 | 0.115 |
| 184 | 15.33 | 0.77 | 0.178 | $0.118)$ | 0.067 | 0.110 |
| 185 | 15.42 | 0.77 | 0.178 | $0.118)$ | 0.067 | 0.110 |
| 186 | 15.50 | 0.77 | 0.178 | 0.117) | 0.067 | 0.110 |
| 187 | 15.58 | 0.63 | 0.147 | 0.117) | 0.056 | 0.091 |
| 188 | 15.67 | 0.63 | 0.147 | $0.116)$ | 0.056 | 0.091 |
| 189 | 15.75 | 0.63 | 0.147 | $0.115)$ | 0.056 | 0.091 |
| 190 | 15.83 | 0.63 | 0.147 | $0.115)$ | 0.056 | 0.091 |
| 191 | 15.92 | 0.63 | 0.147 | $0.114)$ | 0.056 | 0.091 |
| 192 | 16.00 | 0.63 | 0.147 | $0.114)$ | 0.056 | 0.091 |
| 193 | 16.08 | 0.13 | 0.031 | $0.113)$ | 0.012 | 0.019 |
| 194 | 16.17 | 0.13 | 0.031 | $0.112)$ | 0.012 | 0.019 |
| 195 | 16.25 | 0.13 | 0.031 | $0.112)$ | 0.012 | 0.019 |
| 196 | 16.33 | 0.13 | 0.031 | 0.111) | 0.012 | 0.019 |
| 197 | 16.42 | 0.13 | 0.031 | 0.111) | 0.012 | 0.019 |
| 198 | 16.50 | 0.13 | 0.031 | 0.110) | 0.012 | 0.019 |
| 199 | 16.58 | 0.10 | 0.023 | 0.110) | 0.009 | 0.014 |
| 200 | 16.67 | 0.10 | 0.023 | $0.109)$ | 0.009 | 0.014 |
| 201 | 16.75 | 0.10 | 0.023 | $0.109)$ | 0.009 | 0.014 |
| 202 | 16.83 | 0.10 | 0.023 | $0.108)$ | 0.009 | 0.014 |
| 203 | 16.92 | 0.10 | 0.023 | $0.107)$ | 0.009 | 0.014 |
| 204 | 17.00 | 0.10 | 0.023 | $0.107)$ | 0.009 | 0.014 |
| 205 | 17.08 | 0.17 | 0.039 | $0.106)$ | 0.015 | 0.024 |
| 206 | 17.17 | 0.17 | 0.039 | $0.106)$ | 0.015 | 0.024 |
| 207 | 17.25 | 0.17 | 0.039 | $0.105)$ | 0.015 | 0.024 |
| 208 | 17.33 | 0.17 | 0.039 | $0.105)$ | 0.015 | 0.024 |
| 209 | 17.42 | 0.17 | 0.039 | $0.104)$ | 0.015 | 0.024 |
| 210 | 17.50 | 0.17 | 0.039 | $0.104)$ | 0.015 | 0.024 |
| 211 | 17.58 | 0.17 | 0.039 | $0.103)$ | 0.015 | 0.024 |
| 212 | 17.67 | 0.17 | 0.039 | $0.103)$ | 0.015 | 0.024 |
| 213 | 17.75 | 0.17 | 0.039 | $0.102)$ | 0.015 | 0.024 |
| 214 | 17.83 | 0.13 | 0.031 | $0.102)$ | 0.012 | 0.019 |
| 215 | 17.92 | 0.13 | 0.031 | $0.101)$ | 0.012 | 0.019 |
| 216 | 18.00 | 0.13 | 0.031 | $0.101)$ | 0.012 | 0.019 |
| 217 | 18.08 | 0.13 | 0.031 | 0.100) | 0.012 | 0.019 |
| 218 | 18.17 | 0.13 | 0.031 | $0.100)$ | 0.012 | 0.019 |
| 219 | 18.25 | 0.13 | 0.031 | $0.099)$ | 0.012 | 0.019 |
| 220 | 18.33 | 0.13 | 0.031 | $0.099)$ | 0.012 | 0.019 |
| 221 | 18.42 | 0.13 | 0.031 | $0.098)$ | 0.012 | 0.019 |
| 222 | 18.50 | 0.13 | 0.031 | 0.098) | 0.012 | 0.019 |
| 223 | 18.58 | 0.10 | 0.023 | $0.097)$ | 0.009 | 0.014 |
| 224 | 18.67 | 0.10 | 0.023 | $0.097)$ | 0.009 | 0.014 |
| 225 | 18.75 | 0.10 | 0.023 | $0.096)$ | 0.009 | 0.014 |
| 226 | 18.83 | 0.07 | 0.015 | $0.096)$ | 0.006 | 0.010 |
| 227 | 18.92 | 0.07 | 0.015 | $0.095)$ | 0.006 | 0.010 |
| 228 | 19.00 | 0.07 | 0.015 | $0.095)$ | 0.006 | 0.010 |
| 229 | 19.08 | 0.10 | 0.023 | $0.094)$ | 0.009 | 0.014 |
| 230 | 19.17 | 0.10 | 0.023 | $0.094)$ | 0.009 | 0.014 |
| 231 | 19.25 | 0.10 | 0.023 | $0.094)$ | 0.009 | 0.014 |
| 232 | 19.33 | 0.13 | 0.031 | $0.093)$ | 0.012 | 0.019 |
| 233 | 19.42 | 0.13 | 0.031 | $0.093)$ | 0.012 | 0.019 |
| 234 | 19.50 | 0.13 | 0.031 | $0.092)$ | 0.012 | 0.019 |
| 235 | 19.58 | 0.10 | 0.023 | $0.092)$ | 0.009 | 0.014 |
| 236 | 19.67 | 0.10 | 0.023 | 0.091) | 0.009 | 0.014 |
| 237 | 19.75 | 0.10 | 0.023 | $0.091)$ | 0.009 | 0.014 |
| 238 | 19.83 | 0.07 | 0.015 | 0.091) | 0.006 | 0.010 |


| 239 | 19.92 | 0.07 | 0.015 | 0.090) | 0.006 | 0.010 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 240 | 20.00 | 0.07 | 0.015 | 0.090) | 0.006 | 0.010 |
| 241 | 20.08 | 0.10 | 0.023 | $0.089)$ | 0.009 | 0.014 |
| 242 | 20.17 | 0.10 | 0.023 | $0.089)$ | 0.009 | 0.014 |
| 243 | 20.25 | 0.10 | 0.023 | $0.089)$ | 0.009 | 0.014 |
| 244 | 20.33 | 0.10 | 0.023 | $0.088)$ | 0.009 | 0.014 |
| 245 | 20.42 | 0.10 | 0.023 | $0.088)$ | 0.009 | 0.014 |
| 246 | 20.50 | 0.10 | 0.023 | $0.088)$ | 0.009 | 0.014 |
| 247 | 20.58 | 0.10 | 0.023 | $0.087)$ | 0.009 | 0.014 |
| 248 | 20.67 | 0.10 | 0.023 | $0.087)$ | 0.009 | 0.014 |
| 249 | 20.75 | 0.10 | 0.023 | $0.086)$ | 0.009 | 0.014 |
| 250 | 20.83 | 0.07 | 0.015 | $0.086)$ | 0.006 | 0.010 |
| 251 | 20.92 | 0.07 | 0.015 | $0.086)$ | 0.006 | 0.010 |
| 252 | 21.00 | 0.07 | 0.015 | $0.085)$ | 0.006 | 0.010 |
| 253 | 21.08 | 0.10 | 0.023 | $0.085)$ | 0.009 | 0.014 |
| 254 | 21.17 | 0.10 | 0.023 | $0.085)$ | 0.009 | 0.014 |
| 255 | 21.25 | 0.10 | 0.023 | $0.084)$ | 0.009 | 0.014 |
| 256 | 21.33 | 0.07 | 0.015 | $0.084)$ | 0.006 | 0.010 |
| 257 | 21.42 | 0.07 | 0.015 | $0.084)$ | 0.006 | 0.010 |
| 258 | 21.50 | 0.07 | 0.015 | $0.083)$ | 0.006 | 0.010 |
| 259 | 21.58 | 0.10 | 0.023 | $0.083)$ | 0.009 | 0.014 |
| 260 | 21.67 | 0.10 | 0.023 | $0.083)$ | 0.009 | 0.014 |
| 261 | 21.75 | 0.10 | 0.023 | $0.083)$ | 0.009 | 0.014 |
| 262 | 21.83 | 0.07 | 0.015 | $0.082)$ | 0.006 | 0.010 |
| 263 | 21.92 | 0.07 | 0.015 | $0.082)$ | 0.006 | 0.010 |
| 264 | 22.00 | 0.07 | 0.015 | $0.082)$ | 0.006 | 0.010 |
| 265 | 22.08 | 0.10 | 0.023 | 0.081) | 0.009 | 0.014 |
| 266 | 22.17 | 0.10 | 0.023 | 0.081) | 0.009 | 0.014 |
| 267 | 22.25 | 0.10 | 0.023 | 0.081) | 0.009 | 0.014 |
| 268 | 22.33 | 0.07 | 0.015 | 0.081) | 0.006 | 0.010 |
| 269 | 22.42 | 0.07 | 0.015 | 0.080) | 0.006 | 0.010 |
| 270 | 22.50 | 0.07 | 0.015 | 0.080) | 0.006 | 0.010 |
| 271 | 22.58 | 0.07 | 0.015 | 0.080) | 0.006 | 0.010 |
| 272 | 22.67 | 0.07 | 0.015 | 0.080) | 0.006 | 0.010 |
| 273 | 22.75 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 274 | 22.83 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 275 | 22.92 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 276 | 23.00 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 277 | 23.08 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 278 | 23.17 | 0.07 | 0.015 | $0.079)$ | 0.006 | 0.010 |
| 279 | 23.25 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 280 | 23.33 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 281 | 23.42 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 282 | 23.50 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 283 | 23.58 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 284 | 23.67 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 285 | 23.75 | 0.07 | 0.015 | $0.078)$ | 0.006 | 0.010 |
| 286 | 23.83 | 0.07 | 0.015 | $0.077)$ | 0.006 | 0.010 |
| 287 | 23.92 | 0.07 | 0.015 | $0.077)$ | 0.006 | 0.010 |
| 288 | 24.00 | 0.07 | 0.015 | $0.077)$ | 0.006 | 0.010 |
|  | Sum = | $\begin{aligned} & \text { oss Ra } \\ & 100.0 \end{aligned}$ | ot Us |  | Sum $=$ | 14.4 |
| Flood volume = Effective rainfall 1.20(In) |  |  |  |  |  |  |
|  | times area 10.9(Ac.)/[(In)/(Ft.)] = 1.1(Ac.Ft) |  |  |  |  |  |
| Total soil loss $=\quad 0.73$ (In) |  |  |  |  |  |  |
| Total soil loss $=00.666($ Ac.Ft) |  |  |  |  |  |  |
| Total rainfall = 1.93(In) |  |  |  |  |  |  |
| Flood volume $=$ 47344.9 Cubic Feet |  |  |  |  |  |  |
| Total soil loss $=$ 29017.8 Cubic Feet |  |  |  |  |  |  |



| 1+50 | 0.0234 | 0.18 | Q | \| | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1+55 | 0.0248 | 0.21 | Q | \| | 1 |
| 2+ 0 | 0.0263 | 0.21 | Q | \| | \\| |
| 2+ 5 | 0.0277 | 0.21 | QV | \| | \\| |
| 2+10 | 0.0292 | 0.21 | QV | \| | \| |
| 2+15 | 0.0306 | 0.21 | QV | \| | \| |
| 2+20 | 0.0321 | 0.21 | QV | \| | \| |
| 2+25 | 0.0335 | 0.21 | QV | \| | \\| |
| 2+30 | 0.0350 | 0.21 | QV | \| | । |
| 2+35 | 0.0366 | 0.23 | QV | \| | \| |
| 2+40 | 0.0384 | 0.26 | IQ | \| | । |
| 2+45 | 0.0402 | 0.26 | IQ | \| | \\| |
| 2+50 | 0.0420 | 0.26 | IQ | \| | । |
| 2+55 | 0.0438 | 0.26 | IQ | \| | I |
| 3+ 0 | 0.0456 | 0.26 | IQ | \| | I |
| 3+ 5 | 0.0474 | 0.26 | IQ | \| | \| |
| 3+10 | 0.0492 | 0.26 | IQ | \| | । |
| 3+15 | 0.0510 | 0.26 | IQ | \| | \| |
| 3+20 | 0.0529 | 0.26 | IQ | \| | \| |
| 3+25 | 0.0547 | 0.26 | IQV | \| | \| |
| 3+30 | 0.0565 | 0.26 | IQV | \| | । |
| 3+35 | 0.0583 | 0.26 | IQV | \| | \| |
| 3+40 | 0.0601 | 0.26 | IQV | \| | \| |
| 3+45 | 0.0619 | 0.26 | IQV | \| | \| |
| 3+50 | 0.0639 | 0.29 | IQV | \| | \| |
| 3+55 | 0.0660 | 0.31 | IQV | \| | \| |
| 4+ 0 | 0.0682 | 0.32 | IQV | \| | I |
| 4+ 5 | 0.0704 | 0.32 | IQV | \| | \| |
| 4+10 | 0.0725 | 0.32 | IQV | \| | \| |
| 4+15 | 0.0747 | 0.32 | IQV | \| | \| |


| 4+20 | 0.0771 | 0.34 | IQV |  |  | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4+25 | 0.0796 | 0.36 | IQV |  |  | 1 |
| 4+30 | 0.0821 | 0.37 | IQ V |  |  | 1 |
| 4+35 | 0.0846 | 0.37 | IQ V |  |  | \| |
| 4+40 | 0.0872 | 0.37 | IQ V |  |  | \| |
| 4+45 | 0.0897 | 0.37 | IQ V |  |  | \| |
| 4+50 | 0.0924 | 0.39 | IQ V |  |  | \| |
| 4+55 | 0.0953 | 0.42 | IQ V |  |  | 1 |
| 5+ 0 | 0.0982 | 0.42 | IQ V |  |  | \| |
| 5+5 | 0.1008 | 0.37 | IQ V |  |  | I |
| 5+10 | 0.1030 | 0.32 | IQ V |  | \| | \| |
| 5+15 | 0.1052 | 0.32 | IQ V |  |  | \| |
| 5+20 | 0.1075 | 0.34 | IQ V |  |  | \| |
| 5+25 | 0.1100 | 0.36 | IQ | V |  | \| |
| 5+30 | 0.1125 | 0.37 | IQ | V |  | \| |
| 5+35 | 0.1152 | 0.39 | IQ | V |  | \| |
| 5+40 | 0.1181 | 0.42 | IQ | V |  | \| |
| 5+45 | 0.1210 | 0.42 | IQ | V |  | \| |
| 5+50 | 0.1239 | 0.42 | IQ | V |  | \| |
| 5+55 | 0.1268 | 0.42 | IQ | V |  | \| |
| 6+ 0 | 0.1297 | 0.42 | IQ | V |  | \| |
| 6+ 5 | 0.1328 | 0.44 | IQ | V |  | \| |
| 6+10 | 0.1360 | 0.47 | IQ | V |  | \| |
| 6+15 | 0.1393 | 0.47 | IQ | V |  | \| |
| 6+20 | 0.1425 | 0.47 | IQ | v |  | \| |
| 6+25 | 0.1458 | 0.47 | IQ | v |  | \| |
| 6+30 | 0.1490 | 0.47 | IQ | V |  | \| |
| 6+35 | 0.1525 | 0.50 | IQ | V |  | \| |
| 6+40 | 0.1561 | 0.52 | \| Q | V |  | 1 |
| 6+45 | 0.1597 | 0.53 | \| Q | V |  | \| |


| 6+50 | 0.1633 | 0.53 | \| 0 |  |  | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6+55 | 0.1669 | 0.53 | \| Q |  |  | \| | \| |
| 7+ 0 | 0.1706 | 0.53 | Q | Q |  | \| | 1 |
| 7+ 5 | 0.1742 | 0.53 | 18 | Q |  | \| | 1 |
| 7+10 | 0.1778 | 0.53 | Q | Q |  | \| | 1 |
| 7+15 | 0.1814 | 0.53 | Q | Q |  | \| | \| |
| 7+20 | 0.1852 | 0.55 | \| Q | Q |  | \| | \| |
| 7+25 | 0.1892 | 0.58 | 18 | Q |  | \| | \| |
| 7+30 | 0.1931 | 0.58 | Q | Q | V | I | I |
| 7+35 | 0.1973 | 0.60 | Q | Q | V | \| | \| |
| 7+40 | 0. 2016 | 0.63 | Q | Q | V | 1 | 1 |
| 7+45 | 0.2060 | 0.63 | 18 | Q | V | 1 | 1 |
| 7+50 | 0.2105 | 0.65 | Q |  | V | 1 | 1 |
| 7+55 | 0.2152 | 0.68 | Q | Q | V | \| | \| |
| 8+ 0 | 0.2199 | 0.68 | Q | Q | V |  | \| |
| 8+ 5 | 0.2249 | 0.73 | Q | Q | V |  | \| |
| 8+10 | 0.2303 | 0.78 | 1 | Q | V |  | 1 |
| 8+15 | 0.2357 | 0.79 | 1 | Q | V |  | \| |
| 8+20 | 0.2412 | 0.79 | 1 | Q | V |  | \| |
| $8+25$ | 0.2466 | 0.79 | \| | Q |  | \| | \| |
| 8+30 | 0.2520 | 0.79 | 1 | Q |  | I | 1 |
| 8+35 | 0.2576 | 0.81 | 1 | Q |  | I | \| |
| 8+40 | 0.2634 | 0.84 | 1 | Q |  | \| | \| |
| $8+45$ | 0.2692 | 0.84 | 1 | Q |  | \| | \| |
| 8+50 | 0.2751 | 0.87 | 1 | Q |  | V | \| |
| 8+55 | 0.2813 | 0.89 | 1 | Q |  | V | \| |
| 9+ 0 | 0.2874 | 0.89 | । | Q |  | V | \| |
| 9+ 5 | 0.2939 | 0.94 | । | Q |  | V | \| |
| 9+10 | 0.3008 | 0.99 | 1 | Q |  | IV | । |
| 9+15 | 0.3076 | 1.00 | 1 | Q |  | IV | \| |



| 11+50 | 0.5187 | 0.92 | \| | Q | \| | VI | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11+55 | 0.5252 | 0.94 | \| | Q | \| | V\| | \| |
| 12+ 0 | 0.5318 | 0.95 | \| | Q | \| | V\| | \| |
| 12+ 5 | 0.5394 | 1.11 | \| | Q | \| | V1 | \| |
| 12+10 | 0.5483 | 1.29 | I | Q |  | $v$ | \| |
| 12+15 | 0.5573 | 1.31 | \| | Q | \| | V | \| |
| 12+20 | 0.5666 | 1.34 | \| | Q | \| | V | \| |
| 12+25 | 0.5760 | 1.36 | \| | Q | \| | IV | \| |
| 12+30 | 0.5854 | 1.37 | \| | Q | \| | \| | \| |
| 12+35 | 0.5951 | 1.41 | \| | Q |  | IV | \| |
| 12+40 | 0.6052 | 1.47 | \| | Q | \| |  | V |
| 12+45 | 0.6154 | 1.47 | \| | Q | \| |  | V |
| 12+50 | 0.6257 | 1.50 | \| | Q | \| | I | v |
| 12+55 | 0.6362 | 1.52 | \| | Q | \| | \| | V |
| 13+ 0 | 0.6467 | 1.53 | \\| | Q | \| | \| | V |
| 13+ 5 | 0.6580 | 1.64 | \\| | Q | \| | \| | v |
| 13+10 | 0.6702 | 1.77 | \| | Q | \| | \| | v |
| 13+15 | 0.6825 | 1.79 | \| | Q | \| | \| | V \| |
| 13+20 | 0.6948 | 1.79 | \| | Q | \| | \| | v |
| 13+25 | 0.7071 | 1.79 | \| | Q | \| | \| | v |
| 13+30 | 0.7194 | 1.79 | \| | Q |  | \| | V I |
| 13+35 | 0.7300 | 1.53 | \| | Q |  | \| | V \| |
| 13+40 | 0.7386 | 1.25 | \| | Q |  | \| | v \| |
| 13+45 | 0.7469 | 1.21 | \| | Q |  | \| | v \\| |
| 13+50 | 0.7553 | 1.21 | I | Q |  | \| | $\vee$ I |
| 13+55 | 0.7636 | 1.21 | \| | Q |  | \| | v \| |
| 14+ 0 | 0.7719 | 1.21 | I | Q | \| | \| | V \| |
| 14+ 5 | 0.7809 | 1.30 | \| | Q |  | \| | V \| |
| 14+10 | 0.7906 | 1.41 | I | Q |  | \| | v 1 |
| 14+15 | 0.8004 | 1.42 | \| | Q |  | \| | v\| |


| 14+20 | 0.8100 | 1.40 | I | Q | \| | I | v |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 14+25 | 0.8194 | 1.37 | \| | Q | \| | \| | V |  |  |
| 14+30 | 0.8288 | 1.37 | \| | Q | \| | \| | V |  |  |
| 14+35 | 0.8383 | 1.37 | \| | Q | \| | \| | v |  |  |
| 14+40 | 0.8477 | 1.37 | \| | Q | \| | \| | \|V |  |  |
| 14+45 | 0.8571 | 1.37 | \| | Q | \| | \| | \|V |  |  |
| 14+50 | 0.8664 | 1.34 | 1 | Q | \| | \| | IV |  |  |
| 14+55 | 0.8754 | 1.32 | \| | Q | \| | \| | \| V |  |  |
| 15+ 0 | 0.8845 | 1.32 | \| | Q | \| | \| | 1 V |  | 8 |
| 15+5 | 0.8934 | 1.29 | \| | Q | \| | \| | I V |  | - |
| 15+10 | 0.9021 | 1.27 | 1 | Q | \| | \| | I V |  | $\stackrel{\square}{\square}$ |
| 15+15 | 0.9108 | 1.26 | \| | Q | \| | \| | I V |  | $\stackrel{n}{\square}$ |
| 15+20 | 0.9193 | 1.24 | \| | Q | \| | \| | v |  | ¢ |
| 15+25 | 0.9277 | 1.21 | \| | Q | \| | \| | I V |  | 3 |
| 15+30 | 0.9360 | 1.21 | 1 | Q | \| | \| | I V |  | O6\% |
| 15+35 | 0.9437 | 1.12 | 1 | Q | 1 | I | \\| V |  | \% |
| 15+40 | 0.9507 | 1.01 | \| | Q | \| | \| |  | I V |  |
| 15+45 | 0.9576 | 1.00 | \| | Q | 1 | \| | 1 | V |  |
| 15+50 | 0.9645 | 1.00 |  | Q | \| | 1 | \| | V | \% |
| 15+55 | 0.9714 | 1.00 | 1 | Q | 1 | 1 | v |  | $\stackrel{8}{2}$ |
| 16+ 0 | 0.9782 | 1.00 |  | Q | \| | \| | I V |  |  |
| $16+5$ | 0.9827 | 0.65 |  |  | \| | \| | \| | v |  |
| 16+10 | 0.9845 | 0.26 | IQ |  | \| | I | \| | v |  |
| 16+15 | 0.9860 | 0.22 | Q |  | \| | \| | \| | V |  |
| 16+20 | 0.9874 | 0.21 | Q |  | 1 | \| | \| | V |  |
| 16+25 | 0.9889 | 0.21 | Q |  | 1 | \| | \| | V |  |
| 16+30 | 0.9903 | 0.21 | Q |  | \| | 1 | \| | $v$ |  |
| 16+35 | 0.9916 | 0.19 | Q |  | 1 | 1 | \| | v |  |
| 16+40 | 0.9927 | 0.16 | Q |  | 1 | \| | \| | V |  |
| 16+45 | 0.9938 | 0.16 | Q |  | \| | \| | \| | V |  |




|  | 21+50 | 1.0665 | 0.13 | Q | 1 |  | \| |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V | 21+55 | 1.0672 | 0. 11 | Q | , | I | । |
| VI |  |  |  |  |  |  |  |
|  | 22+ 0 | 1.0680 | 0.11 | Q | \| | \| | I |
| V1 | 22+ 5 | 1.0688 | 0.13 | Q | \| | \| | 1 |
| VI |  |  |  |  |  |  |  |
|  | 22+10 | 1.0699 | 0.15 | Q | 1 | \| | I |
| V1 | 22+15 | 1.0710 | 0.16 | Q | \| | \| | 1 |
| V\| | 22+20 | 1.0719 | 0.13 | Q | \| | \| | \| |
| V1 | 22+25 | 1.0727 | 0.11 | Q | \| | \| | 1 |
| VI | 22+30 | 1.0734 | 0.11 | O | , | , | \| |
| VI |  |  |  |  |  |  |  |
|  | 22+35 | 1.0741 | 0.11 | Q | \| | \| | 1 |
| V\| | 22+40 | 1.0748 | 0.11 | Q | । | \| | 1 |
| VI |  |  |  |  |  |  |  |
|  | 22+45 | 1.0756 | 0.11 | Q | \| | \| | \| |
| V\| | 22+50 | 1.0763 | 0.11 | Q | \| | \| | \| |
| VI | 22+55 | 1.0770 | 0.11 | 0 | , | \| | I |
| VI |  |  |  |  |  |  |  |
|  | 23+ 0 | 1.0777 | 0.11 | Q | \| | \| | \| |
| V\| | 23+ 5 | 1.0785 | 0.11 | Q | । | \| | । |
| V1 | 23+10 | 1.0792 | 0.11 | Q |  |  |  |
| VI |  | 1.0792 |  |  | 1 | I | \| |
|  | 23+15 | 1.0799 | 0.11 | Q | \| | \| | \| |
| V\| | 23+20 | 1.0806 | 0.11 | Q | 1 | \| | \| |
| VI |  |  |  |  |  |  |  |
|  | 23+25 | 1.0814 | 0.11 | Q | \| | \| | \| |
| V\| | 23+30 | 1.0821 | 0.11 | Q | 1 | \| | \| |
| VI | $23+35$ | 1.0828 | 0.11 | Q | , |  |  |
| VI |  | 1.0828 |  | Q | 1 |  |  |
|  | 23+40 | 1.0835 | 0.11 | Q | \| | \| | \| |
| V\| | 23+45 | 1.0843 | 0.11 | Q | । | \| | \| |
| VI |  |  |  | O |  |  |  |
| VI | 23+50 | 1.0850 | 0.11 | Q | 1 | \| | 1 |
|  | 23+55 | 1.0857 | 0.11 | Q | \| | \| | \| |
| V\| | 24+ 0 | 1.0864 | 0.11 | 0 | । | \| | \| |
| VI |  |  |  |  |  |  |  |
|  | 24+ 5 | 1.0868 | 0.06 | Q | \| | \| | \| |
| V\| | 24+10 | 1.0869 | 0.01 | Q | । | \| | \| |
| VI | 24+15 | 1.0869 | 0. 00 | Q | , | , | , |
| v |  |  |  |  |  | 1 |  |

```
        U n i t H y d r o g r a p h A n a l y s i s
            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
                8.2
                Study date 11/09/21 File: moval33post242.out
                    _++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
            Riverside County Synthetic Unit Hydrology Method
            RCFC & WCD Manual date - April }197
            Program License Serial Number 6232
            English (in-lb) Input Units Used
            English Rainfall Data (Inches) Input Values Used
            English Units used in output format
--- Gateway Heights
    Proposed Condition
    Unit Hydrograph
    Area A
    Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
    Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) =
0.006 Sq. Mi.
    Length along longest watercourse = 1159.00(Ft.)
    Length along longest watercourse measured to centroid = 637.00
(Ft.)
    Length along longest watercourse = 0.220 Mi.
    Length along longest watercourse measured to centroid = 0.121
Mi.
    Difference in elevation = 70.00(Ft.)
    Slope along watercourse = 318.8956 Ft./Mi.
    Average Manning's 'N' = 0.015
    Lag time = 0.030 Hr.
    Lag time = 1.82 Min.
    25% of lag time = 0.45 Min.
    40% of lag time = 0.73 Min.
    Unit time = 5.00 Min.
    Duration of storm = 24 Hour(s)
    User Entered Base Flow = 0.00(CFS)
    2 ~ Y E A R ~ A r e a ~ r a i n f a l l ~ d a t a : ~
    Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
```

4.00
1.93
7.72

100 YEAR Area rainfall data:


The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value
Unit Time Pattern Storm Rain Loss rate(In./Hr) Effective

|  | ( Hr.$)$ | Percent | ( $\mathrm{In} / \mathrm{Hr}$ ) | Max | Low | ( $\mathrm{In} / \mathrm{Hr}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0.08 | 0.07 | 0.015 | ( 0.274) | 0.006 | 0.010 |
| 2 | 0.17 | 0.07 | 0.015 | (0.273) | 0.006 | 0.010 |
| 3 | 0.25 | 0.07 | 0.015 | (0.272) | 0.006 | 0.010 |
| 4 | 0.33 | 0.10 | 0.023 | (0.271) | 0.009 | 0.014 |
| 5 | 0.42 | 0.10 | 0.023 | ( 0.270) | 0.009 | 0.014 |
| 6 | 0.50 | 0.10 | 0.023 | ( 0.269) | 0.009 | 0.014 |
| 7 | 0.58 | 0.10 | 0.023 | ( 0.268) | 0.009 | 0.014 |
| 8 | 0.67 | 0.10 | 0.023 | ( 0.267) | 0.009 | 0.014 |
| 9 | 0.75 | 0.10 | 0.023 | ( 0.266) | 0.009 | 0.014 |
| 10 | 0.83 | 0.13 | 0.031 | (0.265) | 0.012 | 0.019 |
| 11 | 0.92 | 0.13 | 0.031 | ( 0.264) | 0.012 | 0.019 |
| 12 | 1.00 | 0.13 | 0.031 | ( 0.263) | 0.012 | 0.019 |
| 13 | 1.08 | 0.10 | 0.023 | ( 0.262) | 0.009 | 0.014 |
| 14 | 1.17 | 0.10 | 0.023 | ( 0.261) | 0.009 | 0.014 |
| 15 | 1.25 | 0.10 | 0.023 | ( 0.260) | 0.009 | 0.014 |
| 16 | 1.33 | 0.10 | 0.023 | ( 0.259) | 0.009 | 0.014 |
| 17 | 1.42 | 0.10 | 0.023 | (0.258) | 0.009 | 0.014 |
| 18 | 1.50 | 0.10 | 0.023 | ( 0.257) | 0.009 | 0.014 |
| 19 | 1.58 | 0.10 | 0.023 | ( 0.255) | 0.009 | 0.014 |
| 20 | 1.67 | 0.10 | 0.023 | (0.254) | 0.009 | 0.014 |
| 21 | 1.75 | 0.10 | 0.023 | (0.253) | 0.009 | 0.014 |
| 22 | 1.83 | 0.13 | 0.031 | (0.252) | 0.012 | 0.019 |
| 23 | 1.92 | 0.13 | 0.031 | (0.251) | 0.012 | 0.019 |
| 24 | 2.00 | 0.13 | 0.031 | (0.250) | 0.012 | 0.019 |
| 25 | 2.08 | 0.13 | 0.031 | ( 0.249) | 0.012 | 0.019 |
| 26 | 2.17 | 0.13 | 0.031 | ( 0.248) | 0.012 | 0.019 |
| 27 | 2.25 | 0.13 | 0.031 | (0.247) | 0.012 | 0.019 |
| 28 | 2.33 | 0.13 | 0.031 | (0.246) | 0.012 | 0.019 |
| 29 | 2.42 | 0.13 | 0.031 | (0.245) | 0.012 | 0.019 |
| 30 | 2.50 | 0.13 | 0.031 | ( 0.244) | 0.012 | 0.019 |
| 31 | 2.58 | 0.17 | 0.039 | ( 0.243) | 0.015 | 0.024 |
| 32 | 2.67 | 0.17 | 0.039 | ( 0.242) | 0.015 | 0.024 |
| 33 | 2.75 | 0.17 | 0.039 | ( 0.241) | 0.015 | 0.024 |
| 34 | 2.83 | 0.17 | 0.039 | (0.240) | 0.015 | 0.024 |
| 35 | 2.92 | 0.17 | 0.039 | (0.239) | 0.015 | 0.024 |
| 36 | 3.00 | 0.17 | 0.039 | ( 0.238) | 0.015 | 0.024 |
| 37 | 3.08 | 0.17 | 0.039 | (0.237) | 0.015 | 0.024 |
| 38 | 3.17 | 0.17 | 0.039 | (0.236) | 0.015 | 0.024 |
| 39 | 3.25 | 0.17 | 0.039 | (0.235) | 0.015 | 0.024 |
| 40 | 3.33 | 0.17 | 0.039 | ( 0.234) | 0.015 | 0.024 |
| 41 | 3.42 | 0.17 | 0.039 | ( 0.233) | 0.015 | 0.024 |
| 42 | 3.50 | 0.17 | 0.039 | ( 0.232) | 0.015 | 0.024 |
| 43 | 3.58 | 0.17 | 0.039 | ( 0.232) | 0.015 | 0.024 |
| 44 | 3.67 | 0.17 | 0.039 | (0.231) | 0.015 | 0.024 |
| 45 | 3.75 | 0.17 | 0.039 | ( 0.230) | 0.015 | 0.024 |
| 46 | 3.83 | 0.20 | 0.046 | ( 0.229) | 0.018 | 0.029 |
| 47 | 3.92 | 0.20 | 0.046 | ( 0.228) | 0.018 | 0.029 |
| 48 | 4.00 | 0.20 | 0.046 | ( 0.227) | 0.018 | 0.029 |
| 49 | 4.08 | 0.20 | 0.046 | ( 0.226) | 0.018 | 0.029 |
| 50 | 4.17 | 0.20 | 0.046 | ( 0.225) | 0.018 | 0.029 |
| 51 | 4.25 | 0.20 | 0.046 | (0.224) | 0.018 | 0.029 |
| 52 | 4.33 | 0.23 | 0.054 | (0.223) | 0.021 | 0.034 |
| 53 | 4.42 | 0.23 | 0.054 | (0.222) | 0.021 | 0.034 |
| 54 | 4.50 | 0.23 | 0.054 | ( 0.221) | 0.021 | 0.034 |
| 55 | 4.58 | 0.23 | 0.054 | ( 0.220) | 0.021 | 0.034 |
| 56 | 4.67 | 0.23 | 0.054 | ( 0.219) | 0.021 | 0.034 |
| 57 | 4.75 | 0.23 | 0.054 | ( 0.218) | 0.021 | 0.034 |
| 58 | 4.83 | 0.27 | 0.062 | ( 0.217) | 0.023 | 0.038 |
| 59 | 4.92 | 0.27 | 0.062 | ( 0.216) | 0.023 | 0.038 |


| 60 | 5.00 | 0.27 | 0.062 | 0.215) | 0.023 | 0.038 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 61 | 5.08 | 0.20 | 0.046 | $0.214)$ | 0.018 | 0.029 |
| 62 | 5.17 | 0.20 | 0.046 | $0.213)$ | 0.018 | 0.029 |
| 63 | 5.25 | 0.20 | 0.046 | 0.212) | 0.018 | 0.029 |
| 64 | 5.33 | 0.23 | 0.054 | $0.212)$ | 0.021 | 0.034 |
| 65 | 5.42 | 0.23 | 0.054 | 0.211) | 0.021 | 0.034 |
| 66 | 5.50 | 0.23 | 0.054 | 0.210) | 0.021 | 0.034 |
| 67 | 5.58 | 0.27 | 0.062 | $0.209)$ | 0.023 | 0.038 |
| 68 | 5.67 | 0.27 | 0.062 | 0.208) | 0.023 | 0.038 |
| 69 | 5.75 | 0.27 | 0.062 | 0.207) | 0.023 | 0.038 |
| 70 | 5.83 | 0.27 | 0.062 | $0.206)$ | 0.023 | 0.038 |
| 71 | 5.92 | 0.27 | 0.062 | $0.205)$ | 0.023 | 0.038 |
| 72 | 6.00 | 0.27 | 0.062 | $0.204)$ | 0.023 | 0.038 |
| 73 | 6.08 | 0.30 | 0.069 | $0.203)$ | 0.026 | 0.043 |
| 74 | 6.17 | 0.30 | 0.069 | $0.202)$ | 0.026 | 0.043 |
| 75 | 6.25 | 0.30 | 0.069 | $0.202)$ | 0.026 | 0.043 |
| 76 | 6.33 | 0.30 | 0.069 | 0.201) | 0.026 | 0.043 |
| 77 | 6.42 | 0.30 | 0.069 | 0.200) | 0.026 | 0.043 |
| 78 | 6.50 | 0.30 | 0.069 | $0.199)$ | 0.026 | 0.043 |
| 79 | 6.58 | 0.33 | 0.077 | $0.198)$ | 0.029 | 0.048 |
| 80 | 6.67 | 0.33 | 0.077 | $0.197)$ | 0.029 | 0.048 |
| 81 | 6.75 | 0.33 | 0.077 | $0.196)$ | 0.029 | 0.048 |
| 82 | 6.83 | 0.33 | 0.077 | $0.195)$ | 0.029 | 0.048 |
| 83 | 6.92 | 0.33 | 0.077 | $0.194)$ | 0.029 | 0.048 |
| 84 | 7.00 | 0.33 | 0.077 | $0.193)$ | 0.029 | 0.048 |
| 85 | 7.08 | 0.33 | 0.077 | $0.193)$ | 0.029 | 0.048 |
| 86 | 7.17 | 0.33 | 0.077 | 0.192) | 0.029 | 0.048 |
| 87 | 7.25 | 0.33 | 0.077 | $0.191)$ | 0.029 | 0.048 |
| 88 | 7.33 | 0.37 | 0.085 | 0.190) | 0.032 | 0.053 |
| 89 | 7.42 | 0.37 | 0.085 | $0.189)$ | 0.032 | 0.053 |
| 90 | 7.50 | 0.37 | 0.085 | $0.188)$ | 0.032 | 0.053 |
| 91 | 7.58 | 0.40 | 0.093 | $0.187)$ | 0.035 | 0.057 |
| 92 | 7.67 | 0.40 | 0.093 | $0.187)$ | 0.035 | 0.057 |
| 93 | 7.75 | 0.40 | 0.093 | $0.186)$ | 0.035 | 0.057 |
| 94 | 7.83 | 0.43 | 0.100 | $0.185)$ | 0.038 | 0.062 |
| 95 | 7.92 | 0.43 | 0.100 | $0.184)$ | 0.038 | 0.062 |
| 96 | 8.00 | 0.43 | 0.100 | $0.183)$ | 0.038 | 0.062 |
| 97 | 8.08 | 0.50 | 0.116 | $0.182)$ | 0.044 | 0.072 |
| 98 | 8.17 | 0.50 | 0.116 | 0.181) | 0.044 | 0.072 |
| 99 | 8.25 | 0.50 | 0.116 | 0.181) | 0.044 | 0.072 |
| 100 | 8.33 | 0.50 | 0.116 | 0.180) | 0.044 | 0.072 |
| 101 | 8.42 | 0.50 | 0.116 | $0.179)$ | 0.044 | 0.072 |
| 102 | 8.50 | 0.50 | 0.116 | $0.178)$ | 0.044 | 0.072 |
| 103 | 8.58 | 0.53 | 0.124 | 0.177) | 0.047 | 0.077 |
| 104 | 8.67 | 0.53 | 0.124 | $0.176)$ | 0.047 | 0.077 |
| 105 | 8.75 | 0.53 | 0.124 | $0.176)$ | 0.047 | 0.077 |
| 106 | 8.83 | 0.57 | 0.131 | $0.175)$ | 0.050 | 0.081 |
| 107 | 8.92 | 0.57 | 0.131 | $0.174)$ | 0.050 | 0.081 |
| 108 | 9.00 | 0.57 | 0.131 | $0.173)$ | 0.050 | 0.081 |
| 109 | 9.08 | 0.63 | 0.147 | $0.172)$ | 0.056 | 0.091 |
| 110 | 9.17 | 0.63 | 0.147 | 0.171) | 0.056 | 0.091 |
| 111 | 9.25 | 0.63 | 0.147 | 0.171) | 0.056 | 0.091 |
| 112 | 9.33 | 0.67 | 0.154 | 0.170) | 0.059 | 0.096 |
| 113 | 9.42 | 0.67 | 0.154 | $0.169)$ | 0.059 | 0.096 |
| 114 | 9.50 | 0.67 | 0.154 | $0.168)$ | 0.059 | 0.096 |
| 115 | 9.58 | 0.70 | 0.162 | $0.167)$ | 0.062 | 0.101 |
| 116 | 9.67 | 0.70 | 0.162 | $0.167)$ | 0.062 | 0.101 |
| 117 | 9.75 | 0.70 | 0.162 | $0.166)$ | 0.062 | 0.101 |
| 118 | 9.83 | 0.73 | 0.170 | 0.165) | 0.065 | 0.105 |
| 119 | 9.92 | 0.73 | 0.170 | $0.164)$ | 0.065 | 0.105 |


| 120 | 10.00 | 0.73 | 0.170 | $0.163)$ | 0.065 | 0.105 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 121 | 10.08 | 0.50 | 0.116 | $0.163)$ | 0.044 | 0.072 |
| 122 | 10.17 | 0.50 | 0.116 | $0.162)$ | 0.044 | 0.072 |
| 123 | 10.25 | 0.50 | 0.116 | 0.161) | 0.044 | 0.072 |
| 124 | 10.33 | 0.50 | 0.116 | 0.160) | 0.044 | 0.072 |
| 125 | 10.42 | 0.50 | 0.116 | $0.159)$ | 0.044 | 0.072 |
| 126 | 10.50 | 0.50 | 0.116 | $0.159)$ | 0.044 | 0.072 |
| 127 | 10.58 | 0.67 | 0.154 | 0.158) | 0.059 | 0.096 |
| 128 | 10.67 | 0.67 | 0.154 | 0.157) | 0.059 | 0.096 |
| 129 | 10.75 | 0.67 | 0.154 | $0.156)$ | 0.059 | 0.096 |
| 130 | 10.83 | 0.67 | 0.154 | $0.156)$ | 0.059 | 0.096 |
| 131 | 10.92 | 0.67 | 0.154 | $0.155)$ | 0.059 | 0.096 |
| 132 | 11.00 | 0.67 | 0.154 | $0.154)$ | 0.059 | 0.096 |
| 133 | 11.08 | 0.63 | 0.147 | $0.153)$ | 0.056 | 0.091 |
| 134 | 11.17 | 0.63 | 0.147 | $0.153)$ | 0.056 | 0.091 |
| 135 | 11.25 | 0.63 | 0.147 | $0.152)$ | 0.056 | 0.091 |
| 136 | 11.33 | 0.63 | 0.147 | 0.151) | 0.056 | 0.091 |
| 137 | 11.42 | 0.63 | 0.147 | 0.150) | 0.056 | 0.091 |
| 138 | 11.50 | 0.63 | 0.147 | 0.150) | 0.056 | 0.091 |
| 139 | 11.58 | 0.57 | 0.131 | $0.149)$ | 0.050 | 0.081 |
| 140 | 11.67 | 0.57 | 0.131 | $0.148)$ | 0.050 | 0.081 |
| 141 | 11.75 | 0.57 | 0.131 | $0.147)$ | 0.050 | 0.081 |
| 142 | 11.83 | 0.60 | 0.139 | $0.147)$ | 0.053 | 0.086 |
| 143 | 11.92 | 0.60 | 0.139 | $0.146)$ | 0.053 | 0.086 |
| 144 | 12.00 | 0.60 | 0.139 | $0.145)$ | 0.053 | 0.086 |
| 145 | 12.08 | 0.83 | 0.193 | $0.144)$ | 0.073 | 0.120 |
| 146 | 12.17 | 0.83 | 0.193 | $0.144)$ | 0.073 | 0.120 |
| 147 | 12.25 | 0.83 | 0.193 | $0.143)$ | 0.073 | 0.120 |
| 148 | 12.33 | 0.87 | 0.201 | $0.142)$ | 0.076 | 0.124 |
| 149 | 12.42 | 0.87 | 0.201 | $0.142)$ | 0.076 | 0.124 |
| 150 | 12.50 | 0.87 | 0.201 | $0.141)$ | 0.076 | 0.124 |
| 151 | 12.58 | 0.93 | 0.216 | 0.140) | 0.082 | 0.134 |
| 152 | 12.67 | 0.93 | 0.216 | $0.139)$ | 0.082 | 0.134 |
| 153 | 12.75 | 0.93 | 0.216 | $0.139)$ | 0.082 | 0.134 |
| 154 | 12.83 | 0.97 | 0.224 | $0.138)$ | 0.085 | 0.139 |
| 155 | 12.92 | 0.97 | 0.224 | $0.137)$ | 0.085 | 0.139 |
| 156 | 13.00 | 0.97 | 0.224 | $0.137)$ | 0.085 | 0.139 |
| 157 | 13.08 | 1.13 | 0.262 | $0.136)$ | 0.100 | 0.163 |
| 158 | 13.17 | 1.13 | 0.262 | $0.135)$ | 0.100 | 0.163 |
| 159 | 13.25 | 1.13 | 0.262 | $0.135)$ | 0.100 | 0.163 |
| 160 | 13.33 | 1.13 | 0.262 | $0.134)$ | 0.100 | 0.163 |
| 161 | 13.42 | 1.13 | 0.262 | $0.133)$ | 0.100 | 0.163 |
| 162 | 13.50 | 1.13 | 0.262 | $0.133)$ | 0.100 | 0.163 |
| 163 | 13.58 | 0.77 | 0.178 | $0.132)$ | 0.067 | 0.110 |
| 164 | 13.67 | 0.77 | 0.178 | 0.131) | 0.067 | 0.110 |
| 165 | 13.75 | 0.77 | 0.178 | 0.130) | 0.067 | 0.110 |
| 166 | 13.83 | 0.77 | 0.178 | $0.130)$ | 0.067 | 0.110 |
| 167 | 13.92 | 0.77 | 0.178 | $0.129)$ | 0.067 | 0.110 |
| 168 | 14.00 | 0.77 | 0.178 | $0.129)$ | 0.067 | 0.110 |
| 169 | 14.08 | 0.90 | 0.208 | $0.128)$ | 0.079 | 0.129 |
| 170 | 14.17 | 0.90 | 0.208 | 0.127) | 0.079 | 0.129 |
| 171 | 14.25 | 0.90 | 0.208 | 0.127) | 0.079 | 0.129 |
| 172 | 14.33 | 0.87 | 0.201 | $0.126)$ | 0.076 | 0.124 |
| 173 | 14.42 | 0.87 | 0.201 | $0.125)$ | 0.076 | 0.124 |
| 174 | 14.50 | 0.87 | 0.201 | $0.125)$ | 0.076 | 0.124 |
| 175 | 14.58 | 0.87 | 0.201 | $0.124)$ | 0.076 | 0.124 |
| 176 | 14.67 | 0.87 | 0.201 | $0.123)$ | 0.076 | 0.124 |
| 177 | 14.75 | 0.87 | 0.201 | $0.123)$ | 0.076 | 0.124 |
| 178 | 14.83 | 0.83 | 0.193 | $0.122)$ | 0.073 | 0.120 |
| 179 | 14.92 | 0.83 | 0.193 | 0.121) | 0.073 | 0.120 |




```
            Peak flow rate of this hydrograph = 0.656(CFS)
```



| 1+55 | 0.0092 | 0.08 | Q | \\| | \| |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2+ 0 | 0.0097 | 0.08 | Q | \\| | \| |
| 2+ 5 | 0.0102 | 0.08 | QV | \| | \| |
| 2+10 | 0.0108 | 0.08 | QV | 1 | \| |
| 2+15 | 0.0113 | 0.08 | QV | , | \| |
| 2+20 | 0.0118 | 0.08 | QV | I | \| |
| 2+25 | 0.0124 | 0.08 | QV | \| | \| |
| 2+30 | 0.0129 | 0.08 | QV | 1 | 1 |
| 2+35 | 0.0135 | 0.09 | QV | , | \| |
| 2+40 | 0.0142 | 0.10 | QV | 1 | 1 |
| 2+45 | 0.0148 | 0.10 | QV | \| | \| |
| 2+50 | 0.0155 | 0.10 | QV | 1 | \| |
| 2+55 | 0.0162 | 0.10 | QV | , | \| |
| $3+0$ | 0.0168 | 0.10 | QV | 1 | 1 |
| $3+5$ | 0.0175 | 0.10 | QV | 1 | \| |
| 3+10 | 0.0182 | 0.10 | QV | 1 | I |
| 3+15 | 0.0188 | 0.10 | QV | 1 | 1 |
| $3+20$ | 0.0195 | 0.10 | QV | 1 | 1 |
| 3+25 | 0.0202 | 0.10 | Q V | 1 | 1 |
| 3+30 | 0.0208 | 0.10 | Q V | 1 | I |
| 3+35 | 0.0215 | 0.10 | Q V | 1 | \| |
| $3+40$ | 0.0221 | 0.10 | Q V | 1 | I |
| $3+45$ | 0.0228 | 0.10 | Q V | 1 | I |
| 3+50 | 0.0236 | 0.11 | Q V | 1 | I |
| 3+55 | 0.0243 | 0.12 | Q V | 1 | I |
| 4+ 0 | 0.0251 | 0.12 | Q V | 1 | 1 |
| 4+ 5 | 0.0259 | 0.12 | Q V | 1 | I |
| 4+10 | 0.0267 | 0.12 | Q V | 1 | 1 |
| 4+15 | 0.0275 | 0.12 | Q V | 1 | 1 |
| 4+20 | 0.0284 | 0.13 | Q V | , | \| |


| $4+25$ | 0.0293 | 0.13 | $Q$ | $V$ |
| :--- | :--- | :--- | :--- | :--- |
| $4+30$ | 0.0303 | 0.14 | $Q$ | $V$ |
| $4+35$ | 0.0312 | 0.14 | $Q$ | $V$ |
| $4+40$ | 0.0321 | 0.14 | $Q$ | $V$ |
| $4+45$ | 0.0331 | 0.14 | $Q$ | $V$ |
| $4+50$ | 0.0341 | 0.15 | $Q$ | $V$ |
| $4+55$ | 0.0351 | 0.15 | $Q$ | $V$ |


| $6+55$ | 0.0614 | 0.19 | $Q$ | V | । |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $7+0$ | 0.0628 | 0.19 | Q | V | । |
| $7+5$ | 0.0641 | 0.19 | Q | V | । |
| $7+10$ | 0.0654 | 0.19 | Q | V | । |
| $7+15$ | 0.0668 | 0.19 | Q | V | । |
| $7+20$ | 0.0682 | 0.20 | Q | V | । |
| $7+25$ | 0.0696 | 0.21 | Q | V | । |


| 9+25 | 0.1185 | 0.39 | IQ | IV |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9+30 | 0.1212 | 0.39 | IQ | 1 |  |  |  |
| 9+35 | 0.1239 | 0.40 | IQ | \| |  |  |  |
| 9+40 | 0.1267 | 0.40 | IQ | \| |  |  |  |
| $9+45$ | 0.1295 | 0.41 | IQ | 1 |  |  |  |
| 9+50 | 0.1323 | 0.42 | IQ | 1 | v |  |  |
| 9+55 | 0.1353 | 0.42 | IQ | \| | v |  |  |
| 10+ 0 | 0.1382 | 0.42 | IQ | \| | v |  |  |
| 10+ 5 | 0.1406 | 0.35 | IQ | \| | v |  |  |
| 10+10 | 0.1426 | 0.29 | IQ | \| | v |  |  |
| 10+15 | 0.1446 | 0.29 | IQ | 1 | v |  |  |
| 10+20 | 0.1466 | 0.29 | IQ | 1 | v |  |  |
| 10+25 | 0.1486 | 0.29 | IQ | 1 | v |  |  |
| 10+30 | 0.1506 | 0.29 | IQ | 1 | V |  |  |
| 10+35 | 0.1530 | 0.34 | IQ | 1 | V |  |  |
| 10+40 | 0.1556 | 0.38 | IQ | 1 | v |  |  |
| 10+45 | 0.1583 | 0.39 | IQ | 1 | v |  |  |
| 10+50 | 0.1609 | 0.39 | IQ | 1 | V |  |  |
| 10+55 | 0.1636 | 0.39 | IQ | 1 | V |  |  |
| $11+0$ | 0.1662 | 0.39 | IQ | 1 | V |  |  |
| 11+ 5 | 0.1688 | 0.38 | IQ | 1 | V |  |  |
| 11+10 | 0.1714 | 0.37 | IQ | 1 |  |  |  |
| 11+15 | 0.1739 | 0.37 | IQ | 1 |  |  |  |
| 11+20 | 0.1764 | 0.37 | IQ | 1 |  |  |  |
| 11+25 | 0.1789 | 0.37 | IQ | 1 |  |  |  |
| 11+30 | 0.1815 | 0.37 | IQ | 1 |  | V |  |
| 11+35 | 0.1838 | 0.35 | IQ | 1 |  | V |  |
| 11+40 | 0.1861 | 0.33 | IQ | 1 |  | V |  |
| 11+45 | 0.1884 | 0.33 | IQ | 1 |  | V |  |
| 11+50 | 0.1907 | 0.34 | IQ | 1 |  | v |  |


| 11+55 | 0.1931 | 0.35 | IQ |
| :---: | :---: | :---: | :---: |
| 12+ 0 | 0.1955 | 0.35 | IQ |
| 12+ 5 | 0.1984 | 0.42 | IQ |
| 12+10 | 0.2017 | 0.48 | IQ |
| 12+15 | 0.2050 | 0.48 | IQ |
| 12+20 | 0.2084 | 0.49 | IQ |

$12+25$
$12+30$
|
$12+35$
. 2153
0.50 | Q
|
$12+40$
$12+45$
|
$12+50$
12+55
$13+0$
$13+5$
$13+10$
|
$13+15$
|
$13+20$
|
$13+25$
$13+30$
|
13+35
.2189
0.52 | Q
0.54 | Q
0.54 | Q
0.55 | Q
0.56 | Q
0.56 | Q
0.61 | Q
0.65 | Q
0.66 | Q
0.66 | Q
0.66 | Q
0.66 | Q
0.54 | Q
0.45 IQ
|
$13+45$
$13+50$
$13+55$
,
14+ 0
14+ 5 |

14+10
$14+15$
. 2942
0.44 IQ
0.44 IQ
0.44 IQ
|
0.2871
0.44 IQ
0.49 IQ
|
|
$14+20$
0.2977
0.52 | Q
0.52 | Q
0.51 | Q

| V1 |  |
| :---: | :---: |
| VI |  |
| VI |  |
| v |  |
| v |  |
| v |  |
| IV |  |
| IV |  |
| IV |  |
| I V |  |
| I V |  |
| I V |  |
| 1 V |  |
| 1 V |  |
| I V |  |
| 1 | v |
| \| | v |
| \| | v |
| \| | v |
| I | v |
| \| | $v$ |
| 1 | $\vee 1$ |
| \| | v I |
| I | v I |
| 1 | V I |
| 1 | v I |
| \| | v 1 |
| \| | VI |
| \| | V1 |
| \| | v |


| 14+25 | 0.3012 | 0.50 | Q |
| :---: | :---: | :---: | :---: |
| 14+30 | 0.3047 | 0.50 | Q |
| 14+35 | 0.3081 | 0.50 | Q |
| 14+40 | 0.3116 | 0.50 | Q |
| 14+45 | 0.3150 | 0.50 | Q |

$$
0.48 \quad \mathrm{IQ}
$$

$$
0.3251
$$

$$
0.48 \quad \mathrm{IQ}
$$

|

$15+10$
0.3315

| 0.46 | IQ |
| :--- | :--- |
| 0.46 | IQ |

0.3184
0.3217
0.49 IQ

$$
15+5
$$

$$
0.3283
$$

|

$$
15+15
$$

$$
0.3347
$$

$$
15+20
$$

$$
0.3378
$$

$$
\begin{array}{ll}
0.46 & \mathrm{IQ} \\
0.45 & \mathrm{IQ}
\end{array}
$$

$$
\begin{array}{ll}
0.45 & \mathrm{IQ} \\
0.44 & \mathrm{IQ}
\end{array}
$$

I
15+55

16+ 0
0.3409
0.3439
0.3467
$0.44 \quad \mathrm{IQ}$
1
1
1

$$
15+25
$$

$$
15+30
$$

I

$$
15+35
$$

$$
15+40
$$

$$
15+45
$$

$$
15+50
$$

|
|
$16+5$
$16+10$
$16+15$
$16+20$
| $16+25$
$16+25$
$16+30$
0.3630
0.3635

| 0.40 | IQ |
| :--- | :--- |
| 0.37 | IQ |


| $16+55$ | 0.3656 | 0.06 | $Q$ |
| :--- | :--- | :--- | :--- |
| $17+0$ | 0.3660 | 0.06 | $Q$ |
| $17+5$ | 0.3665 | 0.08 | $Q$ |
| $17+10$ | 0.3672 | 0.10 | $Q$ |
| $17+15$ | 0.3678 | 0.10 | $Q$ |
| $17+20$ | 0.3685 | 0.10 | $Q$ |
| $17+25$ | 0.3692 | 0.10 | $Q$ |

$17+25$
$17+30$
0.3692
0.10 Q
$17+35$
0.3698
0.3705
0.10 Q
|
$17+40$
0.3712
0.10 Q
|
$17+45$
|
17+50
,
17+55
$18+0$
I 18+ 5
|
18+10
$18+15$
$18+20$
|
$18+25$
$18+30$
$18+35$
0.3718
0.10 Q
0.10 Q
0.09 Q
$\begin{array}{ll}0.08 & Q \\ 0.08 & Q\end{array}$
0.3740
0.08 Q
0.08 Q
$18+40$
0.3771
0.08 Q
$18+45$
0.3775
0.3779
0.08 Q
$18+50$
0.3783
0.08 Q
0.08 Q
0.07 Q
0.06 Q
0.06 Q

18+55
0.3785
0.05 Q
|
19+ 0
0.3788
0.04 Q
|
$19+5$
0.3791
0.04 Q

19+10
$\begin{array}{ll}0.05 & Q \\ 0.06 & Q \\ 0.06 & Q \\ 0.07 & Q\end{array}$

| 19+25 | 0.3809 | 0.08 | Q | \| | \| | \| | v |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19+30 | 0.3815 | 0.08 | Q | \| | \| | \| | V |
| 19+35 | 0.3819 | 0.07 | Q | \| | \| | \| | v |
| 19+40 | 0.3823 | 0.06 | Q | \| | \| | \| | V |
| 19+45 | 0.3827 | 0.06 | Q | \| | \| | \| | v |
| 19+50 | 0.3830 | 0.05 | Q | \| | \| | \| | v |
| 19+55 | 0.3833 | 0.04 | Q | \| | \| | 1 | V |
| 20+ 0 | 0.3836 | 0.04 | Q | \| | \| | \| | v |
| 20+ 5 | 0.3839 | 0.05 | Q | \| | \| | \| | v |
| 20+10 | 0.3843 | 0.06 | Q | \| | \| | \| | v |
| 20+15 | 0.3847 | 0.06 | Q | \| | \| | 1 | v |
| 20+20 | 0.3851 | 0.06 | Q | \| | \| | I | v |
| 20+25 | 0.3855 | 0.06 | Q | \| | \| | 1 | v |
| 20+30 | 0.3859 | 0.06 | Q | \| | \| | , | v |
| 20+35 | 0.3863 | 0.06 | Q | \| | \| | 1 | v |
| 20+40 | 0.3867 | 0.06 | Q | \| | \| | 1 | v |
| 20+45 | 0.3871 | 0.06 | Q | \| | \| | \| | v |
| 20+50 | 0.3874 | 0.05 | Q | \| | \| | , | v |
| 20+55 | 0.3877 | 0.04 | Q | \| | \| | I | v |
| 21+ 0 | 0.3880 | 0.04 | Q | \| | \| | 1 | V |
| 21+ 5 | 0.3883 | 0.05 | Q | \| | \| | , | V |
| 21+10 | 0.3887 | 0.06 | Q | \| | \| | , | V |
| 21+15 | 0.3891 | 0.06 | Q | \| | \| | 1 |  |
| 21+20 | 0.3894 | 0.05 | Q | \| | । | \| |  |
| 21+25 | 0. 3897 | 0.04 | Q | , | , | । |  |
|  |  |  | Q | 1 | 1 | , |  |
| 21+30 | 0.3900 | 0.04 | Q | \| | \| | \\| |  |
| 21+35 | 0.3903 | 0.05 | Q | - | I | \| |  |
| 21+40 | 0.3907 | 0.06 | Q | । | 1 | \| |  |
| 21+45 | 0.3911 | 0.06 | Q | । | \| | \| |  |
| 21+50 | 0.3914 | 0.05 | Q | । | \| | \| |  |



FLOOD HYDROGRAPH ROUTING PROGRAM Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012 Study date: 11/09/21


```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)
```



| 0.15 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1.250 | 0.16 | 0.11 | 0.010 | \|OI | \| | \| |
| 0.16 |  |  |  |  |  |  |
| 1.333 | 0.16 | 0.11 | 0.010 | 10 | 1 \| | \| |
| 0.16 |  |  |  |  |  |  |
| 1.417 | 0.16 | 0.12 | 0.010 | 10 | \| | \| |
| 0.17 |  |  |  |  |  |  |
| 1.500 | 0.16 | 0.12 | 0.010 | 0 | \| | \| |
| 0.17 |  |  |  |  |  |  |
| 1.583 | 0.16 | 0.12 | 0.011 | 0 | $1 \quad 1$ | \| |
| 0.18 |  |  |  |  |  |  |
| 1.667 | 0.16 | 0.13 | 0.011 | 0 | , | \| |
| 0.18 |  |  |  |  |  |  |
| 1.750 | 0.16 | 0.13 | 0.011 | 10 | 1 | \| |
| 0.18 |  |  |  |  |  |  |
| 1.833 | 0.18 | 0.13 | 0.011 | OI | \| | \| |
| 0.19 - 0.18 |  |  |  |  |  |  |
| 1.917 | 0.21 | 0.14 | 0.012 | \| OI | , | \| |
| 0.20 - 0.1 |  |  |  |  |  |  |
| 2.000 | 0.21 | 0.14 | 0.012 | OI | \| | \| |
| 0.20 |  |  |  |  |  |  |
| 2.083 | 0.21 | 0.15 | 0.013 | OI | - | \| |
| 0.21 |  |  |  |  |  |  |
| 2.167 | 0.21 | 0.15 | 0.013 | OI | 1 \| | \| |
| 0.22 0.21 0.15 |  |  |  |  |  |  |
| 2.250 | 0.21 | 0.16 | 0.013 | \| OI | 1 \| | \| |
| 0.22 |  |  |  |  |  |  |
| 2.333 | 0.21 | 0.16 | 0.014 | OI | 1 \| | \| |
| 0.23 |  |  |  |  |  |  |
| 2.417 | 0.21 | 0.16 | 0.014 | OI | 1 \| | \| |
| 0.24 |  |  |  |  |  |  |
| 2.500 | 0.21 | 0.17 | 0.014 | 0 | 1 \| | \| |
| 0.24 |  |  |  |  |  |  |
| 2.583 | 0.23 | 0.17 | 0.015 | \| OI | \| | \| |
| 0.25 |  |  |  |  |  |  |
| 2.667 | 0.26 | 0.18 | 0.015 | \| OI | , | \| |
| 0.25 O. 0.18 |  |  |  |  |  |  |
| 2.750 | 0.26 | 0.18 | 0.016 | \| OI | $1 \quad 1$ | \| |
| 0.26 0. 0.18 |  |  |  |  |  |  |
| 2.833 | 0.26 | 0.19 | 0.016 | \| OI | 1 \| | \| |
| 0.27 |  |  |  |  |  |  |
| 2.917 | 0.26 | 0.20 | 0.017 | OI | 1 \| | \| |
| 0.28 |  |  |  |  |  |  |
| 3.000 | 0.26 | 0.20 | 0.017 | \| OI | 1 \| | \| |
| 0.29 |  |  |  |  |  |  |
| 3.083 | 0.26 | 0.21 | 0.018 | \| OI | \| | \| |
| 0.29 |  |  |  |  |  |  |
| 3.167 | 0.26 | 0.21 | 0.018 | \| OI | 1 \| | \| |
| 0.30 |  |  |  |  |  |  |
| 3.250 | 0.26 | 0.21 | 0.018 | \| OI | $1 \quad 1$ | \| |
| 0.31 0.21 |  |  |  |  |  |  |
| 3.333 | 0.26 | 0.22 | 0.019 | \| OI | \| | \| |
| 0.31 0.3 0.22 |  |  |  |  |  |  |
| 3.417 | 0.26 | 0.22 | 0.019 | \| OI | \| | \| |
| 0.32 |  |  |  |  |  |  |
| 3.500 | 0.26 | 0.23 | 0.019 | 0 | \| | \| |
| 0.32 |  |  |  |  |  |  |
| 3.583 | 0.26 | 0.23 | 0.020 | \| 0 | 1 \| | \| |
| 0.33 |  |  |  |  |  |  |
| 3.667 | 0.26 | 0.23 | 0.020 | \| 0 | \| | \| |



| 0.54 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6.250 | 0.47 | 0.38 | 0.033 | 0 I | \| | \| |
| 0.55 |  |  |  |  |  |  |
| 6.333 | 0.47 | 0.39 | 0.033 | 0 I | 1 | 1 |
| 0.56 |  |  |  |  |  |  |
| 6.417 | 0.47 | 0.40 | 0.034 | OI | \| | 1 |
| 0.57 |  |  |  |  |  |  |
| 6.500 | 0.47 | 0.40 | 0.034 | OI | \| | \| |
| 0.57 |  |  |  |  |  |  |
| 6.583 | 0.50 | 0.41 | 0.035 | OI | \| | \| |
| 0.58 |  |  |  |  |  |  |
| 6.667 | 0.52 | 0.42 | 0.036 | O\|I |  | \| |
| 0.60 (0.4 |  |  |  |  |  |  |
| 6.750 | 0.53 | 0.42 | 0.036 | O\|I |  | \| |
| 0.61 (0.4 |  |  |  |  |  |  |
| 6.833 | 0.53 | 0.43 | 0.037 | O\|I |  | \| |
| 0.62 |  |  |  |  |  |  |
| 6.917 | 0.53 | 0.44 | 0.038 | O\|I | \| | 1 |
| 0.63 (0.50. |  |  |  |  |  |  |
| 7.000 | 0.53 | 0.45 | 0.038 | O\|I | \| | \| |
| 0.64 0.5 |  |  |  |  |  |  |
| 7.083 | 0.53 | 0.45 | 0.039 | OI |  | \| |
| 0.65 |  |  |  |  |  |  |
| 7.167 | 0.53 | 0.46 | 0.039 | OI |  | \| |
| 0.65 |  |  |  |  |  |  |
| 7.250 | 0.53 | 0.46 | 0.040 | OI |  | \| |
| 0.66 |  |  |  |  |  |  |
| 7.333 | 0.55 | 0.47 | 0.040 | OI |  | \| |
| 0.67 |  |  |  |  |  |  |
| 7.417 | 0.58 | 0.48 | 0.041 | 0 I | I | \| |
| 0.68 |  |  |  |  |  |  |
| 7.500 | 0.58 | 0.48 | 0.042 | 0 I | I | 1 |
| 0.69 |  |  |  |  |  |  |
| 7.583 | 0.60 | 0.49 | 0.042 | 0 I | I | \| |
| 0.70 |  |  |  |  |  |  |
| 7.667 | 0.63 | 0.50 | 0.043 | 0 | I | \| |
| 0.72 |  |  |  |  |  |  |
| 7.750 | 0.63 | 0.51 | 0.044 | 10 | I | \| |
| 0.73 0.05 0.52 0.045 |  |  |  |  |  |  |
| 7.833 | 0.65 | 0.52 | 0.045 | 10 | I | \| |
| 0.75 - 0.08 I0 |  |  |  |  |  |  |
| 7.917 | 0.68 | 0.53 | 0.046 | 10 |  | \| |
| 0.76 |  |  |  |  |  |  |
| 8.000 | 0.68 | 0.54 | 0.047 | 10 | I | \| |
| 0.78 |  |  |  |  |  |  |
| 8.083 | 0.73 | 0.56 | 0.048 | 10 | I | \| |
| 0.80 0. 0.780 |  |  |  |  |  |  |
| 8.167 | 0.78 | 0.57 | 0.049 | 0 | I | \| |
|  |  |  |  |  |  |  |
| 8.250 | 0.79 | 0.59 | 0.050 | 0 | 0 I \| | \| |
| 0.84 - 0.8 |  |  |  |  |  |  |
| 8.333 | 0.79 | 0.60 | 0.052 | \| 0 | 0 I \| | \| |
| 0.86 O 0.70 |  |  |  |  |  |  |
| 8.417 | 0.79 | 0.62 | 0.053 |  | 0 I \| | \| |
| 0.88 |  |  |  |  |  |  |
| 8.500 | 0.79 | 0.63 | 0.054 |  | 0 I \| | \| |
| 0.90 |  |  |  |  |  |  |
| 8.583 | 0.81 | 0.64 | 0.055 |  | 0 I \| | \| |
| 0.92 - 0.81 |  |  |  |  |  |  |
| 8.667 | 0.84 | 0.66 | 0.056 |  | 0 I \| | \| |







| 2.06 |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 21.250 | 0.16 | 0.70 | 0.128 | \| I | \| | 0 \| | \| |
| 2.04 |  |  |  |  |  |  |  |
| 21.333 | 0.13 | 0.70 | 0.124 | \| I | \| | 0 \| | \| |
| 2.02 |  |  |  |  |  |  |  |
| 21.417 | 0.11 | 0.70 | 0.120 | \| I | \| | 0 \| | \| |
| 2.00 |  |  |  |  |  |  |  |
| 21.500 | 0.11 | 0.70 | 0.116 | \| I | \| | 0 \| | \| |
| 1.94 |  |  |  |  |  |  |  |
| 21.583 | 0.13 | 0.70 | 0.112 | \| I | \| | 0 \| | \| |
| 1.87 0. 0.13 |  |  |  |  |  |  |  |
| 21.667 | 0.15 | 0.70 | 0.108 | \\| I | \| | 0 | \| |
| 1.80 |  |  |  |  |  |  |  |
| 21.750 | 0.16 | 0.70 | 0.105 | \| I | \| | 0 \| | \| |
| 1.74 |  |  |  |  |  |  |  |
| 21.833 | 0.13 | 0.70 | 0.101 | \\| I | \| | 0 | \| |
| 1.68 0.11 0.70 0.007 |  |  |  |  |  |  |  |
| 21.917 | 0.11 | 0.70 | 0.097 | \| I | 1 | 0 | \| |
| 1.61 |  |  |  |  |  |  |  |
| 22.000 | 0.11 | 0.70 | 0.093 | \| I | \| | 0 \| | \| |
| 1.54 |  |  |  |  |  |  |  |
| 22.083 | 0.13 | 0.70 | 0.089 | \| I | \| | 0 | \| |
| 1.48 |  |  |  |  |  |  |  |
| 22.167 | 0.15 | 0.70 | 0.085 | \| I | \| | 0 | \| |
| 1.41 0. 0.15 |  |  |  |  |  |  |  |
| 22.250 | 0.16 | 0.70 | 0.081 | \| I | \| | 0 | \| |
| 1.35 0.16 0.70 |  |  |  |  |  |  |  |
| 22.333 | 0.13 | 0.70 | 0.077 | \| I | \| | 0 | \| |
| 1.29 |  |  |  |  |  |  |  |
| 22.417 | 0.11 | 0.70 | 0.073 | \| I | \| | 0 | \| |
| 1.22 |  |  |  |  |  |  |  |
| 22.500 | 0.11 | 0.70 | 0.069 | \| I | 1 | 0 | \| |
| 1.15 |  |  |  |  |  |  |  |
| 22.583 | 0.11 | 0.70 | 0.065 | \| I | \| | 0 \| | \| |
| 1.08 |  |  |  |  |  |  |  |
| 22.667 | 0.11 | 0.70 | 0.061 | \| I | \| | 0 | \| |
| 1.02 O. 0.11 |  |  |  |  |  |  |  |
| 22.750 | 0.11 | 0.66 | 0.057 | \| I | 10 | 0 | \| |
| 0.95 0.11 |  |  |  |  |  |  |  |
| 22.833 | 0.11 | 0.62 | 0.053 | \| I | 10 | 0 \| | \| |
| 0.89 O 0.11 |  |  |  |  |  |  |  |
| 22.917 | 0.11 | 0.58 | 0.050 | \| I | 10 | \| | \| |
| 0.83 |  |  |  |  |  |  |  |
| 23.000 | 0.11 | 0.54 | 0.047 | \| I | 10 | \| | \| |
| 0.78 |  |  |  |  |  |  |  |
| 23.083 | 0.11 | 0.51 | 0.044 | \| I | 10 | 1 | \| |
| 0.73 |  |  |  |  |  |  |  |
| 23.167 | 0.11 | 0.48 | 0.041 | \| I | 0 | \| | \| |
| 0.69 |  |  |  |  |  |  |  |
| 23.250 | 0.11 | 0.45 | 0.039 | \| I | 0 | \| | \| |
| 0.64 0.11 0.41 |  |  |  |  |  |  |  |
| 23.333 | 0.11 | 0.42 | 0.036 | \| I | 01 | \| | \| |
| 0.61 0.11 0.0 .01 |  |  |  |  |  |  |  |
| 23.417 | 0.11 | 0.40 | 0.034 | \| I | 0\| | \| | \| |
| 0.57 0.11 0.41 |  |  |  |  |  |  |  |
| 23.500 | 0.11 | 0.38 | 0.032 | \| I | 0 \| | \| | \| |
| 0.54 0. 0.11 |  |  |  |  |  |  |  |
| 23.583 | 0.11 | 0.36 | 0.030 | \| I | 0 \| | \| | \| |
| 0.51 0. 0.11 |  |  |  |  |  |  |  |
| 23.667 | 0.11 | 0.34 | 0.029 | \| I | 0 \| | \| | \| |





FLOOD HYDROGRAPH ROUTING PROGRAM Copyright (c) CIVILCADD/CIVILDESIGN, 1989-2012 Study date: 11/11/21

```
---
        Gateway Height
        Basin Routing
        Area A
        2yr 24hr
Program License Serial Number 6232
-----------------------------------------------
            From study/file name: moval33post242.rte
******************************HYDROGRAPH
            Number of intervals = 290
            Time interval = 5.0 (Min.)
            Maximum/Peak flow rate = 0.656 (CFS)
            Total volume = 0.399 (Ac.Ft)
        Status of hydrographs being held in storage
                        Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
        Peak (CFS)
                                0.000 0.000 0.000 0.000
0.000
        Vol (Ac.Ft)
                            0.000
                            0.000
                            0.000 0.000
0.000
    *******************************************************************
*****
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
    Process from Point/Station 202.000 to Point/Station
203.000
    **** RETARDING BASIN ROUTING ****
```

User entry of depth-outflow-storage data

-     - Total number of inflow hydrograph intervals $=290$
Hydrograph time unit $=5.000$ (Min.)
Initial depth in storage basin $=0.00(F t$.

```
Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)
```



| 0.12 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1.250 | 0.06 | 0.06 | 0.002 | 0 | 1 \| | \| |
| 0.12 |  |  |  |  |  |  |
| 1.333 | 0.06 | 0.06 | 0.002 | 0 | 1 \| | \| |
| 0.12 |  |  |  |  |  |  |
| 1.417 | 0.06 | 0.06 | 0.002 | 0 | - | \| |
| 0.12 |  |  |  |  |  |  |
| 1.500 | 0.06 | 0.06 | 0.002 | 0 | - | \| |
| 0.12 |  |  |  |  |  |  |
| 1.583 | 0.06 | 0.06 | 0.002 | 0 | 1 \| | \| |
| 0.12 |  |  |  |  |  |  |
| 1.667 | 0.06 | 0.06 | 0.002 | 0 | , | \| |
| 0.12 |  |  |  |  |  |  |
| 1.750 | 0.06 | 0.06 | 0.002 | 0 | , | \| |
| 0.12 |  |  |  |  |  |  |
| 1.833 | 0.07 | 0.06 | 0.002 | OI | \| | \| |
| 0.12 - 0.0 .01 |  |  |  |  |  |  |
| 1.917 | 0.08 | 0.06 | 0.002 | 0 | \| | \| |
| 0.12 |  |  |  |  |  |  |
| 2.000 | 0.08 | 0.06 | 0.002 | 0 | \| | \| |
| 0.13 |  |  |  |  |  |  |
| 2.083 | 0.08 | 0.07 | 0.002 | 0 | \| | \| |
| 0.13 |  |  |  |  |  |  |
| 2.167 | 0.08 | 0.07 | 0.002 | 0 | $1 \quad 1$ | \| |
| 0.14 0.10 0 |  |  |  |  |  |  |
| 2.250 | 0.08 | 0.07 | 0.002 | 0 | 1 \| | \| |
| 0.14 |  |  |  |  |  |  |
| 2.333 | 0.08 | 0.07 | 0.002 | 0 | 1 \| | \| |
| 0.14 |  |  |  |  |  |  |
| 2.417 | 0.08 | 0.07 | 0.002 | 0 | 1 \| | \| |
| 0.15 |  |  |  |  |  |  |
| 2.500 | 0.08 | 0.07 | 0.002 | 0 | 1 \| | \| |
| 0.15 |  |  |  |  |  |  |
| 2.583 | 0.09 | 0.08 | 0.002 | OI | \| | \| |
| 0.15 |  |  |  |  |  |  |
| 2.667 | 0.10 | 0.08 | 0.003 | OI | , | \| |
| 0.16 O. 0.10 |  |  |  |  |  |  |
| 2.750 | 0.10 | 0.08 | 0.003 | 0 | $1 \quad 1$ | \| |
| 0.16 0.0.08 |  |  |  |  |  |  |
| 2.833 | 0.10 | 0.08 | 0.003 | 0 | 1 \| | \| |
| 0.17 |  |  |  |  |  |  |
| 2.917 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.17 |  |  |  |  |  |  |
| 3.000 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.18 |  |  |  |  |  |  |
| 3.083 | 0.10 | 0.09 | 0.003 | 0 | \| | \| |
| 0.18 |  |  |  |  |  |  |
| 3.167 | 0.10 | 0.09 | 0.003 | 0 | \| | \| |
| 0.18 , 0.10 |  |  |  |  |  |  |
| 3.250 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.19 - 0.10 |  |  |  |  |  |  |
| 3.333 | 0.10 | 0.09 | 0.003 | 0 | \| | | \| |
| 0.19 0. 0 |  |  |  |  |  |  |
| 3.417 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.19 |  |  |  |  |  |  |
| 3.500 | 0.10 | 0.09 | 0.003 | 0 | 1 \| | \| |
| 0.19 |  |  |  |  |  |  |
| 3.583 | 0.10 | 0.09 | 0.003 | 0 | \| | \| |
| 0.19 |  |  |  |  |  |  |
| 3.667 | 0.10 | 0.10 | 0.003 | 0 | \| | \| |








| 0.15 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 18.750 | 0.06 | 0.07 | 0.002 \| IO | I | \| |
| 0.14 |  |  |  |  |  |
| 18.833 | 0.05 | 0.07 | 0.002 \| IO | I | \| |
| 0.14 |  |  |  |  |  |
| 18.917 | 0.04 | 0.06 | $0.002 \mid I 0$ | \| | | \| |
| 0.13 (0.01 |  |  |  |  |  |
| 19.000 | 0.04 | 0.06 | 0.002 \|IO | , | \| |
| 0.12 |  |  |  |  |  |
| 19.083 | 0.05 | 0.06 | 0.002 \| 0 | \| | | \| |
| 0.11 |  |  |  |  |  |
| 19.167 | 0.06 | 0.06 | 0.002 \| 0 | 1 \| | \| |
| 0.11 |  |  |  |  |  |
| 19.250 | 0.06 | 0.06 | 0.002 \| 0 | 1 \| | \| |
| 0.11 |  |  |  |  |  |
| 19.333 | 0.07 | 0.06 | 0.002 \| OI | \| | \| |
| 0.11 |  |  |  |  |  |
| 19.417 | 0.08 | 0.06 | 0.002 OI | \| | \| |
| 0.12 |  |  |  |  |  |
| 19.500 | 0.08 | 0.06 | $0.002 \mid 0$ | \| | \| |
| 0.13 |  |  |  |  |  |
| 19.583 | 0.07 | 0.07 | 0.002 \| 0 | \| | \| |
| 0.13 |  |  |  |  |  |
| 19.667 | 0.06 | 0.06 | 0.002 \| IO | \| | \| |
| 0.13 |  |  |  |  |  |
| 19.750 | 0.06 | 0.06 | 0.002 \| IO | \| | \| |
| 0.13 |  |  |  |  |  |
| 19.833 | 0.05 | 0.06 | 0.002 \| 0 | \| | \| |
| 0.12 |  |  |  |  |  |
| 19.917 | 0.04 | 0.06 | 0.002 \| IO | \| | \| |
| 0.12 0.0.00 |  |  |  |  |  |
| 20.000 | 0.04 | 0.05 | 0.002 \|IO | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.083 | 0.05 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.10 0.0.0. 0 |  |  |  |  |  |
| 20.167 | 0.06 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.10 |  |  |  |  |  |
| 20.250 | 0.06 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.333 | 0.06 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.417 | 0.06 | 0.05 | $0.002 \mid 0$ | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.500 | 0.06 | 0.06 | 0.002 \| 0 | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.583 | 0.06 | 0.06 | $0.002 \mid 0$ | \| | \| |
| 0.11 |  |  |  |  |  |
| 20.667 | 0.06 | 0.06 | 0.002 \| 0 | \| | \| |
| 0.11 0.0.0. |  |  |  |  |  |
| 20.750 | 0.06 | 0.06 | $0.002 \mid 0$ | $\mid$ \| | \| |
|  |  |  |  |  |  |
| 20.833 | 0.05 | 0.06 | 0.002 \| 0 | I | \| |
| 0.11 - |  |  |  |  |  |
| 20.917 | 0.04 | 0.05 | 0.002 \| IO | \| | \| |
| 0.11 |  |  |  |  |  |
| 21.000 | 0.04 | 0.05 | 0.002 \| IO | \| | \| |
| 0.10 |  |  |  |  |  |
| 21.083 | 0.05 | 0.05 | 0.002 \| 0 | \| | \| |
| 0.10 |  |  |  |  |  |
| 21.167 | 0.06 | 0.05 | 0.002 \| 0 | 1 \| | \| |




|  | Storm Duration |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |
| 2 year | 5.4 | 0.13 | 2.9 | 0.14 | 2.5 | 0.15 | 0.5 | 0.12 |
| 5 year | 7.8 | 0.20 | 4.1 | 0.23 | 3.6 | 0.24 | 1.0 | 0.25 |
| 10 year | 9.6 | 0.26 | 5.1 | 0.31 | 4.5 | 0.32 | 1.4 | 0.37 |
| 100 year | 16.2 | 0.51 | 8.9 | 0.75 | 7.9 | 0.94 | 3.1 | 1.35 |


| Moreno Valley 33 - Area A Post-Development |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |
| 2 year | 4.6 | 0.12 | 2.4 | 0.18 | 2.1 | 0.23 | 0.7 | 0.40 |
| 5 year | 6.5 | 0.17 | 3.3 | 0.24 | 3.0 | 0.32 | 0.9 | 0.53 |
| 10 year | 8.0 | 0.21 | 4.1 | 0.30 | 3.6 | 0.38 | 1.1 | 0.63 |
| 100 year | 13.1 | 0.37 | 6.8 | 0.55 | 6.1 | 0.69 | 2.3 | 1.17 |


| Moreno Valley 33 - Area A Post-Development Routed |  |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |  |
| 2 year |  |  |  |  |  |  | $0.5^{*}$ | 0.02 |  |
| 100 year | 0.5 | 0.33 | 6.4 | 0.21 | 5.5 | 0.21 | 2.3 | 0.19 |  |

By orafice control or 6" underdrain slope

| Moreno Valley 33 - Area B Pre-Development |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |
| 2 year | 8.2 | 0.18 | 4.1 | 0.20 | 3.5 | 0.21 | 0.7 | 0.18 |
| 5 year | 11.8 | 0.29 | 6.0 | 0.33 | 5.1 | 0.35 | 1.4 | 0.37 |
| 10 year | 14.5 | 0.38 | 7.4 | 0.45 | 6.3 | 0.47 | 2 | 0.54 |
| 100 year | 24.4 | 0.74 | 12.9 | 1.09 | 11.2 | 1.37 | 4.5 | 1.96 |


| Moreno Valley 33 - Area B Post-Development (Area B and C Pre-Development) |  |  |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Storm Duration |  |  |  |  |  |  |  |  |  |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |  |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |  |  |
| 2 year | 11.4 | 0.31 | 6.4 | 0.48 | 5.6 | 0.64 | 1.8 | 1.09 |  |  |
| 5 year | 16.2 | 0.45 | 8.9 | 0.66 | 7.9 | 0.86 | 2.4 | 1.44 |  |  |
| 10 year | 19.9 | 0.56 | 10.9 | 0.80 | 9.6 | 1.04 | 3.1 | 1.73 |  |  |
| 100 year | 32.7 | 1.01 | 18.2 | 1.5 | 16.2 | 1.89 | 6.2 | 3.18 |  |  |

Moreno Valley 33 - Area B Post-Development Routed

|  | Storm Duration |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 hour |  | 3 hour |  | 6 hour |  | 24 hour |  |
| Frequency | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume | Q Peak | Volume |
| 2 year |  |  |  |  |  |  | $0.7^{*}$ | 0.35 |
| 100 year | 18.0 | 0.76 | 15.9 | 0.73 | 13.8 | 0.71 | 6.1 | 0.63 |

*By orafice control or 6" underdrain slope

| Basin Stage-Storage-Outfall Chart |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Depth <br> [ft] |  |  |  |  |  |
| Area [sf] | Vol [acft] | Vol Total <br> [acft] | Q out <br> [cfs]* |  |  |
| Basin B | 0 | 8356 |  |  |  |
|  | 1 | 8356 | 0.058 | 0.058 | 0.7 |
|  | 2 | 8356 | 0.058 | 0.115 | 0.7 |
| 3 | 9566 | 0.206 | 0.321 | 0.7 |  |
| 4 | 10831 | 0.234 | 0.555 | 0.7 |  |
|  | 5 | 12153 | 0.264 | 0.819 | 24.0 |
| 6 | 13532 | 0.265 | 1.084 | 24.0 |  |

0.5 cfs limited by 6 " underdrain or Orafice to match 2 yr 24 hr

| Basin Stage-Storage-Outfall Chart |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Depth <br> [ft] |  |  |  |  |  |
| Area [sf] | Vol [acft] | Vol Total <br> [acft] | Q out <br> [cfs] |  |  |
| Basin A | 0 | 2355 |  |  |  |
|  | 1 | 2355 | 0.016 | 0.016 | 0.5 |
| 2 | 2355 | 0.016 | 0.032 | 0.5 |  |
|  | 3 | 3229 | 0.064 | 0.097 | 0.5 |
| 4 | 4223 | 0.086 | 0.182 | 0.5 |  |
|  | 5 | 5318 | 0.110 | 0.292 | 24.0 |
| 6 | 6422 | 0.111 | 0.402 | 24.0 |  |

0.7 cfs limited by 6" underdrain or Orafice to match 2 yr 24 hr

## Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

## STORMWATER POLLUTANT SOURCESISOURCE CONTROLCHECKLIST

## How to use this worksheet（also see instructions in Section G of the WQMP Template）：

1．Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site．Check each box that applies．
2．Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit．
3．Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP．Use the format shown in Table G．1on page 23 of this WQMP Template．Describe your specific BMPs in an accompanying narrative，and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here．

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ．．． | ．．．THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs，AS APPLICABLE on |  |  |
| :---: | :---: | :---: | :---: |
| 1 <br> Potential Sources of Runoff Pollutants | $2$ <br> Permanent Controls－Show on WQMP Drawings | $3$ <br> Permanent Controls－List in WQMP Table and Narrative | 4 <br> Operational BMPs－Include in WQMP Table and Narrative |
| A．On－site storm drain inlets | 凶 Locations of inlets． | 凶 Mark all inlets with the words ＂Only Rain Down the Storm Drain＂or similar．Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District， call 951.955 .1200 to verify． | 凶 Maintain and periodically repaint or replace inlet markings． <br> 凶 Provide stormwater pollution prevention information to new site owners，lessees，or operators． <br> 凹 See applicable operational BMPs in Fact Sheet SC－44，＂Drainage System Maintenance，＂in the CASQA Stormwater Quality Handbooks at www．cabmphandbooks．com <br> 】 Include the following in lease agreements：＂Tenant shall not allow anyone to discharge anything to storn drains or to store or deposit materials so as to create a potential discharge to storm drains．＂ |
| B．Interior floor drains and elevator shaft sump pumps |  | －State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer． | －Inspect and maintain drains to preven blockages and overflow． |
| C．Interior parking garages |  | State that parking garage floor drains will be plumbed to the sanitary sewer． | $\square$ Inspect and maintain drains to preven blockages and overflow． |


| IF THESE SOURCES WILL BE ON THE PROJECT SITE ．．． | ．．．THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs，AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| 1 Potential Sources of Runoff Pollutants | $2$ <br> Permanent Controls－Show on WQMP Drawings | ```Permanent Controls-List in WQMP Table and Narrative``` | Operational BMPs－Include in WQMP Table and Narrative |
| D1．Need for future indoor \＆structural pest control |  | －Note building design features that discourage entry of pests． | Provide Integrated Pest Management information to owners，lessees，and operators． |
| D2．Landscape／ <br> Outdoor Pesticide Use | Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained． <br> Show self－retaining landscape areas，if any． <br> 凹 Show stormwater treatment and hydrograph modification management BMPs．（See instructions in Chapter 3，Step 5 and guidance in Chapter 5．） | State that final landscape plans will accomplish all of the following． <br> Preserve existing native trees， shrubs，and ground cover to the maximum extent possible． <br> 【 Design landscaping to minimize irrigation and runoff，to promote surface infiltration where appropriate，and to minimize the use of fertilizers and pesticides that can contribute to stormwater <br> 区 pollution． <br> Where landscaped areas are used to retain or detain stormwater，specify plants that are tolerant of saturated凹 soil conditions． <br> Consider using pest－resistant <br> 】 plants，especially adjacent to hardscape． <br> To insure successful establishment， select plants appropriate to site soils，slopes，climate，sun，wind， rain，land use，air movement， ecological consistency，and plant interactions． | 凶 Maintain landscaping using minimun or no pesticides． <br> 凹 See applicable operational BMPs in ＂What you should know for．．．．．Landscape and Gardening＂at http：／／rcflood．org／stormwater／Error！ Hyperlink reference not valid． <br> Provide IPM information to new owners，lessees and operators． |


| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| 1 Potential Sources of Runoff Pollutants | $2$ <br> Permanent Controls-Show on WQMP Drawings | $3$ <br> Permanent Controls-List in WQMP Table and Narrative | $4$ <br> Operational BMPs-Include in WQMP Table and Narrative |
| E. Pools, spas, ponds, decorative fountains, and other water features. | Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.) | If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements. | See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/ |
| $\square \quad$ F. Food service | - For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. <br> On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer. | - Describe the location and features of the designated cleaning area. <br> Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated. | See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ <br> Provide this brochure to new site owners, lessees, and operators. |
| - G. Refuse areas | - Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. <br> If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent runon and show locations of berms to prevent runoff from the area. <br> Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer. | - State how site refuse will be handled and provide supporting detail to what is shown on plans. <br> $\square$ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar. | State how the following will be implemented: <br> Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

STORMWATER POLLUTANTSOURCESISOURCECONTROLCHECKLIST


| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| $1$ <br> Potential Sources of Runoff Pollutants | WQMP Drawings | 3Permanent Controls-List in WQMP <br> Table and Narrative | 4 <br> Operational BMPs-Include in WQMP Table and Narrative |
| I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.) | Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent runon or run-off from area. <br> Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. <br> Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site. | Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. <br> Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: <br> - Hazardous Waste Generation <br> - Hazardous Materials Release Response and Inventory <br> - California Accidental Release (CalARP) <br> - Aboveground Storage Tank <br> - Uniform Fire Code Article 80 Section 103(b) \& (c) 1991 <br> - Underground Storage Tank <br> www.cchealth.org/groups/hazmat L | See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |


| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| 1 <br> Potential Sources of Runoff Pollutants | WQMP Drawings | 3 <br> Permanent Controls-List in WQMP <br> Table and Narrative | $4$ <br> Operational BMPs-Include in WQMP Table and Narrative |
| J. Vehicle and Equipment Cleaning | Show on drawings as appropriate: <br> (1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. <br> (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shutoff to discourage such use). <br> (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. <br> (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed. | 凶 If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced. | Describe operational measures to implement the following (if applicable): <br> 凹 Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Servic Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ <br> Car dealerships and similar may rinse cars with water only. |


| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| 1 <br> Potential Sources of Runoff Pollutants | $2$ <br> Permanent Controls-Show on WQMP Drawings | $3$ <br> Permanent Controls-List in WQMP Table and Narrative | 4 <br> Operational BMPs-Include in WQMP Table and Narrative |
| K. Vehicle/Equipment Repair and Maintenance | Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. <br> Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. <br> Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained. | State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. <br> State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. <br> State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. | In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: <br> No person shall dispose of, nor permi 1 the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. <br> No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. <br> Refer to "Automotive Maintenance \& Ca Care Best Management Practices for Autc Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http:// rcflood.org/stormwater/ <br> Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ |


| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| 1 Potential Sources of Runoff Pollutants | $2$ <br> Permanent Controls-Show on WQMP Drawings | 3 Permanent Controls-List in WQMP Table and Narrative | $4$ <br> Operational BMPs-Include in WQMP Table and Narrative |
| L. Fuel Dispensing Areas | Fueling areas ${ }^{6}$ shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and $b$ ) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. <br> Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area ${ }^{1}$.] The canopy [or cover] shall not drain onto the fueling area. |  | The property owner shall dry sweep the fueling area routinely. <br> See the Fact Sheet SD-30, "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

[^11]STORMWATER POLLUTANTSOURCES/SOURCECONTROLCHECKLIST

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| 1 Potential Sources of Runoff Pollutants | $2$ <br> Permanent Controls-Show on WQMP Drawings | 3 Permanent Controls-List in WQMP Table and Narrative | $4$ <br> Operational BMPs-Include in WQMP Table and Narrative |
| - M. Loading Docks | Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. <br> Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. <br> Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer. |  | Move loaded and unloaded items indoors as soon as possible. <br> See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

STORMWATER POLLUTANTSOURCESISOURCECONTROLCHECKLIST

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| $1$ <br> Potential Sources of Runoff Pollutants | 2 <br> Permanent Controls-Show on WQMP Drawings | 3 <br> Permanent Controls-List in WQMP Table and Narrative | $4$ <br> Operational BMPs-Include in WQMP Table and Narrative |
| N. Fire Sprinkler Test Water |  | - Provide a means to drain fire sprinkler test water to the sanitary sewer. | See the note in Fact Sheet SC-41, "Building and Grounds Maintenance, in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |
| O. Miscellaneous Drain or Wash Water or Other Sources <br> Boiler drain lines <br> Condensate drain lines <br> Rooftop equipment <br> Drainage sumps <br> Roofing, gutters, and trim. <br> Other sources |  | - Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain凹 system. <br> Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. <br> Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. <br> Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. <br> ■ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. <br> Include controls for other sources as specified by local reviewer. |  |

STORMWATER POLLUTANTSOURCESISOURCECONTROLCHECKLIST

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE |  |  |
| :---: | :---: | :---: | :---: |
| 1 <br> Potential Sources of Runoff Pollutants | $2$ <br> Permanent Controls-Show on WQMP Drawings | 3 <br> Permanent Controls-List in WQMP Table and Narrative | 4 <br> Operational BMPs-Include in WQMP Table and Narrative |
| P. Plazas, sidewalks, and parking lots. |  |  | Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris fron pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain |

## Appendix 9: O\&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms
Operation \& Maintenance responsibility for Treatment Control BMP's will be outlined in the CC\&R's for the project and be enforced by the Home Owner's Association, or will be provided by an alternative method as approved by the County of Riverside. The final documents and methodology to be provided as part of the Final WQMP.

# Appendix 10: Educational Materials To be provided during final engineering 



## General Description

The bioretention best management practice (BMP) functions as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. These facilities normally consist of a grass buffer strip, sand bed, ponding area, organic layer or mulch layer, planting soil, and plants. The runoff's velocity is reduced by passing over or through a sand bed and is subsequently distributed evenly along a ponding area. Exfiltration of the stored water in the bioretention area planting soil into the underlying soils occurs over a period of days.

## Inspection/Maintenance Considerations

Bioretention requires frequent landscaping maintenance, including measures to ensure that the area is functioning properly, as well as maintenance of the landscaping on the practice. In many cases, bioretention areas initially require intense maintenance, but less maintenance is needed over time. In many cases, maintenance tasks can be completed by a landscaping contractor, who may already be hired at the site. In cold climates the soil may freeze, preventing runoff from infiltrating into the planting soil.

Maintenance Concerns, Objectives, and Goals

- Clogged Soil or Outlet Structures
- Invasive Species
- Vegetation/Landscape Maintenance
- Erosion
- Channelization of Flow

Aesthetics

| Inspection Activitios | Sugnested Franuency |
| :---: | :---: |
| - Inspeci soil and repair eroded areas. | Monthly |
| - Inspect for crosion or damage to vegetation, preferably at the end of the wet season to schedule summer maintenance and before najor fall runoff to be sure the strips are ready for winter. However, additional inspection after periods of heavy runoff is desirable. |  |
| Inspect to ensure grass is well established. If not, either prepare soil and reseed or replace with atternative species. Install erosion control blanket. <br> - Check for debris and litter, and areas of sediment accumulation. <br> - Inspect health of trees and shrubs. | Semi-annual inspection |
| Maintenance Activities | sursested Frequery |
| - Water plants daily for 2 weeks. | At project completion |
| - Remove litter and debris, | Monthly |
| - Remove sediment. <br> - Remuld void areas. <br> - Treat diseased trees and shrubs. <br> - Mow turf areas. <br> - Repatir erosion at inflow points. <br> - Repair outfow structures. <br> - Unclog underdrain. <br> Wegulate soil ph reguation. | As reeded |
| - Remove and replace dead and diseased vegetation. | Semi-anmal |
| - Add mulch. <br> - Repace tree stakes and wires. | Annual -... |
| Mulch should be replaced every 2 to 3 years or when bate spots appear, Remulch prior to the wet season. | Every 2-3 years, or as needed |

## Additional Information

Landscaping is critical to the function and aesthetic value of bioretention areas. It is preferable to plant the area with native vegetation, or plants that provide habitat value, where possible. Another important design feature is to select species that can withstand the hydrologic regime they will experience. At the bottom of the bioretention facility, plants that tolerate both wet and dry conditions are preferable. At the edges, which will remain primarily dry, upland species will be the most resilient. It is best to select a combination of trees, shrubs, and herbaceous materials.

## References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July, 1998, revised February, 2002.
U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development \& Redevelopment BMP Factsheets. Available at:
cfub.epa.gov/npdes/stormwater/menuofbmps/bmp files.cfm
Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

### 3.5 Bioretention Facility

| Type of BMP | LID - Bioretention |
| :--- | :--- |
| Treatment Mechanisms | Infiltration, Evapotranspiration, Evaporation, Biofiltration |
| Maximum Drainage Area | This BMP is intended to be integrated into a project's landscaped area in a <br> distributed manner. Typically, contributing drainage areas to Bioretention <br> Facilities range from less than 1 acre to a maximum of around 10 acres. |
| Other Names | Rain Garden, Bioretention Cell, Bioretention Basin, Biofiltration Basin, <br> Landscaped Filter Basin, Porous Landscape Detention |

## Description

Bioretention Facilities are shallow, vegetated basins underlain by an engineered soil media. Healthy plant and biological activity in the root zone maintain and renew the macro-pore space in the soil and maximize plant uptake of pollutants and runoff. This keeps the Best Management Practice (BMP) from becoming clogged and allows more of the soil column to function as both a sponge (retaining water) and a highly effective and self-maintaining biofilter. In most cases, the bottom of a Bioretention Facility is unlined, which also provides an opportunity for infiltration to the extent the underlying onsite soil can accommodate. When the infiltration rate of the underlying soil is exceeded, fully biotreated flows are discharged via underdrains. Bioretention Facilities therefore will inherently achieve the maximum feasible level of infiltration and evapotranspiration and achieve the minimum feasible (but highly biotreated) discharge to the storm drain system.

## Siting Considerations

These facilities work best when they are designed in a relatively level area. Unlike other BMPs, Bioretention Facilities can be used in smaller landscaped spaces on the site, such as:
$\checkmark$ Parking islands
$\checkmark$ Medians
$\checkmark$ Site entrances
Landscaped areas on the site (such as may otherwise be required through minimum landscaping ordinances), can often be designed as Bioretention Facilities. This can be accomplished by:

- Depressing landscaped areas below adjacent impervious surfaces, rather than elevating those areas
- Grading the site to direct runoff from those impervious surfaces into the Bioretention Facility, rather than away from the landscaping
- Sizing and designing the depressed landscaped area as a Bioretention Facility as described in this Fact Sheet

Bioretention Facilities should however not be used downstream of areas where large amounts of sediment can clog the system. Placing a Bioretention Facility at the toe of a steep slope should also be avoided due to the potential for clogging the engineered soil media with erosion from the slope, as well as the potential for damaging the vegetation.

## Design and Sizing Criteria

The recommended cross section necessary for a Bioretention Facility includes:

- Vegetated area
- 18' minimum depth of engineered soil media
- 12 ' minimum gravel layer depth with 6 ' perforated pipes (added flow control features such as orifice plates may be required to mitigate for HCOC conditions)


While the 18 -inch minimum engineered soil media depth can be used in some cases, it is recommended to use 24 inches or a preferred 36 inches to provide an adequate root zone for the chosen plant palate. Such a design also provides for improved removal effectiveness for nutrients. The recommended ponding depth inside of a Bioretention Facility is 6 inches; measured from the flat bottom surface to the top of the water surface as shown in Figure 1.

Because this BMP is filled with an engineered soil media, pore space in the soil and gravel layer is assumed to provide storage volume. However, several considerations must be noted:

- Surcharge storage above the soil surface (6 inches) is important to assure that design flows do not bypass the BMP when runoff exceeds the soil's absorption rate.
- In cases where the Bioretention Facility contains engineered soil media deeper than 36 inches, the pore space within the engineered soil media can only be counted to the 36 inch depth.
- A maximum of 30 percent pore space can be used for the soil media whereas a maximum of 40 percent pore space can be use for the gravel layer.


## Bioretention Facility BMP Fact Sheet

## Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost ${ }^{1}$, such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

| Percent Range | Component |
| :---: | :---: |
| $\mathbf{7 0 - 8 0}$ | Sand |
| $\mathbf{1 5 - 2 0}$ | Silt |
| $\mathbf{5 - 1 0}$ | Clay |

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

## Vegetation Requirements

Vegetative cover is important to minimize erosion and ensure that treatment occurs in the Bioretention Facility. The area should be designed for at least 70 percent mature coverage throughout the Bioretention Facility. To prevent the BMP from being used as walkways, Bioretention Facilities shall be planted with a combination of small trees, densely planted shrubs, and natural grasses. Grasses shall be native or ornamental; preferably ones that do not need to be mowed. The application of fertilizers and pesticides should be minimal. To maintain oxygen levels for the vegetation and promote biodegradation, it is important that vegetation not be completely submerged for any extended period of time. Therefore, a maximum of 6 inches of ponded water shall be used in the design to ensure that plants within the Bioretention Facility remain healthy.

A 2 to 3-inch layer of standard shredded aged hardwood mulch shall be placed as the top layer inside the Bioretention Facility. The 6 -inch ponding depth shown in Figure 1 above shall be measured from the top surface of the 2 to 3-inch mulch layer.

## Curb Cuts

To allow water to flow into the Bioretention Facility, 1-foot-wide (minimum) curb cuts should be placed approximately every 10 feet around the perimeter of the Bioretention Facility. Figure 2 shows a curb cut in a Bioretention Facility. Curb cut flow lines must be at or above the $\mathrm{V}_{\text {BMP }}$ water surface level.

[^12]
## Bioretention Facility BMP Fact Sheet



Figure 2: Curb Cut located in a Bioretention Facility
To reduce erosion, a gravel pad shall be placed at each inlet point to the Bioretention Facility. The gravel should be 1- to 1.5 -inch diameter in size. The gravel should overlap the curb cut opening a minimum of 6 inches. The gravel pad inside the Bioretention Facility should be flush with the finished surface at the curb cut and extend to the bottom of the slope.

In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet. See Figure 3.


Figure 3: Apron located in a Bioretention Facility

## Terracing the Landscaped Filter Basin

It is recommended that Bioretention Facilities be level. In the event the facility site slopes and lacks proper design, water would fill the lowest point of the BMP and then discharge from the basin without being treated. To ensure that the water will be held within the Bioretention Facility on sloped sites, the BMP must be terraced with nonporous check dams to provide the required storage and treatment capacity.
The terraced version of this BMP shall be used on non-flat sites with no more than a 3 percent slope. The surcharge depth cannot exceed 0.5 feet, and side slopes shall not exceed 4:1. Table 2 below shows the spacing of the check dams, and slopes shall be rounded up (i.e., 2.5 percent slope shall use 10' spacing for check dams).

Table 2: Check Dam Spacing

| $\mathbf{6}^{\prime \prime}$ Check Dam Spacing |  |
| :---: | :---: |
| Slope | Spacing |
| $\mathbf{1 \%}$ | $25^{\prime}$ |
| $\mathbf{2 \%}$ | $15^{\prime}$ |
| $\mathbf{3 \%}$ | $10^{\prime}$ |

## Bioretention Facility BMP Fact Sheet

## Roof Runoff

Roof downspouts may be directed towards Bioretention Facilities. However, the downspouts must discharge onto a concrete splash block to protect the Bioretention Facility from erosion.

## Retaining Walls

It is recommended that Retaining Wall Type 1A, per Caltrans Standard B3-3 or equivalent, be constructed around the entire perimeter of the Bioretention Facility. This practice will protect the sides of the Bioretention Facility from collapsing during construction and maintenance or from high service loads adjacent to the BMP. Where such service loads would not exist adjacent to the BMP, an engineered alternative may be used if signed by a licensed civil engineer.

## Side Slope Requirements

## Bioretention Facilities Requiring Side Slopes

The design should assure that the Bioretention Facility does not present a tripping hazard. Bioretention Facilities proposed near pedestrian areas, such as areas parallel to parking spaces or along a walkway, must have a gentle slope to the bottom of the facility. Side slopes inside of a Bioretention Facility shall be 4:1. A typical cross section for the Bioretention Facility is shown in Figure 1.

## Bioretention Facilities Not Requiring Side Slopes

Where cars park perpendicular to the Bioretention Facility, side slopes are not required. A 6inch maximum drop may be used, and the Bioretention Facility must be planted with trees and shrubs to prevent pedestrian access. In this case, a curb is not placed around the Bioretention Facility,
but wheel stops shall be used to prevent vehicles from entering the Bioretention Facility, as shown in Figure 4.


## Bioretention Facility BMP Fact Sheet

## Planter Boxes

Bioretention Facilities can also be placed above ground as planter boxes. Planter boxes must have a minimum width of 2 feet, a maximum surcharge depth of 6 inches, and no side slopes are necessary. Planter boxes must be constructed so as to ensure that the top surface of the engineered soil media will remain level. This option may be constructed of concrete, brick, stone or other stable materials that will not warp or bend. Chemically treated wood or galvanized steel, which has the ability to contaminate stormwater, should not be used. Planter boxes must be lined with an impermeable liner on all sides, including the bottom. Due to the impermeable liner, the inside bottom of the planter box shall be designed and constructed with a cross fall, directing treated flows within the subdrain layer toward the point where subdrain exits the planter box, and subdrains shall be oriented with drain holes oriented down. These provisions will help avoid excessive stagnant water within the gravel underdrain layer. Similar to the in-ground Bioretention Facility versions, this BMP benefits from healthy plants and biological activity in the root zone. Planter boxes should be planted with appropriately selected vegetation.


Figure 5: Planter Box
Source: LA Team Effort

## Overflow

An overflow route is needed in the Bioretention Facility design to bypass stored runoff from storm events larger than $\mathrm{V}_{\text {BMP }}$ or in the event of facility or subdrain clogging. Overflow systems must connect to an acceptable discharge point, such as a downstream conveyance system as shown in Figure 1 and Figure 4. The inlet to the overflow structure shall be elevated inside the Bioretention Facility to be flush with the ponding surface for the design capture volume ( $\mathrm{V}_{\text {BMP }}$ ) as shown in Figure 4. This will allow the design capture volume to be fully treated by the Bioretention Facility, and for larger events to safely be conveyed to downstream systems. The overflow inlet shall not be located in the entrance of a Bioretention Facility, as shown in Figure 6.

## Bioretention Facility BMP Fact Sheet

## Underdrain Gravel and Pipes

An underdrain gravel layer and pipes shall be provided in accordance with Appendix BUnderdrains.


Figure 6: Incorrect Placement of an Overflow Inlet.

## Inspection and Maintenance Schedule

The Bioretention Facility area shall be inspected for erosion, dead vegetation, soggy soils, or standing water. The use of fertilizers and pesticides on the plants inside the Bioretention Facility should be minimized.

## Bioretention Facility Design Procedure

1) Enter the area tributary, $A_{T}$, to the Bioretention Facility.
2) Enter the Design Volume, $V_{\text {BMP }}$, determined from Section 2.1 of this Handbook.
3) Select the type of design used. There are two types of Bioretention Facility designs: the standard design used for most project sites that include side slopes, and the modified design used when the BMP is located perpendicular to the parking spaces or with planter boxes that do not use side slopes.
4) Enter the depth of the engineered soil media, $d_{s}$. The minimum depth for the engineered soil media can be 18 ' in limited cases, but it is recommended to use 24 ' or a preferred 36 ' to provide an adequate root zone for the chosen plant palette. Engineered soil media deeper than 36 ' will only get credit for the pore space in the first 36 '.
5) Enter the top width of the Bioretention Facility.
6) Calculate the total effective depth, $d_{E}$, within the Bioretention Facility. The maximum allowable pore space of the soil media is $30 \%$ while the maximum allowable pore space for the gravel layer is $40 \%$. Gravel layer deeper than 12 will only get credit for the pore space in the first 12'.

a. For the design with side slopes the following equation shall be used to determine the total effective depth. Where, $\mathrm{d}_{\mathrm{p}}$ is the depth of ponding within the basin.
$\mathrm{d}_{\mathrm{E}}(\mathrm{ft})=\frac{0.3 \times\left[\left(\mathrm{w}_{\mathrm{T}}(\mathrm{ft}) \times \mathrm{d}_{\mathrm{S}}(\mathrm{ft})\right)+4\left(\mathrm{~d}_{\mathrm{P}}(\mathrm{ft})\right)^{2}\right]+0.4 \times 1(\mathrm{ft})+\mathrm{d}_{\mathrm{P}}(\mathrm{ft})\left[4 \mathrm{~d}_{\mathrm{P}}(\mathrm{ft})+\left(\mathrm{w}_{\mathrm{T}}(\mathrm{ft})-8 \mathrm{~d}_{\mathrm{P}}(\mathrm{ft})\right)\right]}{\mathrm{w}_{\mathrm{T}}(\mathrm{ft})}$
This above equation can be simplified if the maximum ponding depth of $0.5^{\prime}$ is used. The equation below is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$
\mathrm{d}_{\mathrm{E}}(\mathrm{ft})=\left(0.3 \times \mathrm{d}_{\mathrm{S}}(\mathrm{ft})+0.4 \times 1(\mathrm{ft})\right)-\left(\frac{0.7\left(\mathrm{ft}^{2}\right)}{\mathrm{w}_{\mathrm{T}}(\mathrm{ft})}\right)+0.5(\mathrm{ft})
$$

b. For the design without side slopes the following equation shall be used to determine the total effective depth:

$$
\mathrm{d}_{\mathrm{E}}(\mathrm{ft})=\mathrm{d}_{\mathrm{P}}(\mathrm{ft})+\left[(0.3) \times \mathrm{d}_{\mathrm{S}}(\mathrm{ft})+(0.4) \times 1(\mathrm{ft})\right]
$$

The equation below, using the maximum ponding depth of $0.5^{\prime}$, is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$
\mathrm{d}_{\mathrm{E}}(\mathrm{ft})=0.5(\mathrm{ft})+\left[(0.3) \times \mathrm{d}_{\mathrm{S}}(\mathrm{ft})+(0.4) \times 1(\mathrm{ft})\right]
$$

7) Calculate the minimum surface area, $A_{M}$, required for the Bioretention Facility. This does not include the curb surrounding the Bioretention Facility or side slopes.

$$
\mathrm{A}_{\mathrm{M}}\left(\mathrm{ft}^{2}\right)=\frac{\mathrm{V}_{\mathrm{BMP}}\left(\mathrm{ft}^{3}\right)}{\mathrm{d}_{\mathrm{E}}(\mathrm{ft})}
$$

8) Enter the proposed surface area. This area shall not be less than the minimum required surface area.
9) Verify that side slopes are no steeper than $4: 1$ in the standard design, and are not required in the modified design.
10) Provide the diameter, minimum 6 inches, of the perforated underdrain used in the Bioretention Facility. See Appendix B for specific information regarding perforated pipes.
11) Provide the slope of the site around the Bioretention Facility, if used. The maximum slope is 3 percent for a standard design.
12) Provide the check dam spacing, if the site around the Bioretention Facility is sloped.
13) Describe the vegetation used within the Bioretention Facility.

## References Used to Develop this Fact Sheet

Anderson, Dale V. "Landscaped Filter Basin Soil Requirements." Riverside, May 2010.

California Department of Transportation. CalTrans Standard Plans. 15 September 2005. May 2010 [http://www.dot.ca.gov/hq/esc/oe/project_plans/HTM/stdplns-met-new99.htm](http://www.dot.ca.gov/hq/esc/oe/project_plans/HTM/stdplns-met-new99.htm).

Camp Dresser and McKee Inc.; Larry Walker Associates. California Stormwater Best Management Practice Handbook for New Development and Redevelopment. California Stormwater Quality Association (CASQA), 2004.

Contra Costa Clean Water Program. Stormwater Quality Requirements for Development Applications. 3rd Edition. Contra Costa, 2006.

County of Los Angeles Public Works. Stormwater Best Management Practice Design and Maintenance Manual. Los Angeles, 2009.

Kim, Hunho, Eric A. Seagren and Allen P. Davis. "Engineered Bioretention for Removal of Nitrate from Stormwater Runoff." Water Environment Research 75.4 (2003): 355-366.

LA Team Effort. LA Team Effort: FREE Planter Boxes for Businesses. 2 November 2009. May 2010 [http://lateameffort.blogspot.com/2009/11/free-planter-boxes-for-businesses-est.html](http://lateameffort.blogspot.com/2009/11/free-planter-boxes-for-businesses-est.html).

Montgomery County Maryland Department of Permitting Services Water Resources Section. Biofiltration (BF). Montgomery County, 2005.

Program, Ventura Countywide Stormwater Quality Management. Technical Guidance Manual for Stormwater Quality Control Measures. Ventura, 2002.

United States Environmental Protection Agency. Storm Water Technology Fact Sheet Bioretention. Washington D.C, 1999.

Urban Drainage and Flood Control District. Urban Storm Drainage Criteria Manual Volume 3 Best Management Practices. Vol. 3. Denver, 2008. 3 vols.

Urbonas, Ben R. Stormwater Sand Filter Sizing and Design: A Unit Operations Approach. Denver: Urban Drainage and Flood Control District, 2002.

## Appendix J

Planned Unit Development

## UNITED ENGINEERING GROUP

## Gateway Heights

Planned Unit Development
Moreno Valley, California

HengHou Group
177 E. Colorado Blvd.
Suite 200
Pasadena, CA 91105
Prepared for:
November 2022

## PLANNED UNIT DEVELOPMENT

FOR

## Gateway Heights

November 2022
Submitted to


City of Moreno Valley
14177 Fredrick Street
Moreno Valley, CA 92552
(951) 413-3000

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A. Vicinity Map
B. Development Area
C. USGS Topographic Map
D. FEMA FIRM Map
E. General Plan Map
F. Zoning Map
G. Area Circulation Map
H. Gateway Specific Plan
I. Surrounding Jurisdictions
J. Open Space/Park Plan
K. Cluster Detail
L. Street Sections
M. Conceptual Wall \& Fence Plan

## ARCHITECTURE

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## SITE PLAN

Sheet 1 - Preliminary Site Plan
Sheet 2 - Preliminary Grading \& Drainage Plan

### 1.0 PURPOSE

The purpose of this Planned Unit Development (PUD) is to describe the overall design concept for the Gateway Heights project and outline the design details that will be incorporated into the final design decisions. The Gateway Heights project presents innovative housing options within the City of Moreno Valley, while delivering a vast amount of recreational open space to the surrounding communities. This manual includes both design standards and guidelines. The guidelines in this document will lay out both functional and aesthetic design concepts as an overall strategy to be followed at the time of development. The primary objective is to establish a consistent theme throughout the project. This document will establish design standards, overall theme, wall and fence concepts, and pedestrian connectivity to be used in the future build out of this project. This Planned Unit Development (PUD) is being processed in conformance with City of Moreno Valley Municipal Code, Chapter 9.03.060.

### 2.0 PROJECT BACKGROUND \& DESCRIPTION

Gateway Heights is located north of Jennings Court and east of Morton Road in the City of Moreno Valley (Refer to Exhibit A - Vicinity Map). The property contains 32.70 acres in the foothill of the Box Springs Mountain Reserve Park. The project proposes to develop approx. 16.59 acres of 32.56 acres into 108 detached condominium units with the dwelling units in an 8-unit "cluster" concept. (See Exhibit B Development Area) The remaining 15.97 acres will be rezoned to Open Space (OS). It is anticipated that the open space area will be incorporated into the local trail system of hiking, trail running, and mountain biking trails, and the open space area will be available for recreational use by residents of Gateway Heights and the City of Moreno Valley. The project will also contain 3.1 acres of open space, trails and park area within the community providing residents with space to enjoy. The project proposal is consistent with the City of Moreno Valley's Residential 10 (R10) District which allows for a maximum density of 10 dwelling units per net acre. In order to ensure the quality and cohesiveness of PUD projects, the City of Moreno Valley requires additional design details during planning stages. The requirement for these design standards and details helps ensure that City design objectives are met. By implementing the following design points, this project meets these City design objectives for PUDs:

- Provides innovation and diversity in housing choices that would not otherwise be possible according to the strict application of the site development regulations in this title because the


### 3.0 EXISTING CONDITIONS

The property is currently unimproved land bordered to the south by an existing single family residential development. The site lies just to the east of Interstate 215 and to the north of the US 60/I-215 interchange. The site had previously been entitled for a single-family residential development (Tract 33626) in 2007 but those entitlements expired.

The topography of this site has two naturally defined areas. The lower lying area, which generally contains slopes under $15 \%$ and the mountainous area which consists of slopes greater than $25 \%$. The site generally slopes from northeast to southwest (See Exhibit C - USGS Topographic Map). The property is located within Flood Zone ' $X$ ' (areas determined to be outside of the 100-year and 500-year floodplain) Refer to Exhibit D - FIRM Map (Map No. 06065C0733G, dated August 28, 2008).

Per the General Plan, the property currently has land use designations of Residential Max 2DU/AC (R2) and Hillside Residential (HR). (Refer to Exhibit E-General Plan Map and Exhibit F - Zoning Map)

Transportation corridors and area circulation will be developed in conformance with the City of Moreno Valley's General Plan. Refer to Exhibit G - Area Circulation Map for a representation of the major roadways in the areas of the subject site.

### 4.0 RELATIONSHIP TO SURROUNDING PROPERTIES

The surrounding properties in the area include vacant land, existing single-family homes, and hillside. A majority of the vacant land adjacent to this project are contained within the Gateway Center Specific Plan, in the unincorporated area of Riverside County, to the west of the project. This Specific Plan contains densities from 5 du /acre to 16 du /acre as well as a school site bordering Morton Road to the west. (See Exhibit H - Gateway Specific Plan) To the north and east are areas zoned as Hillside Residential in the City of Moreno Valley and Conservation in the County of Riverside, to the east and south of the project there are eight existing single-family homes. (See Exhibit I - Surrounding Jurisdictions)

The surrounding General Plan land use designations are as follows:
North: Hillside Residential (HR) \& Conservation (County of Riverside)
South: Residential Max. 5du/acre (R5)
East: Hillside Residential (HR)
West: Gateway Center Specific Plan (County of Riverside)

The surrounding existing land uses are as follows:
North: Vacant
South: Single Family Residences
East: Vacant
West: Vacant

### 5.0 PRELIMINARY DEVELOPMENT PLAN

The Gateway Heights development is intended as a planned residential community offering innovative cluster housing options in the lower lying portion of the site and open space on the remainder of the site. The development will include a community park, open space and a common community design identity. This development plan coupled with the unique location of this property will provide multiple housing alternatives for both entry-level buyers, young families, and retirees, as well as student and faculty for the University of California-Riverside.

As mentioned above, the R10 designated area of Gateway Heights will total 16.59 acres of the 32.56 acre property and will contain 108 units, with a density of 6.51 units per acre. This density is well within allowances of the proposed General Plan designation of R10 (10 units per net acre). The remaining 15.97 acres will be changed to Open Space (OS) and designated for conservation. In addition to the open space, the project will also provide a 0.89 acre community park located in the center of the development. (Refer to Exhibit J - Open Space/Park Plan)

The residential uses within the Gateway Heights development will consist of cluster units in varying sizes ranging from 4 -unit to 10 -unit clusters. This development will be subject to the requirements in Chapter 9.03.040 (Residential Site Development Standards) and 9.03.060 (Planned Unit Developments) of the City of Moreno Valley's municipal code.

### 5.1 Cluster Design

These units will contain 4-unit to 10 -unit auto court product on pad sizes ranging from 7,674SF to 16,254 SF. (Refer to Exhibit K - Cluster Detail) These cluster units are arranged with garages facing a common driveway as to enhance the aesthetic views of the project from the street and perimeter. The purpose of this design concept is to ensure architectural continuity and compatibility throughout the project utilizing the following design criteria:
> Provide front door access to open space/courtyard for inside units and street access for outside units.
$>$ Provide garage access at common private street
> Use enhanced elevations for homes facing the public street.
> Provide patios or balconies to enhance architectural styles and increase private open space.
> Consider additional building articulation through recessed garage doors, recessing or cantilevering second stories and varying roof pitches.

## (Refer to A-1.3 thru A-3.4 - Conceptual Floor Plans/Elevations)

### 5.2 Alternative Design Standards

This planned unit development for the Gateway Heights project contains various design alternatives that differ from the standard R10 design standards in order to promote the objectives stated above in Section 2. As allowed in the City of Moreno Valley's Municipal Code Section 9.03.060.G, planned unit developments may deviate from the site development standards set forth in the applicable zoning district regarding lot area, lot dimensions, lot coverage, setbacks and building height.

### 5.2.1 Lot Coverage

The Gateway Heights project contains 13 development pad areas varying in size from 7,674 to 16,254 square feet. The cluster development will be exclusively contained within these development pads and the pads will have a maximum building coverage of $65 \%$. The remaining pad area shall contain driveways, sidewalks and landscaping.

### 5.2.2 Building Setbacks

Front/Street Side setback = 5' to ROW
Minimum building separation $=6^{\prime}$
Side setback to toe/top of slope $=5^{\prime}$ Min*
Rear setback to toe/top of slope $=5^{\prime} \mathrm{Min} *$
*-For buildings located at the top or toe of slope, the minimum building setback shall be determined by the California Building Code Section 1808.7 which states that buildings at the toe of slope shall be at least the smaller of $\mathrm{H} / 2$ or $15^{\prime}$ from the toe of slope. Buildings at the top of slope shall be at least the smaller of $\mathrm{H} / 3$ or $40^{\prime}$ from the top of slope.

Example: 20' Slope Height = 10' setback at toe of slope (20/2)
$20^{\prime}$ Slope Height $=7$ ' setback at top of slope (20/3)


For SI: I foot = 304.8 mm.

FOUNDATION CLEARANCES FROM SLOPES

### 5.2.3 Building Height

Building heights for the two story units will not exceed $30^{\prime}$ in height.

### 5.2.4 Street Sections

The streets within the Gateway Heights PUD will be private streets maintained by the project's Homeowner Association. These streets will be constructed based on the City of Moreno Valley's Local Street section MVSI-107A-0. Street A and Street C will be constructed using a modified section which eliminates the sidewalk and landscape area along the project perimeter. The purpose for these modified sections is to preserve the natural landscape along the perimeter of the project. With the elimination of these sidewalks, a pedestrian crossing has been located at approximately mid-block of Street B to provide ADA access to the units on the north side of Street B. (Refer to Exhibit L Street Section Details)

### 5.3 Fire Protection Plan

The Gateway Heights project has developed a Fire Protection Plan in conjunction with the development to increase safety measures and mitigate any fire hazards for the project. The mitigations include providing two $36^{\prime}+$ wide roadways at the entrance to minimize any potential traffic congestion during an emergency setting. One roadway would be used for ingress and the other for egress. The site also includes an internal looped road system allowing traffic circulation in either direction. Direct access shall be provided to all structures and no dead-end fire apparatus access roads are contained onsite. The project has also developed a Fuel Modification and Vegetation Management plan for the site which includes requirements for landscape materials to reduce non-fire-resistant vegetation.

### 5.4 Community Park \& Landscape Buffers

This project will contain a community park space area, approximately 0.89 acres in size and with various elements for recreation. This community park will be located near the center to the subdivision allowing easy access to all residents and turf areas for additional gathering and activities. The park will be owned and maintained by the project's Homeowners Association. In addition to the community park, this project will also incorporate landscaped buffer areas throughout the project and along the project's perimeter. These landscape areas will also be maintained by the Homeowners Association.

### 5.4.1 General Guidelines

> All landscape shall conform to Ordinance No. 859.2 and County of Riverside Guide to California Friendly Landscaping.
> All planting areas shall be irrigated with an automatic irrigation system and an ET based controller, per Ordinance 859.2.
> All planting areas shall receive three inches ( $3^{\prime \prime}$ ) of shredded bark mulch and one and a half inches ( $1-1 / 2^{\prime \prime}$ ) on ground cover from flats.
$>$ All trees within six feet ( $6^{\prime}$ ) of any hardscape shall receive thirty-six inch ( $36^{\prime \prime}$ ) deep, by twenty inch ( $20^{\prime \prime}$ ) long linear root barrier.
> All slopes three feet ( $3^{\prime}$ ) in vertical height or greater shall be planted with shrubs and trees and irrigated per the Riverside County requirements for slope erosion control landscaping. Slopes to meet building and safety requirements.
> Landscaping shall consist of a combination of trees, shrubs and groundcover as listed in the California Friendly Plant List provided by the County.

### 5.5 Entry Monuments, Walls \& Project Theme

The primary entry for the community will be located at the intersection of "Street A" and Morton Road. The elevated topography of the Gateway Heights project will make it a predominant development near the l-215 freeway. As such, it is important to minimize the walls and fences that could impact the views from the street or surrounding areas. The Gateway Heights project will contain no walls on the interior of the project. The perimeter of the project will consist of decorative view walls and/ or tubular steel fencing. Perimeter wall and fence materials, designs, and colors will carry on the project's theme established by the project's monument signage and landscaping. Wall and fence heights will be limited to a maximum height of six (6) feet, except where necessary for noise attenuation or additional retaining wall. Decorative pillars and pedestals may extend up to an additional fourteen (14) inches above the maximum wall or fence heights. (Refer to Exhibit M - Conceptual Wall \& Fence Plan) Materials, colors, and construction methods for theme, view and accent walls are subject to some variation, so long as the proposed character and theme of the walls is preserved and per the approval of the Planning Department.

While in some areas of the development, units may have retaining walls the majority of the development will not be separated by neighborhood walls at the rear or side yards.

### 5.5.1 General Guidelines

- All walls and fences should maintain a six foot ( $6^{\prime}$ ) maximum height limit, except where larger walls are necessary for noise attenuation or retaining purposes.
> If walls or fences end in a pilaster, the design of the pilaster should reflect the shape of the supports used in the entry monuments and use similar materials.
> When changes in pad elevation occur, the wall or fence should be stepped in equal vertical intervals.
> Where gates are required, they shall be constructed of wrought iron, vinyl or tubular steel. Chain link fencing is not permitted. All construction must be of good quality and sufficient durability. (Applicants shall provide specifications which shall be approved by the Planning Department)
> All wall and fence plans and materials must conform to City of Moreno Valley guidelines.


### 5.6 Perimeter Yard Landscaping

Perimeter yard landscaping is required around all cluster pads and unless approved by the Planning Department, will be provided by the developer/home builder. Perimeter yard landscaping provided by the developer/builder or their representative must be installed within one month of closing of the first unit. A variety of perimeter yard landscape packages with automatic irrigation systems shall be provided; landscaping designs with berming, river run features, courtyards, lighting, or other creative features shall be offered for standard landscape design.

### 5.7 Private Open Space

Private Open Space may include land within each residential unit that is available for private use. This private open space is typically considered yard, patio or balcony area that is available for private recreation. It is recognized that while the community park provides an easily accessible active recreational opportunity for all residents of the development, each residence must have adequate private outdoor space that can be an effective extension of the indoor living space and be used for passive outdoor activities such as gardening, reading, eating and barbequing. Per Moreno Valley Municipal Code Section 9.03.040.G.8, each unit shall have at least one


Figure 1 - Galvanized steel rock garden wall hundred and fifty (150) square feet of private open space. This open space may be achieved through the use of patio or balcony spaces. First floor patio space shall have a minimum dimension of $8^{\prime}$ and upstairs balconies must have a minimum dimension of $5^{\prime}$. Patio designs may include alternatives to traditional fencing, such as garden walls, small retaining walls or landscaping which delineates the space between units.

EXHIBITS



National Flood Hazard Layer FIRMette (8) FEMA


Legend


$\qquad$

noscrezon Ares of Minimal Flod Harid
other areas
GENERA $\square$ Effective LOMRs
aL Area of Undetorrinined Flood Hazard zoned


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The flood hazerd intomstion is derived diresty trem the
authoritative NFHL web serices poroided by FEMA. Tis map authoritative NHL web serices pronded by PNMA. Mis mos reflect changes or amendments subsequerk to this dote and


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EXISTING GENERAL PLAN


PROPOSED GENERAL PLAN

EXISTING ZONING
COUNTY OF RIVERSIDE
PROPOSED ZONING



GATEWAY HDIGHTS


NOT 10 SCALE
$\theta$



## TYPICAL CLUSTER DETAIL






VIEW FENCE DETAIL


ENTRY FEATURE DETAIL

## FLOOR PLANS/ELEVATIONS


(1) PLAN 1 SECOND FLOOR 785 sq ft


FIRST FLOOR 615 sq ft
(1) $\frac{\text { PLAN } 1}{\text { BEDROOM, } 2.5 \text { BATHS }}$
$K P$ KNITTER PARTNERS
INTERNATIONT NTERNATIONAL, INC.
architecture \& planning
17752 MITCHEL NORTH SHEC 17752 Mitchel North, SuTE 949.752 .1177 RNMA MwM.knititercom



PLAN 1A
(PLAN 1B SIM)

A-1.1
Packet Pg. 2080
F.1.d

(1) PLAN 1A RIGHT ELEVATION $\qquad$

(1) PLAN 1A REAR ELEVATION $\qquad$

(1) PLAN 1A LEFT ELEVATION $\qquad$

(1) PLAN 1A FRONT ELEVATION $\qquad$

KPI KNITER PARTNERS
INTERNATIONAL, INC.
architecture \& planning INTERNATIONAL, INC.
architecture \& planning
17752 MitchELL NoRTH, SUITE $\xrightarrow{\text { ReVUNE. CALIFORNA } 92614-6802}$



PLAN 1 EXTERIOR A

A-1.2
F.1.d

KPI KNITTER PARTNERS
INTERNATIONAL


(1) PLAN 1B FRONT ELEVATION

INTERNATIONAL, INC.
architecture \& planing
17752 MircuEL North, SuIt C IRyNE, CALIFORNA
949.752 .1177

#  

$\qquad$
(1) PLAN 1B RIGHT ELEVATION
$\qquad$
(1) PLAN 1B REAR ELEVATION



[^13] -

1) ROOF PLAN 1B


(2) PLAN 2 SECOND FLOOR 885 sq ft

$K P$ KNITTER PARTNERS
INERNATIONAL, INC. aNERNATINAL, INC.
architecture \& planning
17552 MTCHEL NoRTH, SUTEE



PLAN 2A
(PLAN 2B SIM)
A-2.1
Packet Pg. 2003
F.1.d

(2) PLAN 2A RIGHT ELEVATIO N $\qquad$
(2) PLAN 2A REAR ELE VATION $\qquad$
$K P$ KNITTER PARTNERS
INTERNATTARTM NTERNATIONAL, INC.
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## 

PLAN 2 EXTERIORA

A-2. 2
F.1.d

(2) PLAN 2 RIGHT ELEV AT DN $\qquad$
(2) PLAN 2 REAR ELEVATION $\qquad$


(2) PLAN B LEFT ELEVATION

(2) PLA N B FRONT ELEVATION $\qquad$
KPI KNITTER PARTNERS
INTERNATIONAL architecture \& planning
17752 Mirctull 1752 MitchELL LORTH Slanning $949.52 .1177{ }^{2}$


Henghou Group
E. Colorado BLVD Ste. 200
Pasadena, CA 91105
Gateway Heights
Moreno Valley, USA
$\qquad$
PLAN 2 EXTERIORB




## SITE PLAN




### 6.0 ARCHITECTURE

The architectural guidelines in this manual have been developed to ensure architectural continuity and compatibility throughout the project; to promote a distinctive architectural theme; and to avoid a mundane repetition of too similar architectural design elements. These guidelines will provide a set of basic concepts for development but are not meant to limit future creativity in design.

These styles and concepts should be incorporated to provide a variety of quality housing types.

### 6.1 General Guidelines

The following general guidelines should be considered in the designing and layout of the project:
> A common set of design style and design elements should be included throughout the project.
> Long unarticulated building facades should be avoided
> Natural building materials should be varied throughout the project, avoiding long stretches of similar street scene
> Offset roof planes, columns, vertical and horizontal articulation or other projecting architectural features shall occur on those facades of the residence that are visible from the street or open space
> The visual impact of garages shall be reduced to the maximum extent practicable

### 6.2 Architectural styles

Two architectural styles have been set forth as examples in this document to begin to identify and illustrate the intent and objective of these design guidelines in terms of architectural style and variety. Santa Barbara and Modern Farmhouse architectural styles are discussed in the following pages and depicted in Figures $\mathbf{1} \& 2$ to establish the types and level of architectural detail which will assist in achieving the project design objectives. Discussions of each of these styles as well as illustrations of typical elevations and features are located on the following pages.

### 6.2.1 Santa Barbara

Santa Barbara style is an architectural and interior design style derived from Mediterranean and Spanish-revival architecture, often characterized by deep red tones and polished wood textures that contrast with stark white walls.
Santa Barbara style architecture and interior design are characterized by white stucco walls, exposed beam ceilings, red-tile roofs and floors, arcades, and courtyards.

Figure 1 - Santa Barbara


Features typical of the Santa Barbara style include:

- White stucco walls
- Exposed beam ceilings
- Tile roofs
- Shutters
- Decorative Vents


### 6.2.2 Modern Farmhouse

The Modern farmhouse style combines practical elements (simple floor plan, white walls) with rustic materials (wood floors, hand-hewn beams, and wrought-iron hardware). And you'll see this style throughout the U.S., with regional variations. For example, you might spot a Dutch door or two in a New England farmhouse, or wraparound porches on homes in the Deep South

Features typical of the Modern Farmhouse style include:

- Reclaimed wood
- Barnboard details
- Wrought iron accents
- Wide plank floors
- Rafter Tails
- Stone Veneers

Figure 2 - Modern Farmhouse


### 7.0 UTILITIES

Currently the site is undeveloped and the site does contain some existing overhead electrical lines as well as water and sewer lines located in Morton Rd. All existing and new onsite utilities that will serve the subject site will be placed underground except as approved by Public Works. Operation and maintenance of all utilities and facilities will be managed by the appropriate operating entity upon approval and completion of construction. Sewer facilities, water facilities, streetlights, and fire hydrants will be provided according to the appropriate agency's guidelines, per the recommendations of Public Works and City of Moreno Valley Fire Departments and other governmental regulations applicable to the construction of various facilities.

### 8.0 COVENANTS, CONDITIONS AND RESTRICTIONS (CC\&R’S)

Table 8-1 below details the maintenance responsibilities for the various utilities and common areas within Gateway Heights. A majority of the common areas will be maintained by a Home Owners Association (HOA). The HOA will be established in conjunction with development of the project. CC\&R's for Gateway Heights that include language for the establishment of a HOA and provisions for creation of liens in conjunction with the HOA, for maintenance funding, will be provided prior to recordation of the final map.

| MAINTENANCE RESPONSIBILITY <br> Table 8-1 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Home Owners <br> Association | City of Moreno <br> Valley | Riverside County <br> Flood Control | Eastern Municipal <br> Water District |  |
| Onsite Storm Drain | $\mathbf{X}$ |  |  |  |  |
| Basin A | $\mathbf{X}$ |  |  |  |  |
| Basin B | $\mathbf{X}$ |  | $\mathbf{X}$ |  |  |
| Line B <br> (across Morton Rd) |  |  | $\mathbf{X}$ |  |  |
| Headwalls |  |  |  |  |  |
| Water | $\mathbf{X}$ |  |  |  |  |
| Sewer | $\mathbf{X}$ |  |  |  |  |
| Streets | $\mathbf{X}$ |  |  |  |  |
| Landscaping | $\mathbf{X}$ |  |  |  |  |
| Entry Monuments | $\mathbf{X}$ |  |  |  |  |
| Paseos \& Parkways | $\mathbf{X}$ |  |  |  |  |
| Park |  |  |  |  |  |

## Appendix K

## Traffic Impact Analysis

## PREPARED FOR:

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## GATEWAY HIGHLANDS RESIDENTIAL

## TRAFFIC IMPACT ANALYSIS

FEBRUARY 12, 2021

PREPARED BY:

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### 1.0 INTRODUCTION

This report presents the methodology, findings and conclusions of the traffic impact analysis (TIA) prepared for the proposed Gateway Highlands Residential development project. The proposed project site is located on the eastside of Morton Road and north of Jennings Court, in the City of Moreno Valley (City). The project proposes the construction of 108 detached condominiums.

### 1.1 Purpose of the Traffic Study and Study Objectives

This report is intended to satisfy the requirements for a TIA established by the City of Moreno Valley Transportation Impact Analysis Preparation Guide for Vehicles Miles Traveled and Level of Service Assessment, (June 2020), as well as the requirements for the disclosure of potential impacts and mitigation measures per the California Environmental Quality Act (CEQA). The study area, analysis scenarios, and analysis methodologies are based on discussion with City staff and included in the approved Scoping Agreement. Appendix A includes the approved Scoping Agreement.

### 1.2 Project Location \& Study Area

The project is located on the eastside of Morton Road and north of Jennings Court. The project proposes includes 108 detached condominiums. Figure 1 shows the regional location of the project. The project opening year is 2023.

Consistent with City Guidelines, this report analyzes intersections of "Collector" or higher classification, at which the project will add 50 or more peak hour trips. The following six intersections were evaluated for traffic operations:
Study Intersections

1. Sycamore Canyon Road and Fair Isle Drive (Riverside);
2. I-215 Northbound Ramps and Fair Isle Drive-Box Springs Road (Moreno Valley);
3. Morton Road and Project Driveway (Moreno Valley);
4. Morton Road and Woodsworth North (Moreno Valley);
5. Morton Road and Woodsworth South (Moreno Valley); and
6. Morton Road and Box Springs Road (Moreno Valley).

The study area intersections are shown in Figure 2.
This report analyzes weekday a.m. and p.m. peak hour conditions. The a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 a.m. and 9:00 a.m. The p.m. peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m.

### 1.3 Analysis Scenarios

Based on the City of Moreno Valley Guidelines, this report analyzes traffic conditions for the following scenarios:

1. Existing Conditions;
2. Project Completion Without Project Conditions; and
3. Project Completion With Project Conditions.

Consistent with the CMP, this report analyzes weekday daily, a.m., and p.m. peak hour conditions. The a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 a.m. and 9:00 a.m. The p.m. peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m.

### 2.0 PROJECT DESCRIPTION

The project proposes the construction of 108 detached condos. Access to the project will be provided by one fullaccess driveway on Morton Road. The site plan for the proposed project is illustrated in Figure 3.




FIGURE 3

Gateway Highlands
Site Plan

### 2.1 Project Trip Generation

The project includes 108 detached condominiums, however, to provide a conservative estimate of the trips generated by the project, the trip generation is based on rates from the Institute of Transportation Engineers' (ITE) Trip Generation ( $10^{\text {th }}$ Edition) for Land Use 210 - "Single-Family Detached Housing". Table A shows the project trip generation for the a.m. peak hour, p.m. peak hour, and weekday. As shown in Table A, the project is forecast to generate 80 trips in the a.m. peak hour, 107 trips in the p.m. peak hour, and 1,020 daily trips.

### 2.2 Project Trip Distribution \& Assignment

Trip distribution patterns for the proposed project were developed based on discussion with City staff and the location of local and regional destinations. It should be noted that Morton Road to the north of project has been closed off to through traffic since the opening of the Moreno Valley/March Field Station Metrolink, therefore, the project trips were routed to the south on Morton Road and distributed to Box Springs Road. Figure 4 illustrates the trip distribution for project trips at the study area intersections. The project trip generation was applied to the trip distribution patterns for the project to develop trip assignments for new project trips. Figure 5 illustrates the project trip assignment at the study intersections.

### 3.0 LOS DEFINITIONS, PROCEDURES, AND THRESHOLDS

Level of service (LOS) is a measure of the quality of operational conditions within a traffic stream, and is generally expressed in terms of such measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Levels range from A to F , with LOS A representing excellent (free-flow) conditions and LOS F representing extreme congestion. Consistent with City guidelines, the Highway Capacity Manual (HCM) procedures have been used to evaluate levels of service. This section discusses the LOS definitions, procedures, and thresholds used in this report.

### 3.1 Intersection Levels of Service

The analysis of traffic operations at intersections was conducted according to the Highway Capacity Manual 6it Edition (HCM) delay methodologies using Synchro 11 software, which is described in the Highway Capacity Manual (Transportation Research Board, Washington, D.C., November 2016). Under the HCM methodology, LOS for signalized intersections is based on the average delay experienced by vehicles traveling through an intersection, whereas for un-signalized intersections, the LOS is based on the worst approach where the minor leg has a shared lane and on the worst movement where the minor leg has dedicated turn lanes. Table B presents a brief description of each level of service letter grade, as well as the range of delays associated with each grade.

### 3.2 Levels of Service Standards

The City of Moreno Valley General Plan has established minimum Level of Service standards for its roadway network. LOS D is applicable to intersections that are adjacent to freeway on/off ramps and adjacent to employment generating lands uses. LOS C is applicable to all other intersections. For boundary intersections, LOS D is assumed to be acceptable. Further, the City of Moreno Valley identifies the following signalized intersection operating requirements:

- Any signalized study intersection operating at acceptable LOS without project traffic in which the addition of project traffic causes the intersection to degrade to unacceptable LOS shall identify improvements to provide acceptable LOS.
- Any signalized study intersection that is operating at unacceptable LOS without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.


## translutions

Table A - Project Trip Generation

|  | Units | A.M. Peak Hour |  |  | P.M. Peak Hour |  |  | Daily |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use |  | In | Out | Total | In | Out | Total |  |
| Future Use |  |  |  |  |  |  |  |  |
| Single-Family Residential |  |  |  |  |  |  |  |  |
| Trip Generation Rates ${ }^{1}$ |  | 0.19 | 0.56 | 0.74 | 0.62 | 0.37 | 0.99 | 9.44 |
| Trip Generation | 108 DU | 20 | 60 | 80 | 67 | 40 | 107 | 1,020 |
| Total Trip Generation |  | 20 | 60 | 80 | 67 | 40 | 107 | 1,020 |

Notes: DU = Dwelling Unit
Trip generation based on rates for Land Use 210 - "Single-Family Detached Housing" from Institute of Transportation Engineers' (ITE) Trip Generation (10th Edition).


XXX\%(YYY\%) Inbound\%(Outbound\%) Percent

6 Morton Road/Box Springs Road.
FIGURE 4

Gateway Highlands
Project Trip Distribution


XXX / YYY
6 Morton Road/Box Springs Road.
FIGURE 5

## Gateway Highlands <br> Project Trip Assignment

Table B: Level of Service Criteria

| LOS | Description of Drivers' Perception and Traffic Operation |  |  |  | HCM (Delay in Seconds) |
| :---: | :--- | :--- | :--- | :---: | :---: |
|  |  | Unsignalized <br> A | This level is typically assigned when the volume-to-capacity ratio is low and either progression is <br> exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most <br> vehicles arrive during the green indication and travel through the intersection without stopping. |  |  |
| B | This level is assigned when the volume-to-capacity ratio is low and either progression is highly favorable <br> or the cycle length is short. More vehicles stop than with LOS A. | $>10$ and $\leq 15$ | $>10$ and $\leq 20$ |  |  |
|  | This level is typically assigned when progression is favorable or the cycle length is moderate. Individual <br> cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity <br> during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, <br> although many vehicles still pass through the intersection without stopping. | $>15$ and $\leq 25$ | $>20$ and $\leq 35$ |  |  |
| D | This level is typically assigned when the volume-to-capacity ratio is high and either progression is <br> ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable. | $>25$ and $\leq 35$ | $>35$ and $\leq 55$ |  |  |
| E | This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and <br> the cycle length is long. Individual cycle failures are frequent. | $>35$ and $\leq 50$ | $>55$ and $\leq 80$ |  |  |
| F | This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, <br> and the cycle length is long. Most cycles fail to clear the queue. | $>50$ | $>80$ |  |  |

[^14]For unsignalized intersections, the following criteria shall be used when identifying operational deficiencies. An operation improvement would be required if the study determines that either section a) or both sections b) and c) occur:
a) The addition of project traffic causes the intersection to degrade from an acceptable LOS to unacceptable LOS.

OR
b) The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project at an acceptable LOS.
AND
C) The intersection meets the peak hour traffic signal warrant after the addition of project traffic.

The City of Riverside General Plan considers LOS D to be maintained at intersections of Collector or higher classification. Further, for projects that propose uses above that contained in the General Plan, operational improvements are required when the addition of project traffic causes either peak hour LOS to degrade from acceptable LOS (A through D) to unacceptable LOS (LOS E or F) or the peak hour delay to increase as follows:

- LOS A/B: By 10 seconds;
- LOS C: By 8 seconds;
- LOS D: By 5 seconds;
- LOS E: By 2 seconds;
- LOS F: By 1 second.


### 4.0 VOLUME DEVELOPMENT METHODOLOGY

Forecast traffic volumes at study intersections were developed consistent with the City's guidelines. This section discusses the volume development methodology used to forecast future traffic volumes.

### 4.1 Existing Without Project Traffic Volumes

Existing traffic volumes are based on peak hour intersection turn movement counts collected by Counts Unlimited Inc. in January 2021. Due to the Covid-19 pandemic, the peak hour traffic volumes at the study area intersections collected in January 2021 may be less than counts collected before the pandemic. A comparison of historic counts within the study area to current counts was conducted to determine which were higher. Counts collected in 2019 at the intersection of Day Street/Box Springs Road were found to be higher than the counts collected in 2021 at the same location. Therefore, the counts collected in 2019 were used to balance the counts collected in 2021. Count sheets are contained in Appendix B. Detailed volume development worksheets are included in Appendix C.

### 4.2 Project Completion Without Project Traffic Volumes

Project Completion without project peak hour traffic volumes were developed by applying an annual growth rate of 2 percent per year for 2 years to the existing volumes and adding cumulative project trips. The cumulative projects included in the analysis are illustrated in Figure 6. Table C lists the cumulative projects included in the analysis. The cumulative projects are anticipated to generate 504 a.m. peak hour PCE trips, 632 p.m. peak hour PCE trips, and 8,356 daily PCE trips.

### 4.3 With Project Traffic Volumes

Traffic volumes for existing, project completion with project conditions were developed by adding the trip assignment to the corresponding without project peak hour traffic volumes.

### 5.0 EXISTING CONDITIONS

This section discusses the existing transportation conditions in the study area.


## Legend

Cumulative Projects
## translutions

Table C: Cumulative Projects Trip Generation


### 5.1 Existing Roadway Conditions

Regional access to the project site is provided by SR-60 to the north. Local access to the project will be provided by the following roadways:

- Box Springs Road is oriented in the east-west direction and is a 4-lane roadway within the project study area. The City's circulation plan designates Box Springs Road as a "Minor Arterial".
- Sycamore Canyon Road is oriented in the north-south direction and is a 4-lane roadway within the project study area. The City of Riverside's circulation plan designates Sycamore Canyon Road as a 4-lane "110-Foot Arterial" south of Fair Isle Drive and as a 4-lane "88-Foor Arterial" north of Fair Isle Drive.
- Fair Isle Drive is oriented in the east-west direction and is a 4-lane roadway within the project study area. The City of Riverside's circulation element designates Fair Isle Drive as a " 66 -Foot Collector".


### 5.2 Existing Transit Service

Public transportation services within the City of Moreno Valley includes bus transit service provided by the Riverside Transit Agency (RTA) and commuter rail transportation (Metrolink). These services are further described below.

Bus Service. Public transportation in the City of Moreno Valley is provided by RTA, which is the regional transit operator in Riverside County.

- Route 16 provides service on Box Springs Road. Route 16 has major stops at the Moreno Valley Mall, UCE at Bannockburn, and University Avenue at University Village. Route 16 operates at 30-minute headways on weekdays and weekends.

Commuter Rail Service. Commuter rail service is provided by Metrolink, which is operated by the Southern California Regional Rail Authority (SCRRA). Metrolink train service is available between the counties of Ventura, Los Angeles, San Bernardino, Orange, Riverside, and north San Diego. The area is served by the Moreno Valley/March Field Metrolink Station. The Moreno Valley/March Field Station is the nearest Metrolink station to the project site and is approximately 3 miles south of the project site.

Figure 7 illustrates the existing transit services. As shown in Figure 7, the closest transit route to the project is located on Box Springs Road via Route 16.

### 5.3 Existing Pedestrian \& Bicycle Facilities

The City's Bicycle Master Plan includes three types of facilities and are discussed below:

- Class I Multi-use Paths Class I facilities are physically separated from motor vehicle routes, with exclusive rights-of-way for non-motorized users like cyclists and pedestrians and with motor vehicle cross flows kept to a minimum. Class I facilities are often important commuter connections and any proposed paths must be designed for multipurpose use.
- Class II Bicycle Lanes Class II facilities provide an exclusive roadway space for cyclists, demarcated through pavement marking and signage. Bicycle lanes must be one-way facilities and carry bicycle traffic in the same direction as the adjacent motor vehicle traffic. They are typically located along the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.
- Class III Bicycle Routes Class III facilities are suggested bicycle routes marked by signs designating a preferred route between destinations. They are recommended where traffic volumes and roadway speeds are fairly low.

Figure 8 illustrates the existing bicycle facilities within the City. As shown in Figure 8, there are existing Class III bike routes on Box Springs Road. Pedestrian circulation in Moreno Valley is primarily provided via trails and sidewalks. The existing pedestrian sidewalks adjacent to the project are illustrated in Figure 9. As illustrated in Figure 9, there are sidewalks on the east side of Morton Road from Jennings Court to Box Springs Road.




Legend
FIGURE 9
Project Site Bus Stops
Gateway Highlands Residential
Pedestrian Facilities

### 5.4 Existing Levels of Service

An intersection level of service analysis was conducted for existing conditions to determine current circulation system performance. Figure 10 shows the existing lane geometrics and stop controls at the study intersections. The existing traffic volumes at study intersections are illustrated in Figure 11. Detailed volume development worksheets are included in Appendix C. The existing levels of service for the study area intersections are summarized in Table D. Level of service calculation worksheets are contained in Appendix D. As shown in Table D, all study area intersections are currently operating at satisfactory levels of service with the exception of the following:

- Sycamore Canyon Road/Fair Isle Drive (a.m. peak hour).


### 6.0 PROJECT COMPLETION CONDITIONS

This section discusses project completion transportation conditions in the study area. It is anticipated that the project will open in 2023.

### 6.1 Project Completion Roadway Conditions

Project completion roadway conditions are assumed to be the same as those under existing conditions.

### 6.2 Project Completion Transit Service

Transit service under project completion conditions are anticipated to remain the same as under existing conditions.

### 6.3 Project Completion Pedestrian \& Bicycle Facilities

Pedestrian and bicycle facilities under project completion conditions are anticipated to remain the same as under existing conditions, however, the City of Moreno Valley bicycle master plan is proposing a Class III Bike Route on Morton Road north of Box Springs Road and also converting the Class III Bike Route to a Class II Bike Lane on Box Springs Road. Figure 12 shows the City's bicycle master plan.

### 6.4 Project Completion Without Project Levels of Service

An intersection level of service analysis was conducted for project completion without project conditions to determine circulation system performance. Project completion without project traffic volumes at study intersections are shown in Figure 13. Project completion without project levels of service for the study area intersections are summarized in Table E. Detailed volume development worksheets are included in Appendix C. Level of service calculation worksheets are contained in Appendix D. As shown in Table E, all study area intersections are forecast to operate at satisfactory levels of service with the exception of the following:

- Sycamore Canyon Road/Fair Isle Drive (a.m. and p.m. peak hours).


### 6.5 Project Completion With Project Levels of Service

An intersection level of service analysis was conducted for project completion with project conditions to determine circulation system performance. Project completion with project traffic volumes at study intersections are shown in Figure 14. The project completion with project levels of service for the study area intersections are summarized in Table E. Detailed volume development worksheets are included in Appendix C. Level of service calculation worksheets are contained in Appendix D. As shown in Table E, all study intersections are forecast to operate at satisfactory levels of service with the exception of the following:

- Sycamore Canyon Road/Fair Isle Drive (a.m. and p.m. peak hours).

This intersection exceeds the peak hour delay increase for LOS E (2 seconds or more), when comparing the without project delay to the with project delay. Operational improvements to restore the LOS to pre-project conditions are included in the circulation improvements section.


FIGURE 10

Gateway Highlands Residential Existing Intersection Lane Geometrics and Stop Control



Table D: Existing Levels of Service

| Intersection | $\begin{aligned} & \text { LOS } \\ & \text { Std. } \end{aligned}$ | Jurisdiction | Control | Existing Conditions |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | AM Peak Hour |  | PM Peak Hour |  |
|  |  |  |  | Delay | LOS | Delay | LOS |
| 1. Sycamore Canyon Blvd/Fair Isle Dr | D | Riverside | Signal | 58.2 | E | 33.3 | C |
| 2. I-215 NB Ramps/Fair Isle Dr-Box Springs Rd | D | Caltrans | Signal | 26 | C | 16.9 | B |
| 3. Morton Rd/Project Driveway | C | Moreno Valley | TSWC |  | Future In | ersectio |  |
| 4. Morton Rd/Woodsworth Rd N | C | Moreno Valley | TSWC | 8.7 | A | 8.7 | A |
| 5. Morton Rd/Woodsworth Rd S | C | Moreno Valley | TSWC | 9 | A | 9.1 | A |
| 6 . Morton Rd/Box Springs Rd | D | Moreno Valley | Signal | 13 | B | 12 | B |

Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement. LOS = Level of Service


Source: City of Moreno Valley Bicycle Master Plan
FIGURE 12

$\qquad$

Table E: Project Completion Levels of Service

| Intersection | $\begin{aligned} & \text { LOS } \\ & \text { Std. } \\ & \hline \end{aligned}$ | Jurisdiction | Control | Without Project |  |  |  | With Project |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | AM Peak Hour |  | PM Peak Hour |  | AM Peak Hour |  | PM Peak Hour |  |
|  |  |  |  | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1. Sycamore Canyon Blvd/Fair Isle Dr | D | Riverside | Signal | 69.3 | E | 56.3 | E | 72 | E | 60.5 | E |
| 2. I-215 NB Ramps/Fair Isle Dr-Box Springs Rd | D | Caltrans | Signal | 32.5 | C | 18.1 | B | 34.4 | C | 18.3 | B |
| 3. Morton Rd/Project Driveway | C | Moreno Valley | TSWC |  | Future Int | ersectio |  | 8.9 | A | 8.9 | A |
| 4. Morton Rd/Woodsworth Rd N | C | Moreno Valley | TSWC | 8.7 | A | 8.8 | A | 9.1 | A | 9.4 | A |
| 5. Morton Rd/Woodsworth Rd S | C | Moreno Valley | TSWC | 9 | A | 9.2 | A | 9.6 | A | 9.9 | A |
| 6. Morton Rd/Box Springs Rd | D | Moreno Valley | Signal | 13.9 | B | 11.8 | B | 15.4 | B | 13.6 | B |

Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.
LOS = Level of Service


### 7.0 CIRCULATION IMPROVEMENTS

Circulation improvements have been recommended at intersection where the project exceeds the appropriate jurisdictions operational requirements. These improvements can include conversion of stop control, signalization, changes to signal phasing, and/or addition of lanes as appropriate. The following improvements have been recommended:

### 7.1 Project Completion With Project Intersection Circulation Improvements

Under project completion with project conditions, the following modifications to intersection configurations are recommended as circulation improvements as follows:

- Sycamore Canyon Road/Fair Isle Drive: Add an overlap phase to the existing northbound right-turn lane. Figure 15 illustrates the project completion with project with recommended improvements and Table F shows the resulting levels of service.


### 8.0 VEHICLE MILES TRAVELED (VMT) SCREENING ANALYSIS

Based on the City of Moreno Valley Transportation Impact Analysis Preparation Guide for Vehicles Miles Traveled and Level of Service Assessment, (June 2020), a project located in a low VMT area can be effectively screened out from a project-level VMT assessment. To identify if the project is in a low VMT-generating area, the WRCOG screening tool was applied using VMT per capita. Figure 16 shows the low VMT area screening for the project. As shown in Figure 16, the project TAZ based VMT per capita is 15.45 miles. The jurisdictional VMT per capita is 19.04 miles. Since the project TAZ VMT per capita is lower than the City's VMT per capita, the project is considered to be in a low VMT generating TAZ and presumed to have a less than significant impact on VMT.

### 9.0 IMPACT CRITERIA FOR CEQA DETERMINATION

This section evaluates the CEQA checklist for impact evaluation.
A. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?
The project is consistent with the City's adopted plans and policies. With implementation of the recommended improvements, the project has less than significant impacts based on the City's impact criteria. The project would not conflict with adopted policies supporting alternative transportation modes. The project will not change roadway designations from those in the City's General Plan. The project will also not result in removal of any of the facilities listed above. Therefore, the project impact is considered less than significant.
B. Conflict or be inconsistent with CEQA Guidelines 15064.3 , subdivision (b)?

Based on the City's Low VMT Screening Tool, the project will not require a full VMT analysis and will therefore have a less than significant impact under CEQA.
C. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
The design of driveways and other project access locations will be based on City Code, which sets the standard for such design. It is not anticipated that traffic hazards will increase, therefore, the project impact is considered less than significant.
D. Result in inadequate emergency access?

The proposed driveways will be designed in accordance with all applicable design and safety standards required by adopted fire codes, safety codes, and building codes established by the City's Engineering and Fire Departments. The project will not increase delays on street segments substantially, therefore, the project will not result in inadequate emergency access, and the project impact is considered less than significant.


FIGURE 15

[^15]Table F: Project Completion With Project With Improvements Intersection Levels of Service

| Intersection | $\begin{aligned} & \text { LOS } \\ & \text { Std. } \end{aligned}$ | Jurisdiction | Control | With Project |  | WP With Improvements |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | AM Peak Hour | PM Peak Hour | AM Peak Hour | PM Peak Hour |
|  |  |  |  | Delay LOS | Delay LOS | Delay LOS | Delay LOS |
| 1. Sycamore Canyon Blvd/Fair Isle Dr | D | Riverside | Signal | 72 E | 60.5 E * | 52.2 D | 29.6 C |

## Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.
LOS = Level of Service


### 10.0 SUMMARY \& CONCLUSIONS

The proposed project is forecast to generate 80 trips in the a.m. peak hour, 107 trips in the p.m. peak hour, and 1,020 daily trips. Based on the intersection LOS analysis, with the circulation improvements, the study intersections will operate at satisfactory LOS under existing and project completion. The project will not require a full VMT analysis based on the Low VMT screening tool and has a less than significant impact on VMT.

## APPENDIX A: SCOPING AGREEMENT

## EXHIBIT A

## Project Scoping Form

This scoping form shall be submitted to the Lead Agency to assist in identifying infrastructure improvements that may be required to support traffic from the proposed project.


|  | Consultant: | Developer: |
| :--- | :--- | :--- |
| Name: <br> Address: | Translutions, Inc. | Ackerman Law PC |
| 17632 Irvine Blvd., \#200 | 3200 E. Guasti Road, Ste. 100 |  |
| Telephone: | Tustin, CA 92780 | Ontario, CA 91761 |
| Email: | 949-656-3131 | (909) 456-1460 |
| sandipan@translutions.com | jason.m.ackerman@gmail.com |  |

## Trip Generation Information:

Trip Generation Data Source: $\frac{\text { ITE Trip Generation. 10th Edition (Land Use } 210 \text { "Single-Family }}{\text { Detached Housing") }}$

Current General Plan Land Use
Residential

Current Zoning:
Residential

Proposed General Plan Land Use:
Residential

Proposed Zoning:
Residential

|  | Existing Trip Generation |  | Proposed Trip Generation |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
|  | In | Out | Total | In | Out |
| AM Trips |  |  |  | 20 | 60 |
| PM Trips |  |  |  | 67 | 40 |

Trip Generation based on rates for Land Use 210 "Single-Family Detached Housing" from ITE Trip Generation 10th Edition.

| Trip Internalization: | $\square$ | Yes | $\boxed{\checkmark}$ | No | $\left(\begin{array}{r}\quad \\ \text { \% Trip Discount) }\end{array}\right.$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Pass-By Allowance: | $\square$ | Yes | $\boxed{\checkmark}$ | No | $(\quad . \quad \%$ Trip Discount) |

## Potential Screening Checks

Is your project screened from specific analyses (see Page 3 of the guidelines related to LOS assessment and Pages 22-23 for VMT screening criteria).

Is the project screened from LOS assessment? $\quad \square$ Yes $\quad \square$ No

LOS screening justification (see Page 3 of the guidelines): $\qquad$
Trip generation is greater than the threshold.
$\qquad$
$\qquad$
$\qquad$

VMT screening justification (see Pages 22-23 of the guidelines): $\qquad$
The project is located in a low VMT area based on residential VMT. Please see attached
screening map. Jurisdictional average 2012 daily residential home-based VMT per capita
is 19.04 miles and that for Project TAZ is 15.45 miles.

Level of Service Scoping

- Proposed Trip Distribution (Attach Graphic for Detailed Distribution):

| North | South | East | West |  |
| :--- | :--- | :--- | :--- | :--- |
| 0 | $\%$ | 100 | $\%$ |  |

## Link level of service and data collection:

$\qquad$ will be required

X will not be required

- Attach list of study intersections (and roadway segments if applicable)
- Attach site plan
- Other specific items to be addressed:
$\checkmark$ Site access
On-site circulation
Parking
Consistency with Plans supporting Bikes/Peds/Transit
Other $\qquad$
- Date of Traffic Counts New counts will be conducted and adjusted for COVID.
- Attach proposed analysis scenarios (years plus proposed forecasting approach)
- Attach proposed phasing approach (if the project is phased)


## VMT Scoping

For projects that are not screened, identify the following:

- Travel Demand Forecasting Model Used N/A
- Attach WRCOG Screening VMT Assessment output or describe why it is not appropriate for use
- Attach proposed Model Land Use Inputs and Assumed Conversion Factors (attach)


## STUDY INTERSECTIONS:

1. Sycamore Canyon Boulevard/Fair Isle Drive
2. I-215 Northbound Ramps/Fair Isle Drive-Box Springs Road
3. Morton Road/Project Driveway
4. Morton Road/Woodsworth Road. N
5. Morton Road/Woodsworth Road. S
6. Morton Road/Box Springs Road.

## SITE PLAN: Attached Figure 1

TRIP GENERATION: Attached Table A
TRIP DISTRIBUTION: Attached Figure 2
TRIP ASSIGNMENT: Attached Figure 3
VMT SCREENING MAP: Attached Figure 4

## ANALYSISSCENARIOS:

- Existing Conditions
- Project Completion without Project (existing plus ambient growth plus cumulative projects). Analysis year will be 2022, growth rate of $2 \%$ per annum.
- Project Completion with Project (Project Completion Without Project plus project)


FIGURE 1

Gateway Highlands
Site Plan

## the transportation solutions company...

Table A - Project Trip Generation

|  | Units | A.M. Peak Hour |  |  | P.M. Peak Hour |  |  | Daily |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Land Use |  | In | Out | Total | In | Out | Total |  |
| Future Use |  |  |  |  |  |  |  |  |
| Single-Family Residential |  |  |  |  |  |  |  |  |
| Trip Generation Rates ${ }^{1}$ |  | 0.19 | 0.56 | 0.74 | 0.62 | 0.37 | 0.99 | 9.44 |
| Trip Generation | 108 DU | 20 | 60 | 80 | 67 | 40 | 107 | 1,020 |
| Total Trip Generation |  | 20 | 60 | 80 | 67 | 40 | 107 | 1,020 |

Notes: DU = Dwelling Unit
Trip generation based on rates for Land Use 210 - "Single-Family Detached Housing" from Institute of Transportation Engineers' (ITE) Trip Generation (10th Edition).


XXX\%(YYY\%) Inbound\%(Outbound\%) Percent
5 Morton Road/Woodsworth Road. S
6 Morton Road/Box Springs Road.
FIGURE 2

Gateway Highlands
Project Trip Distribution

5 $\qquad$


XXX / YYY AM / PM Peak Hour Trips



FIGURE 5
Gateway Highlands VMT Screening Map

## APPENDIX B: TRAFFIC COUNTS

City of Riverside
File Name : 01_RIV_Sycamore_Fair Isle AM
N/S: Sycamore Canyon Boulevard
Site Code : 99921033
E/W: Fair Isle Drive
Start Date : 1/26/2021
Weather: Clear
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 10 | 15 | 1 | 26 | 16 | 8 | 34 | 58 | 12 | 142 | 52 | 206 | 4 | 11 | 10 | 25 | 315 |
| 07:15 AM | 13 | 14 | 1 | 28 | 24 | 4 | 39 | 67 | 20 | 131 | 52 | 203 | 11 | 12 | 22 | 45 | 343 |
| 07:30 AM | 16 | 23 | 1 | 40 | 23 | 8 | 45 | 76 | 17 | 155 | 61 | 233 | 6 | 16 | 13 | 35 | 384 |
| 07:45 AM | 12 | 35 | 0 | 47 | 23 | 13 | 64 | 100 | 28 | 122 | 70 | 220 | 7 | 17 | 18 | 42 | 409 |
| Total | 51 | 87 | 3 | 141 | 86 | 33 | 182 | 301 | 77 | 550 | 235 | 862 | 28 | 56 | 63 | 147 | 1451 |
| 08:00 AM | 18 | 23 | 1 | 42 | 15 | 9 | 42 | 66 | 11 | 96 | 65 | 172 | 2 | 21 | 13 | 36 | 316 |
| 08:15 AM | 12 | 28 | 3 | 43 | 21 | 8 | 24 | 53 | 19 | 86 | 62 | 167 | 5 | 19 | 15 | 39 | 302 |
| 08:30 AM | 17 | 22 | 2 | 41 | 32 | 5 | 27 | 64 | 26 | 67 | 69 | 162 | 2 | 13 | 13 | 28 | 295 |
| 08:45 AM | 11 | 26 | 2 | 39 | 26 | 8 | 21 | 55 | 21 | 46 | 60 | 127 | 2 | 15 | 18 | 35 | 256 |
| Total | 58 | 99 | 8 | 165 | 94 | 30 | 114 | 238 | 77 | 295 | 256 | 628 | 11 | 68 | 59 | 138 | 1169 |
| Grand Total | 109 | 186 | 11 | 306 | 180 | 63 | 296 | 539 | 154 | 845 | 491 | 1490 | 39 | 124 | 122 | 285 | 2620 |
| Apprch \% | 35.6 | 60.8 | 3.6 |  | 33.4 | 11.7 | 54.9 |  | 10.3 | 56.7 | 33 |  | 13.7 | 43.5 | 42.8 |  |  |
| Total \% | 4.2 | 7.1 | 0.4 | 11.7 | 6.9 | 2.4 | 11.3 | 20.6 | 5.9 | 32.3 | 18.7 | 56.9 | 1.5 | 4.7 | 4.7 | 10.9 |  |
| Passenger Vehicles | 108 | 179 | 11 | 298 | 172 | 63 | 295 | 530 | 150 | 827 | 375 | 1352 | 34 | 119 | 121 | 274 | 2454 |
| \% Passenger Venicles | 99.1 | 96.2 | 100 | 97.4 | 95.6 | 100 | 99.7 | 98.3 | 97.4 | 97.9 | 76.4 | 90.7 | 87.2 | 96 | 99.2 | 96.1 | 93.7 |
| Large 2 Axle Venicles | 1 | 7 | 0 | 8 | 8 | 0 | 1 | 9 | 4 | 12 | 35 | 51 | 5 | 4 | 1 | 10 | 78 |
| \% Large 2 Axe Vevicices | 0.9 | 3.8 | 0 | 2.6 | 4.4 | 0 | 0.3 | 1.7 | 2.6 | 1.4 | 7.1 | 3.4 | 12.8 | 3.2 | 0.8 | 3.5 | 3 |
| 3 Axle Vehicles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 7 | 12 | 0 | 1 | 0 | 1 | 13 |
| $\% 3$ Axle Vehicles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 | 1.4 | 0.8 | 0 | 0.8 | 0 | 0.4 | 0.5 |
| 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 74 | 75 | 0 | 0 | 0 | 0 | 75 |
| \% 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 15.1 | 5 | 0 | 0 | 0 | 0 | 2.9 |



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| eak | 隹 | - |  | at | AM |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:15 AM | 13 | 14 | 1 | 28 | 24 | 4 | 39 | 67 | 20 | 131 | 52 | 203 | 11 | 12 | 22 | 45 | 343 |
| 07:30 AM | 16 | 23 | 1 | 40 | 23 | 8 | 45 | 76 | 17 | 155 | 61 | 233 | 6 | 16 | 13 | 35 | 384 |
| 07:45 AM | 12 | 35 | 0 | 47 | 23 | 13 | 64 | 100 | 28 | 122 | 70 | 220 | 7 | 17 | 18 | 42 | 409 |
| 08:00 AM | 18 | 23 | 1 | 42 | 15 | 9 | 42 | 66 | 11 | 96 | 65 | 172 | 2 | 21 | 13 | 36 | 316 |
| Total Volume | 59 | 95 | 3 | 157 | 85 | 34 | 190 | 309 | 76 | 504 | 248 | 828 | 26 | 66 | 66 | 158 | 1452 |
| \% App. Total | 37.6 | 60.5 | 1.9 |  | 27.5 | 11 | 61.5 |  | 9.2 | 60.9 | 30 |  | 16.5 | 41.8 | 41.8 |  |  |
| PHF | . 819 | . 679 | . 750 | . 835 | . 885 | . 654 | . 742 | . 773 | . 679 | . 813 | . 886 | . 888 | . 591 | . 786 | . 750 | . 878 | . 888 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:45 AM |  |  |  | 07:15 AM |  |  |  | 07:00 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 12 | 35 | 0 | 47 | 24 | 4 | 39 | 67 | 12 | 142 | 52 | 206 | 11 | 12 | 22 | 45 |
| +15 mins. | 18 | 23 | 1 | 42 | 23 | 8 | 45 | 76 | 20 | 131 | 52 | 203 | 6 | 16 | 13 | 35 |
| +30 mins. | 12 | 28 | 3 | 43 | 23 | 13 | 64 | 100 | 17 | 155 | 61 | 233 | 7 | 17 | 18 | 42 |
| +45 mins. | 17 | 22 | 2 | 41 | 15 | 9 | 42 | 66 | 28 | 122 | 70 | 220 | 2 | 21 | 13 | 36 |
| Total Volume | 59 | 108 | 6 | 173 | 85 | 34 | 190 | 309 | 77 | 550 | 235 | 862 | 26 | 66 | 66 | 158 |
| \% App. Total | 34.1 | 62.4 | 3.5 |  | 27.5 | 11 | 61.5 |  | 8.9 | 63.8 | 27.3 |  | 16.5 | 41.8 | 41.8 |  |
| PHF | . 819 | . 771 | . 500 | . 920 | . 885 | . 654 | . 742 | . 773 | . 688 | . 887 | . 839 | . 925 | . 591 | . 786 | . 750 | . 878 |

City of Riverside
File Name : 01_RIV_Sycamore_Fair Isle AM N/S: Sycamore Canyon Boulevard Site Code : 99921033
E/W: Fair Isle Drive
Start Date : 1/26/2021
Weather: Clear
Page No : 1

Groups Printed- Passenger Vehicles

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 10 | 15 | 1 | 26 | 16 | 8 | 34 | 58 | 12 | 141 | 43 | 196 | 4 | 11 | 10 | 25 | 305 |
| 07:15 AM | 13 | 13 | 1 | 27 | 21 | 4 | 39 | 64 | 20 | 130 | 44 | 194 | 9 | 12 | 22 | 43 | 328 |
| 07:30 AM | 16 | 22 | 1 | 39 | 22 | 8 | 45 | 75 | 17 | 152 | 48 | 217 | 6 | 16 | 13 | 35 | 366 |
| 07:45 AM | 12 | 34 | 0 | 46 | 23 | 13 | 63 | 99 | 27 | 117 | 52 | 196 | 7 | 14 | 18 | 39 | 380 |
| Total | 51 | 84 | 3 | 138 | 82 | 33 | 181 | 296 | 76 | 540 | 187 | 803 | 26 | 53 | 63 | 142 | 1379 |
| 08:00 AM | 18 | 23 | 1 | 42 | 14 | 9 | 42 | 65 | 11 | 96 | 53 | 160 | 1 | 21 | 13 | 35 | 302 |
| 08:15 AM | 11 | 25 | 3 | 39 | 21 | 8 | 24 | 53 | 18 | 81 | 43 | 142 | 5 | 18 | 14 | 37 | 271 |
| 08:30 AM | 17 | 22 | 2 | 41 | 30 | 5 | 27 | 62 | 25 | 65 | 52 | 142 | 1 | 13 | 13 | 27 | 272 |
| 08:45 AM | 11 | 25 | 2 | 38 | 25 | 8 | 21 | 54 | 20 | 45 | 40 | 105 | 1 | 14 | 18 | 33 | 230 |
| Total | 57 | 95 | 8 | 160 | 90 | 30 | 114 | 234 | 74 | 287 | 188 | 549 | 8 | 66 | 58 | 132 | 1075 |
| Grand Total | 108 | 179 | 11 | 298 | 172 | 63 | 295 | 530 | 150 | 827 | 375 | 1352 | 34 | 119 | 121 | 274 | 2454 |
| Apprch \% | 36.2 | 60.1 | 3.7 |  | 32.5 | 11.9 | 55.7 |  | 11.1 | 61.2 | 27.7 |  | 12.4 | 43.4 | 44.2 |  |  |
| Total \% | 4.4 | 7.3 | 0.4 | 12.1 | 7 | 2.6 | 12 | 21.6 | 6.1 | 33.7 | 15.3 | 55.1 | 1.4 | 4.8 | 4.9 | 11.2 |  |



City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 13 | 13 | 1 | 27 | 21 | 4 | 39 | 64 | 20 | 130 | 44 | 194 | 9 | 12 | 22 | 43 |
| +15 mins. | 16 | 22 | 1 | 39 | 22 | 8 | 45 | 75 | 17 | 152 | 48 | 217 | 6 | 16 | 13 | 35 |
| +30 mins. | 12 | 34 | 0 | 46 | 23 | 13 | 63 | 99 | 27 | 117 | 52 | 196 | 7 | 14 | 18 | 39 |
| +45 mins. | 18 | 23 | 1 | 42 | 14 | 9 | 42 | 65 | 11 | 96 | 53 | 160 | 1 | 21 | 13 | 35 |
| Total Volume | 59 | 92 | 3 | 154 | 80 | 34 | 189 | 303 | 75 | 495 | 197 | 767 | 23 | 63 | 66 | 152 |
| \% App. Total | 38.3 | 59.7 | 1.9 |  | 26.4 | 11.2 | 62.4 |  | 9.8 | 64.5 | 25.7 |  | 15.1 | 41.4 | 43.4 |  |
| PHF | . 819 | . 676 | 750 | . 837 | . 870 | . 654 | . 750 | . 765 | . 694 | . 814 | . 929 | . 884 | . 639 | . 750 | . 750 | . 884 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 3 |
| 07:15 AM | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 3 | 0 | 1 | 2 | 3 | 2 | 0 | 0 | 2 | 9 |
| 07:30 AM | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 10 | 12 | 0 | 0 | 0 | 0 | 14 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 6 | 10 | 0 | 3 | 0 | 3 | 15 |
| Total | 0 | 3 | 0 | 3 | 4 | 0 | 1 | 5 | 1 | 7 | 20 | 28 | 2 | 3 | 0 | 5 | 41 |


| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 5 | 5 | 1 | 0 | 0 | 1 | 7 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 4 | 3 | 8 | 0 | 1 | 1 | 2 | 14 |
| 08:30 AM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 1 | 2 | 4 | 1 | 0 | 0 | 1 | 7 |
| 08:45 AM | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 5 | 6 | 1 | 0 | 0 | 1 | 9 |
| Total | 1 | 4 | 0 | 5 | 4 | 0 | 0 | 4 | 3 | 5 | 15 | 23 | 3 | 1 | 1 | 5 | 37 |
| Grand Total | 1 | 7 | 0 | 8 | 8 | 0 | 1 | 9 | 4 | 12 | 35 | 51 | 5 | 4 | 1 | 10 | 78 |
| Apprch \% | 12.5 | 87.5 | 0 |  | 88.9 | 0 | 11.1 |  | 7.8 | 23.5 | 68.6 |  | 50 | 40 | 10 |  |  |
| Total \% | 1.3 | 9 | 0 | 10.3 | 10.3 | 0 | 1.3 | 11.5 | 5.1 | 15.4 | 44.9 | 65.4 | 6.4 | 5.1 | 1.3 | 12.8 |  |


|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. To | Left | Thru | Right | App. Total | Left | Thru | Right | App. | T |

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| Peak Hour | tire |  |  |  | 5 AM |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:15 AM | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 3 | 0 | 1 | 2 | 3 | 2 | 0 | 0 | 2 | 9 |
| 07:30 AM | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 10 | 12 | 0 | 0 | 0 | 0 | 14 |
| 07:45 AM | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 6 | 10 | 0 | 3 | 0 | 3 | 15 |
| 08:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 5 | 5 | 1 | 0 | 0 | 1 | 7 |
| Total Volume | 0 | 3 | 0 | 3 | 5 | 0 | 1 | 6 | 1 | 6 | 23 | 30 | 3 | 3 | 0 | 6 | 45 |
| \% App. Total | 0 | 100 | 0 |  | 83.3 | 0 | 16.7 |  | 3.3 | 20 | 76.7 |  | 50 | 50 | 0 |  |  |
| PHF | . 000 | . 750 | . 000 | . 750 | . 417 | 000 | . 250 | . 500 | . 250 | . 500 | . 575 | . 625 | . 375 | . 250 | . 000 | . 500 | . 750 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 3 | 0 | 1 | 2 | 3 | 2 | 0 | 0 | 2 |
| +15 mins. | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 10 | 12 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 6 | 10 | 0 | 3 | 0 | 3 |
| +45 mins. | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 5 | 5 | 1 | 0 | 0 | 1 |
| Total Volume | 0 | 3 | 0 | 3 | 5 | 0 | 1 | 6 | 1 | 6 | 23 | 30 | 3 | 3 | 0 | 6 |
| \% App. Total | 0 | 100 | 0 |  | 83.3 | 0 | 16.7 |  | 3.3 | 20 | 76.7 |  | 50 | 50 | 0 |  |
| PHF | 000 | . 750 | . 000 | 750 | . 417 | 000 | . 250 | . 500 | . 250 | . 500 | . 575 | .625 | . 375 | 250 | 000 | . 500 |

City of Riverside
File Name : 01_RIV_Sycamore_Fair Isle AM
N/S: Sycamore Canyon Boulevard
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 5 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 1 | 0 | 1 | 5 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 7 | 0 | 1 | 0 | 1 | 8 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 7 | 12 | 0 | 1 | 0 | 1 | 13 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 41.7 | 58.3 |  | 0 | 100 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38.5 | 53.8 | 92.3 | 0 | 7.7 | 0 | 7.7 |  |


|  |  | Sycamo Boul Sou | Can evard bound |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | t Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 3 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 4 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 75 | 25 |  | 0 | 0 | 0 |  |  |
| PHF | . 000 | 000 | 000 | . 000 | . 000 | . 000 | 000 | . 000 | . 000 | 375 | 250 | . 333 | . 000 | . 000 | 000 | . 000 | . 333 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : $99 \overline{9} 210 \overline{3} 3$
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| +0 mins. | 07:15 AM | 0 | 0 | 0 | 0 | $07: 15$ AM | 0 | 0 | 0 | 0 | $07: 15$ AM | 0 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 75 | 25 |  | 0 | 0 | 0 |  |
| PHF | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .375 | .250 | .333 | .000 | .000 | .000 | .000 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date: 1/26/2021
Page No :1

Groups Printed-4+ Axle Trucks

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 6 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 6 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 11 | 0 | 0 | 0 | 0 | 11 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 26 | 0 | 0 | 0 | 0 | 26 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 7 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 16 | 0 | 0 | 0 | 0 | 16 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13 | 14 | 0 | 0 | 0 | 0 | 14 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 12 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 48 | 49 | 0 | 0 | 0 | 0 | 49 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 74 | 75 | 0 | 0 | 0 | 0 | 75 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 1.3 | 98.7 |  | 0 | 0 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.3 | 98.7 | 100 | 0 | 0 | 0 | 0 |  |


|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total |  |

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| ak Hour | ire | ersec |  | at 0 | 5 AM |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 6 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 11 | 0 | 0 | 0 | 0 | 11 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 0 | 7 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 27 | 0 | 0 | 0 | 0 | 27 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 100 |  | 0 | 0 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 614 | . 614 | . 000 | . 000 | . 000 | . 000 | . 614 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 11 | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 27 | 0 | 0 | 0 | 0 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 100 |  | 0 | 0 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | 000 | . 000 | . 000 | . 000 | . 000 | . 614 | . 614 | . 000 | . 000 | . 000 | . 000 |

City of Riverside
File Name : 01_RIV_Sycamore_Fair Isle PM
N/S: Sycamore Canyon Boulevard
Site Code : 99921033
E/W: Fair Isle Drive
Start Date : 1/26/2021
Weather: Clear
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 49 | 75 | 2 | 126 | 21 | 14 | 31 | 66 | 22 | 119 | 125 | 266 | 4 | 16 | 21 | 41 | 499 |
| 04:15 PM | 74 | 81 | 4 | 159 | 22 | 18 | 29 | 69 | 53 | 82 | 122 | 257 | 3 | 17 | 19 | 39 | 524 |
| 04:30 PM | 77 | 68 | 5 | 150 | 20 | 25 | 37 | 82 | 37 | 93 | 143 | 273 | 4 | 19 | 20 | 43 | 548 |
| 04:45 PM | 73 | 88 | 7 | 168 | 24 | 21 | 18 | 63 | 36 | 71 | 113 | 220 | 1 | 16 | 25 | 42 | 493 |
| Total | 273 | 312 | 18 | 603 | 87 | 78 | 115 | 280 | 148 | 365 | 503 | 1016 | 12 | 68 | 85 | 165 | 2064 |
| 05:00 PM | 101 | 99 | 10 | 210 | 24 | 18 | 26 | 68 | 31 | 74 | 121 | 226 | 2 | 25 | 19 | 46 | 550 |
| 05:15 PM | 96 | 100 | 10 | 206 | 25 | 22 | 31 | 78 | 27 | 76 | 116 | 219 | 4 | 34 | 28 | 66 | 569 |
| 05:30 PM | 91 | 110 | 6 | 207 | 26 | 25 | 23 | 74 | 28 | 87 | 127 | 242 | 3 | 23 | 23 | 49 | 572 |
| 05:45 PM | 92 | 86 | 5 | 183 | 26 | 25 | 27 | 78 | 25 | 48 | 119 | 192 | 2 | 15 | 28 | 45 | 498 |
| Total | 380 | 395 | 31 | 806 | 101 | 90 | 107 | 298 | 111 | 285 | 483 | 879 | 11 | 97 | 98 | 206 | 2189 |
| Grand Total | 653 | 707 | 49 | 1409 | 188 | 168 | 222 | 578 | 259 | 650 | 986 | 1895 | 23 | 165 | 183 | 371 | 4253 |
| Apprch \% | 46.3 | 50.2 | 3.5 |  | 32.5 | 29.1 | 38.4 |  | 13.7 | 34.3 | 52 |  | 6.2 | 44.5 | 49.3 |  |  |
| Total \% | 15.4 | 16.6 | 1.2 | 33.1 | 4.4 | 4 | 5.2 | 13.6 | 6.1 | 15.3 | 23.2 | 44.6 | 0.5 | 3.9 | 4.3 | 8.7 |  |
| Passenger Vehicles | 652 | 693 | 49 | 1394 | 178 | 168 | 222 | 568 | 258 | 636 | 895 | 1789 | 15 | 158 | 181 | 354 | 4105 |
| \% Passenger Vehicles | 99.8 | 98 | 100 | 98.9 | 94.7 | 100 | 100 | 98.3 | 99.6 | 97.8 | 90.8 | 94.4 | 65.2 | 95.8 | 98.9 | 95.4 | 96.5 |
| Large 2 Axie Velicles | 1 | 13 | 0 | 14 | 10 | 0 | 0 | 10 | 1 | 10 | 23 | 34 | 8 | 7 | 2 | 17 | 75 |
| \% Large 2 axte Venicies | 0.2 | 1.8 | 0 | 1 | 5.3 | 0 | 0 | 1.7 | 0.4 | 1.5 | 2.3 | 1.8 | 34.8 | 4.2 | 1.1 | 4.6 | 1.8 |
| 3 Axle Vehicles | 0 | 1 | 0 | , | 0 | 0 | 0 | 0 | 0 | 4 | 12 | 16 | 0 | 0 | 0 | 0 | 17 |
| $\% 3$ Axle Vehicles | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.6 | 1.2 | 0.8 | 0 | 0 | 0 | 0 | 0.4 |
| 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 56 | 0 | 0 | 0 | 0 | 56 |
| \% 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.7 | 3 | 0 | 0 | 0 | 0 | 1.3 |



|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

| Peak Hour for | 101 | - |  | at | - |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:00 PM | 101 | 99 | 10 | 210 | 24 | 18 | 26 | 68 | 31 | 74 | 121 | 226 | 2 | 25 | 19 | 46 | 550 |
| 05:15 PM | 96 | 100 | 10 | 206 | 25 | 22 | 31 | 78 | 27 | 76 | 116 | 219 | 4 | 34 | 28 | 66 | 569 |
| 05:30 PM | 91 | 110 | 6 | 207 | 26 | 25 | 23 | 74 | 28 | 87 | 127 | 242 | 3 | 23 | 23 | 49 | 572 |
| 05:45 PM | 92 | 86 | 5 | 183 | 26 | 25 | 27 | 78 | 25 | 48 | 119 | 192 | 2 | 15 | 28 | 45 | 498 |
| Total Volume | 380 | 395 | 31 | 806 | 101 | 90 | 107 | 298 | 111 | 285 | 483 | 879 | 11 | 97 | 98 | 206 | 2189 |
| \% App. Total | 47.1 | 49 | 3.8 |  | 33.9 | 30.2 | 35.9 |  | 12.6 | 32.4 | 54.9 |  | 5.3 | 47.1 | 47.6 |  |  |
| PHF | . 941 | . 898 | . 775 | . 960 | . 971 | . 900 | . 863 | . 955 | . 895 | . 819 | . 951 | . 908 | . 688 | . 713 | . 875 | . 780 | . 957 |

Counts Unlimited, Inc. PO Box 1178
Corona, CA 92878
(951)268-6268

City of Riverside
N/S: Sycamore Canyon Boulevard
File Name : 01_RIV_Sycamore_Fair Isle PM
E/W: Fair Isle Drive
Site Code : 99921033
Weather: Clear
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 04:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 101 | 99 | 10 | 210 | 24 | 18 | 26 | 68 | 22 | 119 | 125 | 266 | 2 | 25 | 19 | 46 |
| +15 mins. | 96 | 100 | 10 | 206 | 25 | 22 | 31 | 78 | 53 | 82 | 122 | 257 | 4 | 34 | 28 | 66 |
| +30 mins. | 91 | 110 | 6 | 207 | 26 | 25 | 23 | 74 | 37 | 93 | 143 | 273 | 3 | 23 | 23 | 49 |
| +45 mins. | 92 | 86 | 5 | 183 | 26 | 25 | 27 | 78 | 36 | 71 | 113 | 220 | 2 | 15 | 28 | 45 |
| Total Volume | 380 | 395 | 31 | 806 | 101 | 90 | 107 | 298 | 148 | 365 | 503 | 1016 | 11 | 97 | 98 | 206 |
| \% App. Total | 47.1 | 49 | 3.8 |  | 33.9 | 30.2 | 35.9 |  | 14.6 | 35.9 | 49.5 |  | 5.3 | 47.1 | 47.6 |  |
| PHF | . 941 | . 898 | . 775 | . 960 | . 971 | . 900 | . 863 | . 955 | . 698 | . 767 | . 879 | . 930 | . 688 | . 713 | . 875 | . 780 |

City of Riverside
File Name : 01_RIV_Sycamore_Fair Isle PM N/S: Sycamore Canyon Boulevard Site Code : 99921033
E/W: Fair Isle Drive
Start Date : 1/26/2021
Weather: Clear
Page No : 1

Groups Printed- Passenger Vehicles

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 49 | 74 | 2 | 125 | 20 | 14 | 31 | 65 | 22 | 119 | 113 | 254 | 3 | 16 | 20 | 39 | 483 |
| 04:15 PM | 74 | 80 | 4 | 158 | 20 | 18 | 29 | 67 | 53 | 78 | 104 | 235 | 2 | 16 | 19 | 37 | 497 |
| 04:30 PM | 77 | 67 | 5 | 149 | 18 | 25 | 37 | 80 | 36 | 93 | 132 | 261 | 3 | 18 | 20 | 41 | 531 |
| 04:45 PM | 73 | 86 | 7 | 166 | 23 | 21 | 18 | 62 | 36 | 68 | 102 | 206 | 0 | 15 | 24 | 39 | 473 |
| Total | 273 | 307 | 18 | 598 | 81 | 78 | 115 | 274 | 147 | 358 | 451 | 956 | 8 | 65 | 83 | 156 | 1984 |
| 05:00 PM | 101 | 96 | 10 | 207 | 23 | 18 | 26 | 67 | 31 | 72 | 108 | 211 | 1 | 23 | 19 | 43 | 528 |
| 05:15 PM | 96 | 99 | 10 | 205 | 24 | 22 | 31 | 77 | 27 | 76 | 105 | 208 | 3 | 34 | 28 | 65 | 555 |
| 05:30 PM | 90 | 108 | 6 | 204 | 25 | 25 | 23 | 73 | 28 | 83 | 121 | 232 | 2 | 22 | 23 | 47 | 556 |
| 05:45 PM | 92 | 83 | 5 | 180 | 25 | 25 | 27 | 77 | 25 | 47 | 110 | 182 | 1 | 14 | 28 | 43 | 482 |
| Total | 379 | 386 | 31 | 796 | 97 | 90 | 107 | 294 | 111 | 278 | 444 | 833 | 7 | 93 | 98 | 198 | 2121 |
| Grand Total | 652 | 693 | 49 | 1394 | 178 | 168 | 222 | 568 | 258 | 636 | 895 | 1789 | 15 | 158 | 181 | 354 | 4105 |
| Apprch \% | 46.8 | 49.7 | 3.5 |  | 31.3 | 29.6 | 39.1 |  | 14.4 | 35.6 | 50 |  | 4.2 | 44.6 | 51.1 |  |  |
| Total \% | 15.9 | 16.9 | 1.2 | 34 | 4.3 | 4.1 | 5.4 | 13.8 | 6.3 | 15.5 | 21.8 | 43.6 | 0.4 | 3.8 | 4.4 | 8.6 |  |



City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 101 | 96 | 10 | 207 | 23 | 18 | 26 | 67 | 31 | 72 | 108 | 211 | 1 | 23 | 19 | 43 |
| +15 mins. | 96 | 99 | 10 | 205 | 24 | 22 | 31 | 77 | 27 | 76 | 105 | 208 | 3 | 34 | 28 | 65 |
| +30 mins. | 90 | 108 | 6 | 204 | 25 | 25 | 23 | 73 | 28 | 83 | 121 | 232 | 2 | 22 | 23 | 47 |
| +45 mins. | 92 | 83 | 5 | 180 | 25 | 25 | 27 | 77 | 25 | 47 | 110 | 182 | 1 | 14 | 28 | 43 |
| Total Volume | 379 | 386 | 31 | 796 | 97 | 90 | 107 | 294 | 111 | 278 | 444 | 833 | 7 | 93 | 98 | 198 |
| \% App. Total | 47.6 | 48.5 | 3.9 |  | 33 | 30.6 | 36.4 |  | 13.3 | 33.4 | 53.3 |  | 3.5 | 47 | 49.5 |  |
| PHF | . 938 | . 894 | . 775 | . 961 | . 970 | . 900 | . 863 | . 955 | . 895 | . 837 | . 917 | . 898 | . 583 | 684 | . 875 | . 762 |

City of Riverside N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 4 | , | 0 | 1 | 2 | 8 |
| 04:15 PM | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 2 | 4 | 6 | 1 | 1 | 0 | 2 | 11 |
| 04:30 PM | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 | 5 | 6 | 1 | 1 | 0 | 2 | 11 |
| 04:45 PM | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 2 | 3 | 5 | 1 | 1 | 1 | 3 | 11 |
| Total | 0 | 5 | 0 | 5 | 6 | 0 | 0 | 6 | 1 | 4 | 16 | 21 | 4 | 3 | 2 | 9 | 41 |


| 05:00 PM | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 3 | 4 | 1 | 2 | 0 | 3 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 3 | 1 | 0 | 0 | 1 | 6 |
| 05:30 PM | 1 | 2 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 4 | 1 | 5 | 1 | 1 | 0 | 2 | 11 |
| 05:45 PM | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 7 |
| Total | 1 | 8 | 0 | 9 | 4 | 0 | 0 | 4 | 0 | 6 | 7 | 13 | 4 | 4 | 0 | 8 | 34 |
| Grand Total | 1 | 13 | 0 | 14 | 10 | 0 | 0 | 10 | 1 | 10 | 23 | 34 | 8 | 7 | 2 | 17 | 75 |
| Apprch \% | 7.1 | 92.9 | 0 |  | 100 | 0 | 0 |  | 2.9 | 29.4 | 67.6 |  | 47.1 | 41.2 | 11.8 |  |  |
| Total \% | 1.3 | 17.3 | 0 | 18.7 | 13.3 | 0 | 0 | 13.3 | 1.3 | 13.3 | 30.7 | 45.3 | 10.7 | 9.3 | 2.7 | 22.7 |  |


|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. To | Left | Thru | Right | App. Total | Left | Thru | Right | App. | T |

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

| ak Hour for | re |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:00 PM | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 3 | 4 | 1 | 2 | 0 | 3 | 10 |
| 05:15 PM | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 3 | 1 | 0 | 0 | 1 | 6 |
| 05:30 PM | 1 | 2 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 4 | 1 | 5 | 1 | 1 | 0 | 2 | 11 |
| 05:45 PM | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 7 |
| Total Volume | 1 | 8 | 0 | 9 | 4 | 0 | 0 | 4 | 0 | 6 | 7 | 13 | 4 | 4 | 0 | 8 | 34 |
| \% App. Total | 11.1 | 88.9 | 0 |  | 100 | 0 | 0 |  | 0 | 46.2 | 53.8 |  | 50 | 50 | 0 |  |  |
| PHF | . 250 | . 667 | . 000 | . 750 | 1.00 | . 000 | . 000 | 1.00 | . 000 | . 375 | . 583 | . 650 | 1.00 | . 500 | . 000 | . 667 | . 773 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 3 | 4 | 1 | 2 | 0 | 3 |
| +15 mins. | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 3 | 1 | 0 | 0 | 1 |
| +30 mins. | 1 | 2 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 4 | 1 | 5 | 1 | 1 | 0 | 2 |
| +45 mins. | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 |
| Total Volume | 1 | 8 | 0 | 9 | 4 | 0 | 0 | 4 | 0 | 6 | 7 | 13 | 4 | 4 | 0 | 8 |
| \% App. Total | 11.1 | 88.9 | 0 |  | 100 | 0 | 0 |  | 0 | 46.2 | 53.8 |  | 50 | 50 | 0 |  |
| PHF | . 250 | . 667 | . 000 | . 750 | 1.000 | . 000 | . 000 | 1.000 | . 000 | . 375 | . 583 | . 650 | 1.000 | . 500 | . 000 | . 667 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 4 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 9 | 12 | 0 | 0 | 0 | 0 | 12 |


| 05:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 5 |
| Grand Total | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 12 | 16 | 0 | 0 | 0 | 0 | 17 |
| Apprch \% | 0 | 100 | 0 |  | 0 | 0 | 0 |  | 0 | 25 | 75 |  | 0 | 0 | 0 |  |  |
| Total \% | 0 | 5.9 | 0 | 5.9 | 0 | 0 | 0 | 0 | 0 | 23.5 | 70.6 | 94.1 | 0 | 0 | 0 | 0 |  |



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

| eak Hour for |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:00 PM | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total Volume | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 5 |
| \% App. Total | 0 | 100 | 0 |  | 0 | 0 | 0 |  | 0 | 25 | 75 |  | 0 | 0 | 0 |  |  |
| PHF | . 000 | . 250 | . 000 | . 250 | . 000 | . 000 | . 000 | . 000 | . 000 | . 250 | . 375 | . 500 | . 000 | . 000 | . 000 | . 000 | . 625 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 |
| \% App. Total | 0 | 100 | 0 |  | 0 | 0 | 0 |  | 0 | 25 | 75 |  | 0 | 0 | 0 |  |
| PHF | . 000 | . 250 | . 000 | . 250 | . 000 | . 000 | . 000 | . 000 | . 000 | . 250 | . 375 | . 500 | . 000 | . 000 | . 000 | . 000 |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed-4+ Axle Trucks

|  | Sycamore Canyon Boulevard Southbound |  |  |  | Fair Isle Drive Westbound |  |  |  | Sycamore Canyon Boulevard Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 6 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 12 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 3 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 6 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 27 | 0 | 0 | 0 | 0 | 27 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 0 | 0 | 0 | 10 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 | 6 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 5 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 0 | 8 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 29 | 0 | 0 | 0 | 0 | 29 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 56 | 0 | 0 | 0 | 0 | 56 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 100 |  | 0 | 0 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 0 | 0 |  |

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 29 | 0 | 0 | 0 | 0 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 100 |  | 0 | 0 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 725 | . 725 | . 000 | . 000 | . 000 | . 000 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 49 | 114 | 163 | 9 | 0 | 0 | 9 | 53 | 27 | 0 | 80 | 252 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 54 | 116 | 170 | 11 | 1 | 1 | 13 | 47 | 21 | 0 | 68 | 251 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 59 | 123 | 182 | 16 | 1 | 1 | 18 | 59 | 32 | 0 | 91 | 291 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 88 | 126 | 214 | 21 | 0 | 0 | 21 | 57 | 39 | 0 | 96 | 331 |
| Total | 0 | 0 | 0 | 0 | 0 | 250 | 479 | 729 | 57 | 2 | 2 | 61 | 216 | 119 | 0 | 335 | 1125 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 59 | 92 | 151 | 11 | 2 | 1 | 14 | 48 | 56 | 0 | 104 | 269 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 46 | 75 | 121 | 8 | 0 | 1 | 9 | 45 | 38 | 0 | 83 | 213 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 47 | 96 | 143 | 15 | 0 | 0 | 15 | 59 | 39 | 0 | 98 | 256 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 36 | 67 | 103 | 17 | 1 | 1 | 19 | 55 | 28 | 0 | 83 | 205 |
| Total | 0 | 0 | 0 | 0 | 0 | 188 | 330 | 518 | 51 | 3 | 3 | 57 | 207 | 161 | 0 | 368 | 943 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 438 | 809 | 1247 | 108 | 5 | 5 | 118 | 423 | 280 | 0 | 703 | 2068 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 35.1 | 64.9 |  | 91.5 | 4.2 | 4.2 |  | 60.2 | 39.8 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 21.2 | 39.1 | 60.3 | 5.2 | 0.2 | 0.2 | 5.7 | 20.5 | 13.5 | 0 | 34 |  |
| Passenger Vehicles | 0 | 0 | 0 | 0 | 0 | 417 | 801 | 1218 | 107 | 5 | 5 | 117 | 304 | 273 | 0 | 577 | 1912 |
| \% Passenger Vehicles | 0 | 0 | 0 | 0 | 0 | 95.2 | 99 | 97.7 | 99.1 | 100 | 100 | 99.2 | 71.9 | 97.5 | 0 | 82.1 | 92.5 |
| Large 2 Axle Vehicles | 0 | 0 | 0 | 0 | 0 | 6 | 7 | 13 | 1 | 0 | 0 | 1 | 31 | 6 | 0 | 37 | 51 |
| \% Large 2 AxeV Venicles | 0 | 0 | 0 | 0 | 0 | 1.4 | 0.9 | 1 | 0.9 | 0 | 0 | 0.8 | 7.3 | 2.1 | 0 | 5.3 | 2.5 |
| 3 Axle Vehicles | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 16 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 9 | 25 |
| $\% 3$ Axle Vehicles | 0 | 0 | 0 | 0 | 0 | 3.4 | 0.1 | 1.3 | 0 | 0 | 0 | 0 | 1.9 | 0.4 | 0 | 1.3 | 1.2 |
| 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 0 | 0 | 80 | 80 |
| \% 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18.9 | 0 | 0 | 11.4 | 3.9 |


|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Peak Hour for Entire Intersection Begins at 07:15 AM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 54 | 116 | 170 | 11 | , | 1 | 13 | 47 | 21 | 0 | 68 | 251 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 59 | 123 | 182 | 16 | 1 | 1 | 18 | 59 | 32 | 0 | 91 | 291 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 88 | 126 | 214 | 21 | 0 | 0 | 21 | 57 | 39 | 0 | 96 | 331 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 59 | 92 | 151 | 11 | 2 | 1 | 14 | 48 | 56 | 0 | 104 | 269 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 260 | 457 | 717 | 59 | 4 | 3 | 66 | 211 | 148 | 0 | 359 | 1142 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 36.3 | 63.7 |  | 89.4 | 6.1 | 4.5 |  | 58.8 | 41.2 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 739 | . 907 | 838 | . 702 | . 500 | 750 | . 786 | . 894 | . 661 | . 000 | . 863 | . 863 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:00 AM |  |  |  | 07:00 AM |  |  |  | 07:15 AM |  |  |  | 07:45 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 49 | 114 | 163 | 11 | 1 | 1 | 13 | 57 | 39 | 0 | 96 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 54 | 116 | 170 | 16 | 1 | 1 | 18 | 48 | 56 | 0 | 104 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 59 | 123 | 182 | 21 | 0 | 0 | 21 | 45 | 38 | 0 | 83 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 88 | 126 | 214 | 11 | 2 | 1 | 14 | 59 | 39 | 0 | 98 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 250 | 479 | 729 | 59 | 4 | 3 | 66 | 209 | 172 | 0 | 381 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 34.3 | 65.7 |  | 89.4 | 6.1 | 4.5 |  | 54.9 | 45.1 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 710 | . 950 | . 852 | . 702 | . 500 | . 750 | . 786 | . 886 | . 768 | . 000 | . 916 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 47 | 111 | 158 | 9 | 0 | 0 | 9 | 41 | 27 | 0 | 68 | 235 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 53 | 114 | 167 | 11 | 1 | 1 | 13 | 39 | 21 | 0 | 60 | 240 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 59 | 123 | 182 | 15 | 1 | 1 | 17 | 46 | 31 | 0 | 77 | 276 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 77 | 124 | 201 | 21 | 0 | 0 | 21 | 39 | 37 | 0 | 76 | 298 |
| Total | 0 | 0 | 0 | 0 | 0 | 236 | 472 | 708 | 56 | 2 | 2 | 60 | 165 | 116 | 0 | 281 | 1049 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 55 | 92 | 147 | 11 | 2 | 1 | 14 | 35 | 56 | 0 | 91 | 252 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 46 | 75 | 121 | 8 | 0 | 1 | 9 | 29 | 36 | 0 | 65 | 195 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 45 | 96 | 141 | 15 | 0 | 0 | 15 | 42 | 38 | 0 | 80 | 236 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 35 | 66 | 101 | 17 | 1 | 1 | 19 | 33 | 27 | 0 | 60 | 180 |
| Total | 0 | 0 | 0 | 0 | 0 | 181 | 329 | 510 | 51 | 3 | 3 | 57 | 139 | 157 | 0 | 296 | 863 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 417 | 801 | 1218 | 107 | 5 | 5 | 117 | 304 | 273 | 0 | 577 | 1912 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 34.2 | 65.8 |  | 91.5 | 4.3 | 4.3 |  | 52.7 | 47.3 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 21.8 | 41.9 | 63.7 | 5.6 | 0.3 | 0.3 | 6.1 | 15.9 | 14.3 | 0 | 30.2 |  |


|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Peak Hour for Entire Intersection Begins at 07:15 AM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 53 | 114 | 167 | 11 | 1 | 1 | 13 | 39 | 21 | 0 | 60 | 240 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 59 | 123 | 182 | 15 | 1 | 1 | 17 | 46 | 31 | 0 | 77 | 276 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 77 | 124 | 201 | 21 | 0 | 0 | 21 | 39 | 37 | 0 | 76 | 298 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 55 | 92 | 147 | 11 | 2 | 1 | 14 | 35 | 56 | 0 | 91 | 252 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 244 | 453 | 697 | 58 | 4 | 3 | 65 | 159 | 145 | 0 | 304 | 1066 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 35 | 65 |  | 89.2 | 6.2 | 4.6 |  | 52.3 | 47.7 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 792 | . 913 | . 867 | . 690 | . 500 | 750 | . 774 | . 864 | . 647 | 000 | 835 | 89 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 53 | 114 | 167 | 11 | 1 | 1 | 13 | 39 | 21 | 0 | 60 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 59 | 123 | 182 | 15 | 1 | 1 | 17 | 46 | 31 | 0 | 77 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 77 | 124 | 201 | 21 | 0 | 0 | 21 | 39 | 37 | 0 | 76 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 55 | 92 | 147 | 11 | 2 | 1 | 14 | 35 | 56 | 0 | 91 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 244 | 453 | 697 | 58 | 4 | 3 | 65 | 159 | 145 | 0 | 304 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 35 | 65 |  | 89.2 | 6.2 | 4.6 |  | 52.3 | 47.7 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 792 | . 913 | . 867 | . 690 | . 500 | . 750 | . 774 | . 864 | . 647 | . 000 | . 835 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 5 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 6 | 1 | 0 | 7 | 8 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 7 | 8 |
| Total | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 8 | 1 | 0 | 0 | 1 | 13 | 3 | 0 | 16 | 25 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 8 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $08: 15 \mathrm{AM}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 4 |
| $08: 30 \mathrm{AM}$ | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 4 |
| $08: 45 \mathrm{AM}$ | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 8 | 10 |
| Total | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 18 | 3 | 0 | 21 | 26 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 6 | 7 | 13 | 1 | 0 | 0 | 1 | 31 | 6 | 0 | 37 | 51 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 46.2 | 53.8 |  | 100 | 0 | 0 |  | 83.8 | 16.2 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 11.8 | 13.7 | 25.5 | 2 | 0 | 0 | 2 | 60.8 | 11.8 | 0 | 72.5 |  |



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| Peak Hour for |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 6 | 1 | 0 | 7 | 8 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 7 | 8 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 8 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 5 | 1 | 0 | 0 | 1 | 19 | 3 | 0 | 22 | 28 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 40 | 60 |  | 100 | 0 | 0 |  | 86.4 | 13.6 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 500 | . 375 | . 417 | . 250 | 000 | . 000 | . 250 | . 679 | . 375 | . 000 | . 786 | . 875 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 6 | 1 | 0 | 7 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 7 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 5 | 1 | 0 | 0 | 1 | 19 | 3 | 0 | 22 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 40 | 60 |  | 100 | 0 | 0 |  | 86.4 | 13.6 | 0 |  |
| PHF | 000 | 000 | . 000 | . 000 | . 000 | 500 | 375 | . 417 | . 250 | 0 | 00 | . 250 | . 679 | . 375 | 000 | 786 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 3 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 12 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 15 |
| Total | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 13 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 18 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 7 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 16 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 9 | 25 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 93.8 | 6.2 |  | 0 | 0 | 0 |  | 88.9 | 11.1 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 60 | 4 | 64 | 0 | 0 | 0 | 0 | 32 | 4 | 0 | 36 |  |



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| eak Hour for |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 12 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 15 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 14 | 1 | 15 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 18 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 93.3 | 6.7 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 318 | . 250 | . 313 | . 000 | . 000 | . 000 | . 000 | . 250 | . 000 | . 000 | . 250 | . 300 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 12 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 14 | 1 | 15 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 93.3 | 6.7 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 318 | . 250 | . 313 | . 000 | . 000 | . 000 | . 000 | . 250 | . 000 | . 000 | . 250 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed-4+ Axle Trucks

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 9 | 9 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 7 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 7 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 0 | 33 | 33 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 6 |
| ---: | ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | ---: | ---: | ---: | ---: | ---: |
| $08: 15 \mathrm{AM}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 14 | 14 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 15 |
| $08: 45 \mathrm{AM}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 12 | 12 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 0 | 0 | 47 | 47 |


| Grand Total |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ---: | ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | ---: | ---: | ---: | ---: |
| Apprch $\%$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80 | 0 | 0 | 80 |
| Total $\%$ | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 100 |  |


|  | $1-21$ | orthb South | and | Ramp |  | $\begin{array}{r} \text { Box Sp } \\ \text { We } \end{array}$ | $\begin{aligned} & \text { gs Ro } \\ & \text { ound } \end{aligned}$ |  | I-21 | $\begin{aligned} & \text { lorth } \\ & \text { NoI } \end{aligned}$ | $\text { ind } \mathrm{O}$ ound | Ramp | Fair Isle Drive Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Tot | Left | Thru | Right | App. T | Left | Thru | Right | App. To | Left | Thru | Right | App. Total |

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| Peak Hour for |  |  |  |  | 15 AM |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 7 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 7 |
| 07:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 6 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 30 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 750 | . 000 | . 000 | . 750 | . 750 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |
| PHF | . 000 | . 000 | 000 | . 000 | . 000 | 000 | 000 | . 000 | . 000 | 0 | . 00 | . 000 | . 750 | 00 | 000 | 750 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 56 | 72 | 128 | 12 | 0 | 0 | 12 | 89 | 96 | 0 | 185 | 325 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 52 | 71 | 123 | 14 | 0 | 3 | 17 | 72 | 132 | 0 | 204 | 344 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 55 | 63 | 118 | 31 | 0 | 0 | 31 | 89 | 148 | 0 | 237 | 386 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 44 | 66 | 110 | 22 | 2 | 2 | 26 | 86 | 126 | 0 | 212 | 348 |
| Total | 0 | 0 | 0 | 0 | 0 | 207 | 272 | 479 | 79 | 2 | 5 | 86 | 336 | 502 | 0 | 838 | 1403 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 43 | 57 | 100 | 20 | , | 1 | 22 | 85 | 159 | 0 | 244 | 366 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 46 | 71 | 117 | 33 | 0 | 6 | 39 | 67 | 182 | 0 | 249 | 405 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 51 | 69 | 120 | 21 | 1 | 1 | 23 | 77 | 159 | 0 | 236 | 379 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 56 | 53 | 109 | 22 | 0 | 0 | 22 | 67 | 166 | 0 | 233 | 364 |
| Total | 0 | 0 | 0 | 0 | 0 | 196 | 250 | 446 | 96 | 2 | 8 | 106 | 296 | 666 | 0 | 962 | 1514 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 403 | 522 | 925 | 175 | 4 | 13 | 192 | 632 | 1168 | 0 | 1800 | 2917 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 43.6 | 56.4 |  | 91.1 | 2.1 | 6.8 |  | 35.1 | 64.9 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 13.8 | 17.9 | 31.7 | 6 | 0.1 | 0.4 | 6.6 | 21.7 | 40 | 0 | 61.7 |  |
| Passenger Vehicles | 0 | 0 | 0 | 0 | 0 | 391 | 520 | 911 | 175 | 4 | 13 | 192 | 546 | 1154 | 0 | 1700 | 2803 |
| \% Passenger Venicles | 0 | 0 | 0 | 0 | 0 | 97 | 99.6 | 98.5 | 100 | 100 | 100 | 100 | 86.4 | 98.8 | 0 | 94.4 | 96.1 |
| Large 2 Axle Venicles | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 11 | 0 | 0 | 0 | 0 | 16 | 14 | 0 | 30 | 41 |
| \% Large 2 Axel venicles | 0 | 0 | 0 | 0 | 0 | 2.2 | 0.4 | 1.2 | 0 | 0 | 0 | 0 | 2.5 | 1.2 | 0 | 1.7 | 1.4 |
| 3 Axle Vehicles | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 13 |
| $\% 3$ Axle Venicles | 0 | 0 | 0 | 0 | 0 | 0.7 | 0 | 0.3 | 0 | 0 | 0 | 0 | 1.6 | 0 | 0 | 0.6 | 0.4 |
| 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 0 | 60 | 60 |
| \% 4+Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.5 | 0 | 0 | 3.3 | 2.1 |


|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Peak Hour for Entire Intersection Begins at 05:00 PM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 43 | 57 | 100 | 20 | 1 | 1 | 22 | 85 | 159 | 0 | 244 | 366 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 46 | 71 | 117 | 33 | 0 | 6 | 39 | 67 | 182 | 0 | 249 | 405 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 51 | 69 | 120 | 21 | 1 | 1 | 23 | 77 | 159 | 0 | 236 | 379 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 56 | 53 | 109 | 22 | 0 | 0 | 22 | 67 | 166 | 0 | 233 | 364 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 196 | 250 | 446 | 96 | 2 | 8 | 106 | 296 | 666 | 0 | 962 | 1514 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 43.9 | 56.1 |  | 90.6 | 1.9 | 7.5 |  | 30.8 | 69.2 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 875 | . 880 | . 929 | . 727 | 500 | . 333 | . 679 | . 871 | . 915 | . 000 | . 966 | . 935 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 04:00 PM |  |  |  | 04:00 PM |  |  |  | 04:30 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 56 | 72 | 128 | 31 | 0 | 0 | 31 | 85 | 159 | 0 | 244 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 52 | 71 | 123 | 22 | 2 | 2 | 26 | 67 | 182 | 0 | 249 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 55 | 63 | 118 | 20 | 1 | 1 | 22 | 77 | 159 | 0 | 236 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 44 | 66 | 110 | 33 | 0 | 6 | 39 | 67 | 166 | 0 | 233 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 207 | 272 | 479 | 106 | 3 | 9 | 118 | 296 | 666 | 0 | 962 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 43.2 | 56.8 |  | 89.8 | 2.5 | 7.6 |  | 30.8 | 69.2 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 924 | . 944 | . 936 | . 803 | . 375 | . 375 | . 756 | . 871 | . 915 | . 000 | . 966 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 55 | 72 | 127 | 12 | 0 | 0 | 12 | 81 | 96 | 0 | 177 | 316 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 51 | 70 | 121 | 14 | 0 | 3 | 17 | 54 | 131 | 0 | 185 | 323 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 52 | 63 | 115 | 31 | 0 | 0 | 31 | 80 | 146 | 0 | 226 | 372 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 43 | 66 | 109 | 22 | 2 | 2 | 26 | 73 | 124 | 0 | 197 | 332 |
| Total | 0 | 0 | 0 | 0 | 0 | 201 | 271 | 472 | 79 | 2 | 5 | 86 | 288 | 497 | 0 | 785 | 1343 |


| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 42 | 57 | 99 | 20 | 1 | 1 | 22 | 73 | 155 | 0 | 228 | 349 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 45 | 71 | 116 | 33 | 0 | 6 | 39 | 57 | 181 | 0 | 238 | 393 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 48 | 68 | 116 | 21 | 1 | 1 | 23 | 70 | 156 | 0 | 226 | 365 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 55 | 53 | 108 | 22 | 0 | 0 | 22 | 58 | 165 | 0 | 223 | 353 |
| Total | 0 | 0 | 0 | 0 | 0 | 190 | 249 | 439 | 96 | 2 | 8 | 106 | 258 | 657 | 0 | 915 | 1460 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 391 | 520 | 911 | 175 | 4 | 13 | 192 | 546 | 1154 | 0 | 1700 | 2803 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 42.9 | 57.1 |  | 91.1 | 2.1 | 6.8 |  | 32.1 | 67.9 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 13.9 | 18.6 | 32.5 | 6.2 | 0.1 | 0.5 | 6.8 | 19.5 | 41.2 | 0 | 60.6 |  |



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

| eak Hour for | tir | rs | n | at | 00 |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 42 | 57 | 99 | 20 | 1 | 1 | 22 | 73 | 155 | 0 | 228 | 349 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 45 | 71 | 116 | 33 | 0 | 6 | 39 | 57 | 181 | 0 | 238 | 393 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 48 | 68 | 116 | 21 | 1 | 1 | 23 | 70 | 156 | 0 | 226 | 365 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 55 | 53 | 108 | 22 | 0 | 0 | 22 | 58 | 165 | 0 | 223 | 353 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 190 | 249 | 439 | 96 | 2 | 8 | 106 | 258 | 657 | 0 | 915 | 1460 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 43.3 | 56.7 |  | 90.6 | 1.9 | 7.5 |  | 28.2 | 71.8 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 864 | . 877 | . 946 | . 727 | . 500 | . 333 | . 679 | . 884 | . 907 | . 000 | . 961 | . 929 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 42 | 57 | 99 | 20 | 1 | 1 | 22 | 73 | 155 | 0 | 228 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 45 | 71 | 116 | 33 | 0 | 6 | 39 | 57 | 181 | 0 | 238 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 48 | 68 | 116 | 21 | 1 | 1 | 23 | 70 | 156 | 0 | 226 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 55 | 53 | 108 | 22 | 0 | 0 | 22 | 58 | 165 | 0 | 223 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 190 | 249 | 439 | 96 | 2 | 8 | 106 | 258 | 657 | 0 | 915 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 43.3 | 56.7 |  | 90.6 | 1.9 | 7.5 |  | 28.2 | 71.8 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 864 | . 877 | . 946 | . 727 | . 500 | . 333 | . 679 | . 884 | . 907 | . 000 | . 961 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 4 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 6 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 | 6 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 2 | 0 | 6 | 7 |
| Total | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 0 | 0 | 0 | 0 | 12 | 5 | 0 | 17 | 23 |


| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 | 6 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 | 4 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 6 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 4 | 9 | 0 | 13 | 18 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 11 | 0 | 0 | 0 | 0 | 16 | 14 | 0 | 30 | 41 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 81.8 | 18.2 |  | 0 | 0 | 0 |  | 53.3 | 46.7 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 22 | 4.9 | 26.8 | 0 | 0 | 0 | 0 | 39 | 34.1 | 0 | 73.2 |  |



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

| eak Hour for |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 | 6 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 | 4 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 6 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 4 | 9 | 0 | 13 | 18 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 80 | 20 |  | 0 | 0 | 0 |  | 30.8 | 69.2 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | 1.00 | . 250 | . 625 | . 000 | . 000 | . 000 | . 000 | . 500 | . 563 | 000 | . 650 | . 750 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 5 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 4 | 9 | 0 | 13 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 80 | 20 |  | 0 | 0 | 0 |  | 30.8 | 69.2 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | 1.000 | . 250 | . 625 | . 000 | . 000 | . 000 | . 000 | . 500 | . 563 | . 000 | . 650 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 4 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 8 |


| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 5 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 13 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 100 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 23.1 | 0 | 23.1 | 0 | 0 | 0 | 0 | 76.9 | 0 | 0 | 76.9 |  |



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 5 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 100 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 250 | . 000 | . 250 | . 000 | . 000 | . 000 | . 000 | . 375 | . 000 | . 000 | .375 | . 625 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 100 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |
| PHF | . 000 | . 000 | 000 | . 000 | . 000 | . 250 | 000 | . 250 | . 000 | 0 | 00 | . 000 | . 375 | 00 | 000 | 375 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed-4+ Axle Trucks

|  | I-215 Northbound On Ramp Southbound |  |  |  | Box Springs Road Westbound |  |  |  | I-215 Northbound Off Ramp Northbound |  |  |  | Fair Isle Drive Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 4 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 15 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 4 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 6 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 29 | 29 |


| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 11 | 11 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 6 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 6 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 8 | 8 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 31 | 31 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 | 0 | 0 | 60 | 60 |
| Apprch \% | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 100 |  |



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

| eak Hour for |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 11 | 11 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 6 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 6 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 8 | 8 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 31 | 31 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 705 | . 000 | . 000 | . 705 | . 705 |

County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 11 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 8 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 31 |
| \% App. Total | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 0 | 0 | 0 |  | 100 | 0 | 0 |  |
| PHF | 000 | . 000 | 000 | . 000 | 000 | 000 | 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 705 | . 000 | . 000 | 705 |

City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road North
Weather: Clear

File Name : 03_MRV_Morton_Wordsworth N AM Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Wordsworth Road North Westbound |  |  | Morton Road Northbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | App. Total | Left | Right | App. Total | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 3 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 4 |
| 07:15 AM | 0 | 8 | 8 | 1 | 0 | 1 | 2 | 0 | 2 | 11 |
| 07:30 AM | 0 | 5 | 5 | 0 | 1 | 1 | 4 | 1 | 5 | 11 |
| 07:45 AM | 0 | 6 | 6 | 1 | 0 | 1 | 2 | 3 | 5 | 12 |
| Total | 0 | 22 | 22 | 3 | 1 | 4 | 8 | 4 | 12 | 38 |


| 08:00 AM | 0 | 7 | 7 | 1 | 0 | 1 | 5 | 1 | 6 | 14 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 2 | 2 | 2 | 0 | 2 | 0 | 1 | 1 | 5 |
| 08:30 AM | 0 | 7 | 7 | 0 | 0 | 0 | 2 | 1 | 3 | 10 |
| 08:45 AM | 1 | 2 | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 5 |
| Total | 1 | 18 | 19 | 3 | 0 | 3 | 9 | 3 | 12 | 34 |
| Grand Total | 1 | 40 | 41 | 6 | 1 | 7 | 17 | 7 | 24 | 72 |
| Apprch \% | 2.4 | 97.6 |  | 85.7 | 14.3 |  | 70.8 | 29.2 |  |  |
| Total \% | 1.4 | 55.6 | 56.9 | 8.3 | 1.4 | 9.7 | 23.6 | 9.7 | 33.3 |  |


|  | Morton Road |  |  | Wordsworth Road North <br> Southbound |  | Morton Road <br> Northbound |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Start Time | Left | Thru | App. Total | Left | Right | App. Total | Thru |

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| 07:15 AM | 0 | 8 | 8 | 1 | 0 | 1 | 2 | 0 | 2 | 11 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:30 AM | 0 | 5 | 5 | 0 | 1 | 1 | 4 | 1 | 5 | 11 |
| 07:45 AM | 0 | 6 | 6 | 1 | 0 | 1 | 2 | 3 | 5 | 12 |
| 08:00 AM | 0 | 7 | 7 | 1 | 0 | 1 | 5 | 1 | 6 | 14 |
| Total Volume | 0 | 26 | 26 | 3 | 1 | 4 | 13 | 5 | 18 | 48 |
| \% App. Total | 0 | 100 |  | 75 | 25 |  | 72.2 | 27.8 |  |  |
| PHF | . 000 | . 813 | . 813 | . 750 | . 250 | 1.00 | . 650 | . 417 | . 750 | . 857 |

City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road North
Weather: Clear

File Name : 03_MRV_Morton_Wordsworth N AM Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  | 07:30 AM |  |  | 07:15 AM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 8 | 8 | 0 | 1 | 1 | 2 | 0 | 2 |
| +15 mins. | 0 | 5 | 5 | 1 | 0 | 1 | 4 | 1 | 5 |
| +30 mins. | 0 | 6 | 6 | 1 | 0 | 1 | 2 | 3 | 5 |
| +45 mins. | 0 | 7 | 7 | 2 | 0 | 2 | 5 | 1 | 6 |
| Total Volume | 0 | 26 | 26 | 4 | 1 | 5 | 13 | 5 | 18 |
| \% App. Total | 0 | 100 |  | 80 | 20 |  | 72.2 | 27.8 |  |
| PHF | . 000 | . 813 | . 813 | . 500 | . 250 | . 625 | . 650 | . 417 | . 750 |

City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road North
Weather: Clear

File Name : 03_MRV_Morton_Wordsworth N PM Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Wordsworth Road North Westbound |  |  | Morton Road Northbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | App. Total | Left | Right | App. Total | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 0 | 3 | 5 |
| 04:15 PM | 0 | 11 | 11 | 1 | 0 | 1 | 5 | 3 | 8 | 20 |
| 04:30 PM | 0 | 5 | 5 | 1 | 0 | 1 | 8 | 3 | 11 | 17 |
| 04:45 PM | 0 | 7 | 7 | 0 | 2 | 2 | 7 | 3 | 10 | 19 |
| Total | 0 | 25 | 25 | 2 | 2 | 4 | 23 | 9 | 32 | 61 |


| 05:00 PM | 0 | 4 | 4 | 0 | 0 | 0 | 5 | 1 | 6 | 10 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 3 | 3 | 1 | 0 | 1 | 13 | 6 | 19 | 23 |
| 05:30 PM | 1 | 7 | 8 | 1 | 0 | 1 | 7 | 1 | 8 | 17 |
| 05:45 PM | 2 | 6 | 8 | 0 | 1 | 1 | 10 | 0 | 10 | 19 |
| Total | 3 | 20 | 23 | 2 | 1 | 3 | 35 | 8 | 43 | 69 |
| Grand Total | 3 | 45 | 48 | 4 | 3 | 7 | 58 | 17 | 75 | 130 |
| Apprch \% | 6.2 | 93.8 |  | 57.1 | 42.9 |  | 77.3 | 22.7 |  |  |
| Total \% | 2.3 | 34.6 | 36.9 | 3.1 | 2.3 | 5.4 | 44.6 | 13.1 | 57.7 |  |

City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road North
Weather: Clear

File Name : 03_MRV_Morton_Wordsworth N PM Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 04:15 PM |  |  | 04:00 PM |  |  | 04:30 PM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 11 | 11 | 0 | 0 | 0 | 8 | 3 | 11 |
| +15 mins. | 0 | 5 | 5 | 1 | 0 | 1 | 7 | 3 | 10 |
| +30 mins. | 0 | 7 | 7 | 1 | 0 | 1 | 5 | 1 | 6 |
| +45 mins. | 0 | 4 | 4 | 0 | 2 | 2 | 13 | 6 | 19 |
| Total Volume | 0 | 27 | 27 | 2 | 2 | 4 | 33 | 13 | 46 |
| \% App. Total | 0 | 100 |  | 50 | 50 |  | 71.7 | 28.3 |  |
| PHF | . 000 | . 614 | . 614 | . 500 | . 250 | . 500 | . 635 | . 542 | . 605 |

City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road South
Weather: Clear

File Name : 04_MRV_Morton_Wordsworth S AM Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Wordsworth Road South Westbound |  |  | Morton Road Northbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | App. Total | Left | Right | App. Total | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 4 | 4 | 7 | 0 | 7 | 0 | 2 | 2 | 13 |
| 07:15 AM | 0 | 8 | 8 | 3 | 0 | 3 | 2 | 2 | 4 | 15 |
| 07:30 AM | 0 | 4 | 4 | 11 | 0 | 11 | 5 | 5 | 10 | 25 |
| 07:45 AM | 1 | 5 | 6 | 15 | 0 | 15 | 5 | 1 | 6 | 27 |
| Total | 1 | 21 | 22 | 36 | 0 | 36 | 12 | 10 | 22 | 80 |


| 08:00 AM | 0 | 7 | 7 | 8 | 0 | 8 | 6 | 3 | 9 | 24 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 6 | 6 | 17 | 0 | 17 | 1 | 3 | 4 | 27 |
| 08:30 AM | 0 | 7 | 7 | 10 | 0 | 10 | 3 | 2 | 5 | 22 |
| 08:45 AM | 0 | 2 | 2 | 7 | 0 | 7 | 2 | 1 | 3 | 12 |
| Total | 0 | 22 | 22 | 42 | 0 | 42 | 12 | 9 | 21 | 85 |
| Grand Total | 1 | 43 | 44 | 78 | 0 | 78 | 24 | 19 | 43 | 165 |
| Apprch \% | 2.3 | 97.7 |  | 100 | 0 |  | 55.8 | 44.2 |  |  |
| Total \% | 0.6 | 26.1 | 26.7 | 47.3 | 0 | 47.3 | 14.5 | 11.5 | 26.1 |  |

City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road South
Weather: Clear

File Name : 04_MRV_Morton_Wordsworth S AM Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:45 AM |  |  | 07:30 AM |  |  | 07:15 AM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 1 | 5 | 6 | 11 | 0 | 11 | 2 | 2 | 4 |
| +15 mins. | 0 | 7 | 7 | 15 | 0 | 15 | 5 | 5 | 10 |
| +30 mins. | 0 | 6 | 6 | 8 | 0 | 8 | 5 | 1 | 6 |
| +45 mins. | 0 | 7 | 7 | 17 | 0 | 17 | 6 | 3 | 9 |
| Total Volume | 1 | 25 | 26 | 51 | 0 | 51 | 18 | 11 | 29 |
| \% App. Total | 3.8 | 96.2 |  | 100 | 0 |  | 62.1 | 37.9 |  |
| PHF | . 250 | . 893 | . 929 | . 750 | . 000 | . 750 | . 750 | . 550 | . 725 |

City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road South
Weather: Clear

File Name : 04_MRV_Morton_Wordsworth S PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Wordsworth Road South Westbound |  |  | Morton Road Northbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | App. Total | Left | Right | App. Total | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 0 | 2 | 2 | 13 | 0 | 13 | 3 | 10 | 13 | 28 |
| 04:15 PM | 0 | 11 | 11 | 10 | 0 | 10 | 8 | 10 | 18 | 39 |
| 04:30 PM | 0 | 6 | 6 | 9 | 1 | 10 | 10 | 12 | 22 | 38 |
| 04:45 PM | 0 | 7 | 7 | 6 | 0 | 6 | 11 | 9 | 20 | 33 |
| Total | 0 | 26 | 26 | 38 | 1 | 39 | 32 | 41 | 73 | 138 |


| 05:00 PM | 0 | 4 | 4 | 7 | 0 | 7 | 5 | 7 | 12 | 23 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 4 | 4 | 5 | 0 | 5 | 19 | 10 | 29 | 38 |
| 05:30 PM | 0 | 7 | 7 | 7 | 0 | 7 | 8 | 11 | 19 | 33 |
| 05:45 PM | 0 | 6 | 6 | 10 | 0 | 10 | 10 | 11 | 21 | 37 |
| Total | 0 | 21 | 21 | 29 | 0 | 29 | 42 | 39 | 81 | 131 |
| Grand Total | 0 | 47 | 47 | 67 | 1 | 68 | 74 | 80 | 154 | 269 |
| Apprch \% | 0 | 100 |  | 98.5 | 1.5 |  | 48.1 | 51.9 |  |  |
| Total \% | 0 | 17.5 | 17.5 | 24.9 | 0.4 | 25.3 | 27.5 | 29.7 | 57.2 |  |


|  | Morton Road |  |  | Wordsworth Road South <br> Southbound |  | Morton Road <br> Northbound |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Start Time | Left | Thru | App. Total | Left | Right | App. Total | Thru |

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:00 PM

| 04:00 PM | 0 | 2 | 2 | 13 | 0 | 13 | 3 | 10 | 13 | 28 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04:15 PM | 0 | 11 | 11 | 10 | 0 | 10 | 8 | 10 | 18 | 39 |
| 04:30 PM | 0 | 6 | 6 | 9 | 1 | 10 | 10 | 12 | 22 | 38 |
| 04:45 PM | 0 | 7 | 7 | 6 | 0 | 6 | 11 | 9 | 20 | 33 |
| Total Volume | 0 | 26 | 26 | 38 | 1 | 39 | 32 | 41 | 73 | 138 |
| \% App. Total | 0 | 100 |  | 97.4 | 2.6 |  | 43.8 | 56.2 |  |  |
| PHF | . 000 | . 591 | . 591 | . 731 | . 250 | 750 | . 727 | . 854 | . 830 | 885 |

City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road South
Weather: Clear

File Name : 04_MRV_Morton_Wordsworth S PM Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 04:15 PM |  |  | 04:00 PM |  |  | 04:30 PM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 11 | 11 | 13 | 0 | 13 | 10 | 12 | 22 |
| +15 mins. | 0 | 6 | 6 | 10 | 0 | 10 | 11 | 9 | 20 |
| +30 mins. | 0 | 7 | 7 | 9 | 1 | 10 | 5 | 7 | 12 |
| +45 mins. | 0 | 4 | 4 | 6 | 0 | 6 | 19 | 10 | 29 |
| Total Volume | 0 | 28 | 28 | 38 | 1 | 39 | 45 | 38 | 83 |
| \% App. Total | 0 | 100 |  | 97.4 | 2.6 |  | 54.2 | 45.8 |  |
| PHF | . 000 | . 636 | . 636 | . 731 | . 250 | . 750 | . 592 | . 792 | . 716 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 07:00 AM | 2 | 24 | 26 | 143 | 0 | 143 | 2 | 20 | 22 | 191 |
| 07:15 AM | 1 | 21 | 22 | 159 | 1 | 160 | 4 | 21 | 25 | 207 |
| 07:30 AM | 4 | 22 | 26 | 169 | 1 | 170 | 10 | 24 | 34 | 230 |
| 07:45 AM | 5 | 17 | 22 | 184 | 1 | 185 | 7 | 33 | 40 | 247 |
| Total | 12 | 84 | 96 | 655 | 3 | 658 | 23 | 98 | 121 | 875 |
| 08:00 AM | 6 | 19 | 25 | 127 | 2 | 129 | 10 | 46 | 56 | 210 |
| 08:15 AM | 3 | 26 | 29 | 111 | 2 | 113 | 2 | 39 | 41 | 183 |
| 08:30 AM | 3 | 25 | 28 | 105 | 3 | 108 | 4 | 30 | 34 | 170 |
| 08:45 AM | 4 | 13 | 17 | 91 | 3 | 94 | 3 | 27 | 30 | 141 |
| Total | 16 | 83 | 99 | 434 | 10 | 444 | 19 | 142 | 161 | 704 |
| Grand Total | 28 | 167 | 195 | 1089 | 13 | 1102 | 42 | 240 | 282 | 1579 |
| Apprch \% | 14.4 | 85.6 |  | 98.8 | 1.2 |  | 14.9 | 85.1 |  |  |
| Total \% | 1.8 | 10.6 | 12.3 | 69 | 0.8 | 69.8 | 2.7 | 15.2 | 17.9 |  |
| Passenger Vehicles | 27 | 166 | 193 | 1076 | 12 | 1088 | 41 | 235 | 276 | 1557 |
| \% Passenger Vehicles | 96.4 | 99.4 | 99 | 98.8 | 92.3 | 98.7 | 97.6 | 97.9 | 97.9 | 98.6 |
| Large 2 Axle Vehicles | 1 | 1 | 2 | 11 | 1 | 12 | 1 | 5 | 6 | 20 |
| \% Large 2 Axle Vehicles | 3.6 | 0.6 | 1 | 1 | 7.7 | 1.1 | 2.4 | 2.1 | 2.1 | 1.3 |
| 3 Axle Vehicles | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| \% 3 Axle Vehicles | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.1 |
| 4+ Axle Trucks | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| \% 4+ Axle Trucks | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.1 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  |  |  |  |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| +0 mins. | $07: 45$ AM |  |  | $07: 00$ AM |  |  | $07: 30$ AM |  |
| +15 mins. | 5 | 17 | 22 | 143 | 0 | 143 | 10 | 24 |
| +30 mins. | 3 | 19 | 26 | 25 | 159 | $\mathbf{1}$ | 160 | 7 |
| +45 mins. | 3 | 25 | 29 | 169 | 1 | 170 | 10 | 43 |
| Total Volume | 17 | 87 | 104 | 184 | 1 | 185 | 2 | 39 |
| $\%$ App. Total | 16.3 | 83.7 |  | 655 | 3 | 658 | 29 | 142 |
| PHF | .708 | .837 | .897 | 99.5 | 0.5 |  | 40 |  |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 07:00 AM | 2 | 24 | 26 | 139 | 0 | 139 | 2 | 20 | 22 | 187 |
| 07:15 AM | 1 | 20 | 21 | 159 | 1 | 160 | 4 | 21 | 25 | 206 |
| 07:30 AM | 4 | 22 | 26 | 168 | 1 | 169 | 9 | 24 | 33 | 228 |
| 07:45 AM | 4 | 17 | 21 | 181 | 0 | 181 | 7 | 31 | 38 | 240 |
| Total | 11 | 83 | 94 | 647 | 2 | 649 | 22 | 96 | 118 | 861 |
| 08:00 AM | 6 | 19 | 25 | 126 | 2 | 128 | 10 | 46 | 56 | 209 |
| 08:15 AM | 3 | 26 | 29 | 109 | 2 | 111 | 2 | 37 | 39 | 179 |
| 08:30 AM | 3 | 25 | 28 | 105 | 3 | 108 | 4 | 30 | 34 | 170 |
| 08:45 AM | 4 | 13 | 17 | 89 | 3 | 92 | 3 | 26 | 29 | 138 |
| Total | 16 | 83 | 99 | 429 | 10 | 439 | 19 | 139 | 158 | 696 |
| Grand Total | 27 | 166 | 193 | 1076 | 12 | 1088 | 41 | 235 | 276 | 1557 |
| Apprch \% | 14 | 86 |  | 98.9 | 1.1 |  | 14.9 | 85.1 |  |  |
| Total \% | 1.7 | 10.7 | 12.4 | 69.1 | 0.8 | 69.9 | 2.6 | 15.1 | 17.7 |  |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  | 07:15 AM |  |  | 07:15 AM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 1 | 20 | 21 | 159 | 1 | 160 | 4 | 21 | 25 |
| +15 mins. | 4 | 22 | 26 | 168 | 1 | 169 | 9 | 24 | 33 |
| +30 mins. | 4 | 17 | 21 | 181 | 0 | 181 | 7 | 31 | 38 |
| +45 mins. | 6 | 19 | 25 | 126 | 2 | 128 | 10 | 46 | 56 |
| Total Volume | 15 | 78 | 93 | 634 | 4 | 638 | 30 | 122 | 152 |
| \% App. Total | 16.1 | 83.9 |  | 99.4 | 0.6 |  | 19.7 | 80.3 |  |
| PHF | . 625 | . 886 | . 894 | . 876 | . 500 | . 881 | . 750 | . 663 | . 679 |

City of Moreno Valley
N/S: Morton Road E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 4 |
| 07:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 AM | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 |
| 07:45 AM | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 2 | 2 | 5 |
| Total | 1 | 1 | 2 | 6 | 1 | 7 | 1 | 2 | 3 | 12 |


| 08:00 AM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 2 | 4 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 3 |
| Total | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 3 | 3 | 8 |
| Grand Total | 1 | 1 | 2 | 11 | 1 | 12 | 1 | 5 | 6 | 20 |
| Apprch \% | 50 | 50 |  | 91.7 | 8.3 |  | 16.7 | 83.3 |  |  |
| Total \% | 5 | 5 | 10 | 55 | 5 | 60 | 5 | 25 | 30 |  |


|  | Morton Road <br> Southbound |  |  | Box Springs Road <br> Westbound |  | Box Springs Road <br> Eastbound |  |  |
| ---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru |

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| 07:15 AM | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:30 AM | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 |
| 07:45 AM | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 2 | 2 | 5 |
| 08:00 AM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| Total Volume | 1 | 1 | 2 | 3 | 1 | 4 | 1 | 2 | 3 | 9 |
| \% App. Total | 50 | 50 |  | 75 | 25 |  | 33.3 | 66.7 |  |  |
| PHF | . 250 | . 250 | . 500 | . 750 | . 250 | . 500 | . 250 | . 250 | . 375 | 450 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  | 07:15 AM |  |  | 07:15 AM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| +30 mins. | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 2 | 2 |
| +45 mins. | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Total Volume | 1 | 1 | 2 | 3 | 1 | 4 | 1 | 2 | 3 |
| \% App. Total | 50 | 50 |  | 75 | 25 |  | 33.3 | 66.7 |  |
| PHF | . 250 | 250 | . 500 | 750 | . 250 | . 500 | . 250 | . 250 | 375 |

City of Moreno Valley
N/S: Morton Road E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

| Groups Printed- 3 Axle Vehicles |  |  |  |  |  |  |  |  |  | Int Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total |  |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| Apprch \% | 0 | 0 |  | 100 | 0 |  | 0 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 |  |


|  | Morton Road <br> Southbound |  |  | Box Springs Road <br> Westbound |  |  | Box Springs Road <br> Eastbound |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru |  | App. Total | Int. Total |
| :--- |

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

|  |  |  |  |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| $07: 15$ AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| $07: 30$ AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| $07: 45$ AM | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| $08: 00$ AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| \% App. Total | 0 | 0 |  | 100 | 0 |  | 0 | 0 |
| PHF | .000 | .000 | .000 | .250 | .000 | .250 | .000 | .000 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:15 AM |  |  | 07:15 AM |  |  | 07:15 AM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| \% App. Total | 0 | 0 |  | 100 | 0 |  | 0 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 250 | . 000 | . 250 | . 000 | . 000 | . 000 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 07:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |


| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| Apprch \% | 0 | 0 |  | 100 | 0 |  | 0 | 0 |  |  |
| Total \% | 0 | 0 | 0 | 100 | 0 | 100 | 0 | 0 | 0 |  |


|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 07:15 AM

| 07:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 AM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 08:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| \% App. Total | 0 | 0 |  | 100 | 0 |  | 0 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 250 | . 000 | . 250 | . 000 | . 000 | . 000 | . 250 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  |  |  |  |  |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| +0 mins. | $07: 15$ AM | 0 | 0 | 0 | $07: 15$ AM | 0 | 0 | 0 | $07: 15$ AM |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| $\%$ App. Total | 0 | 0 |  | 100 | 0 |  | 0 | 0 | 0 |
| PHF | .000 | .000 | .000 | .250 | .00 | .250 | .000 | .000 | .000 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 04:00 PM | 7 | 14 | 21 | 120 | 5 | 125 | 16 | 89 | 105 | 251 |
| 04:15 PM | 2 | 23 | 25 | 102 | 6 | 108 | 20 | 124 | 144 | 277 |
| 04:30 PM | 4 | 15 | 19 | 99 | 8 | 107 | 25 | 122 | 147 | 273 |
| 04:45 PM | 9 | 14 | 23 | 94 | 9 | 103 | 19 | 100 | 119 | 245 |
| Total | 22 | 66 | 88 | 415 | 28 | 443 | 80 | 435 | 515 | 1046 |
| 05:00 PM | 8 | 8 | 16 | 98 | 5 | 103 | 21 | 151 | 172 | 291 |
| 05:15 PM | 5 | 8 | 13 | 105 | 7 | 112 | 24 | 159 | 183 | 308 |
| 05:30 PM | 11 | 13 | 24 | 109 | 9 | 118 | 18 | 156 | 174 | 316 |
| 05:45 PM | 12 | 12 | 24 | 102 | 2 | 104 | 21 | 148 | 169 | 297 |
| Total | 36 | 41 | 77 | 414 | 23 | 437 | 84 | 614 | 698 | 1212 |
| Grand Total | 58 | 107 | 165 | 829 | 51 | 880 | 164 | 1049 | 1213 | 2258 |
| Apprch \% | 35.2 | 64.8 |  | 94.2 | 5.8 |  | 13.5 | 86.5 |  |  |
| Total \% | 2.6 | 4.7 | 7.3 | 36.7 | 2.3 | 39 | 7.3 | 46.5 | 53.7 |  |
| Passenger Vehicles | 57 | 107 | 164 | 818 | 51 | 869 | 163 | 1036 | 1199 | 2232 |
| \% Passenger Vehicles | 98.3 | 100 | 99.4 | 98.7 | 100 | 98.8 | 99.4 | 98.8 | 98.8 | 98.8 |
| Large 2 Axle Vehicles | 1 | 0 | 1 | 11 | 0 | 11 | 1 | 13 | 14 | 26 |
| \% Large 2 Axle Vehicles | 1.7 | 0 | 0.6 | 1.3 | 0 | 1.2 | 0.6 | 1.2 | 1.2 | 1.2 |
| 3 Axle Vehicles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| \% 3 Axle Vehicles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| \% 4+ Axle Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  |  |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
|  |  |  |  |  |  |  |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 04:00 PM | 7 | 14 | 21 | 119 | 5 | 124 | 16 | 89 | 105 | 250 |
| 04:15 PM | 2 | 23 | 25 | 100 | 6 | 106 | 20 | 123 | 143 | 274 |
| 04:30 PM | 4 | 15 | 19 | 97 | 8 | 105 | 25 | 120 | 145 | 269 |
| 04:45 PM | 9 | 14 | 23 | 93 | 9 | 102 | 19 | 98 | 117 | 242 |
| Total | 22 | 66 | 88 | 409 | 28 | 437 | 80 | 430 | 510 | 1035 |
| 05:00 PM | 7 | 8 | 15 | 97 | 5 | 102 | 21 | 148 | 169 | 286 |
| 05:15 PM | 5 | 8 | 13 | 104 | 7 | 111 | 24 | 158 | 182 | 306 |
| 05:30 PM | 11 | 13 | 24 | 107 | 9 | 116 | 17 | 154 | 171 | 311 |
| 05:45 PM | 12 | 12 | 24 | 101 | 2 | 103 | 21 | 146 | 167 | 294 |
| Total | 35 | 41 | 76 | 409 | 23 | 432 | 83 | 606 | 689 | 1197 |
| Grand Total | 57 | 107 | 164 | 818 | 51 | 869 | 163 | 1036 | 1199 | 2232 |
| Apprch \% | 34.8 | 65.2 |  | 94.1 | 5.9 |  | 13.6 | 86.4 |  |  |
| Total \% | 2.6 | 4.8 | 7.3 | 36.6 | 2.3 | 38.9 | 7.3 | 46.4 | 53.7 |  |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  | 05:00 PM |  |  | 05:00 PM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 7 | 8 | 15 | 97 | 5 | 102 | 21 | 148 | 169 |
| +15 mins. | 5 | 8 | 13 | 104 | 7 | 111 | 24 | 158 | 182 |
| +30 mins. | 11 | 13 | 24 | 107 | 9 | 116 | 17 | 154 | 171 |
| +45 mins. | 12 | 12 | 24 | 101 | 2 | 103 | 21 | 146 | 167 |
| Total Volume | 35 | 41 | 76 | 409 | 23 | 432 | 83 | 606 | 689 |
| \% App. Total | 46.1 | 53.9 |  | 94.7 | 5.3 |  | 12 | 88 |  |
| PHF | 729 | . 788 | . 792 | . 956 | . 639 | . 931 | . 865 | . 959 | . 946 |

City of Moreno Valley
N/S: Morton Road E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 04:15 PM | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 3 |
| 04:30 PM | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 2 | 4 |
| 04:45 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 3 |
| Total | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 5 | 5 | 11 |


| 05:00 PM | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 3 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 |
| 05:30 PM | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 2 | 3 | 5 |
| 05:45 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 3 |
| Total | 1 | 0 | 1 | 5 | 0 | 5 | 1 | 8 | 9 | 15 |
| Grand Total | 1 | 0 | 1 | 11 | 0 | 11 | 1 | 13 | 14 | 26 |
| Apprch \% | 100 | 0 |  | 100 | 0 |  | 7.1 | 92.9 |  |  |
| Total \% | 3.8 | 0 | 3.8 | 42.3 | 0 | 42.3 | 3.8 | 50 | 53.8 |  |


|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

| 05:00 PM | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 3 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 |
| 05:30 PM | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 2 | 3 | 5 |
| 05:45 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 3 |
| Total Volume | 1 | 0 | 1 | 5 | 0 | 5 | 1 | 8 | 9 | 15 |
| \% App. Total | 100 | 0 |  | 100 | 0 |  | 11.1 | 88.9 |  |  |
| PHF | . 250 | . 000 | . 250 | . 625 | . 000 | .625 | . 250 | . 667 | . 750 | . 750 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  | 05:00 PM |  |  | 05:00 PM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 3 |
| +15 mins. | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| +30 mins. | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 2 | 3 |
| +45 mins. | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 |
| Total Volume | 1 | 0 | 1 | 5 | 0 | 5 | 1 | 8 | 9 |
| \% App. Total | 100 | 0 |  | 100 | 0 |  | 11.1 | 88.9 |  |
| PHF | . 250 | . 000 | . 250 | . 625 | . 000 | . 625 | . 250 | . 667 | . 750 |

City of Moreno Valley
N/S: Morton Road E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

| Groups Printed- 3 Axle Vehicles |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch \% Total \% | 0 | 0 |  | 0 | 0 |  | 0 | 0 |  |  |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  | 05:00 PM |  |  | 05:00 PM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| \% App. Total | 0 | 0 |  | 0 | 0 |  | 0 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | 000 | 00 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 1

|  | Morton Road Southbound |  |  | Box Springs Road Westbound |  |  | Box Springs Road Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Right | App. Total | Thru | Right | App. Total | Left | Thru | App. Total | Int. Total |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |


| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apprch \% Total \% | 0 | 0 |  | 0 | 0 |  | 0 | 0 |  |  |



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| \% App. Total | 0 | 0 |  | 0 | 0 |  | 0 | 0 |  |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 |

City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date: 1/26/2021
Page No : 2


Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  | 05:00 PM |  |  | 05:00 PM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +15 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +30 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| +45 mins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| \% App. Total | 0 | 0 |  | 0 | 0 |  | 0 | 0 |  |
| PHF | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | . 000 | 000 | 00 |

File Name : 01 MRV Day Ironwood
Site Code : 05119512
Start Date: 8/20/2019
Page No : 1

N/S: Day Street
E/W: Box Springs Rd/Ironwood Avenue
Weather: Clear

|  | Day Street Southbound |  |  |  |  | Ironwood Avenue Westbound |  |  |  |  | Day Street Northbound |  |  |  |  | Box Springs Road Eastbound |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | RTOR | App. Total | Left | Thru | Right | RTOR | App. Total | Left | Thru | Right | RTOR | App. Total | Left | Thru | Right | RTOR | App. Total | Exclu. Total | Inclu. Total | Int. Tote |
| 07:00 AM | 5 | 9 | 8 | 4 | 22 | 145 | 332 | 4 | 0 | 481 | 73 | 5 | 27 | 24 | 105 | 0 | 28 | 54 | 22 | 82 | 50 | 690 | 74 |
| 07:15 AM | 8 | 18 | 2 | 1 | 28 | 169 | 235 | 6 | 1 | 410 | 69 | 6 | 36 | 34 | 111 | 0 | 52 | 65 | 36 | 117 | 72 | 666 | 73i |
| 07:30 AM | 7 | 21 | 6 | 4 | 34 | 136 | 247 | 6 | 0 | 389 | 50 | 10 | 32 | 19 | 92 | 1 | 33 | 49 | 26 | 83 | 49 | 598 | 64 |
| 07:45 AM | 7 | 19 | 8 | 1 | 34 | 147 | 215 | 5 | 0 | 367 | 66 | 9 | 31 | 16 | 106 | 1 | 49 | 48 | 28 | 98 | 45 | 605 | 65 |
| Total | 27 | 67 | 24 | 10 | 118 | 597 | 1029 | 21 | 1 | 1647 | 258 | 30 | 126 | 93 | 414 | 2 | 162 | 216 | 112 | 380 | 216 | 2559 | 277: |
| 08:00 AM | 3 | 17 | 3 | 1 | 23 | 130 | 283 | 2 | 0 | 415 | 76 | 8 | 35 | 22 | 119 | 1 | 45 | 64 | 27 | 110 | 50 | 667 | 71. |
| 08:15 AM | 4 | 16 | 2 | 0 | 22 | 122 | 288 | 5 | 0 | 415 | 83 | 9 | 40 | 18 | 132 | 2 | 38 | 51 | 24 | 91 | 42 | 660 | 70: |
| 08:30 AM | 5 | 14 | 2 | 1 | 21 | 97 | 255 | 4 | 1 | 356 | 73 | 16 | 33 | 25 | 122 | 1 | 36 | 68 | 36 | 105 | 63 | 604 | 66 |
| 08:45 AM | 3 | 6 | 3 | 2 | 12 | 86 | 255 | 4 | 0 | 345 | 75 | 6 | 45 | 19 | 126 | 0 | 21 | 31 | 21 | 52 | 42 | 535 | 57 |
| Total | 15 | 53 | 10 | 4 | 78 | 435 | 1081 | 15 | 1 | 1531 | 307 | 39 | 153 | 84 | 499 | 4 | 140 | 214 | 108 | 358 | 197 | 2466 | 266: |
| Grand Total | 42 | 120 | 34 | 14 | 196 | 1032 | 2110 | 36 | 2 | 3178 | 565 | 69 | 279 | 177 | 913 | 6 | 302 | 430 | 220 | 738 | 413 | 5025 | 543i |
| Apprch \% | 21.4 | 61.2 | 17.3 |  |  | 32.5 | 66.4 | 1.1 |  |  | 61.9 | 7.6 | 30.6 |  |  | 0.8 | 40.9 | 58.3 |  |  |  |  |  |
| Total \% | 0.8 | 2.4 | 0.7 |  | 3.9 | 20.5 | 42 | 0.7 |  | 63.2 | 11.2 | 1.4 | 5.6 |  | 18.2 | 0.1 | 6 | 8.6 |  | 14.7 | 7.6 | 92.4 |  |

File Name : 01 MRV Day Ironwood
Site Code : 05119512
Start Date : 8/20/2019
Page No :


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at

|  | 07:15 AM |  |  |  | 07:00 AM |  |  |  | 08:00 AM |  |  |  | 07:15 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 8 | 18 | 2 | 28 | 145 | 332 | 4 | 481 | 76 | 8 | 35 | 119 | 0 | 52 | 65 | 117 |
| +15 mins. | 7 | 21 | 6 | 34 | 169 | 235 | 6 | 410 | 83 | 9 | 40 | 132 | 1 | 33 | 49 | 83 |
| +30 mins. | 7 | 19 | 8 | 34 | 136 | 247 | 6 | 389 | 73 | 16 | 33 | 122 | 1 | 49 | 48 | 98 |
| +45 mins. | 3 | 17 | 3 | 23 | 147 | 215 | 5 | 367 | 75 | 6 | 45 | 126 | 1 | 45 | 64 | 110 |
| Total Volume | 25 | 75 | 19 | 119 | 597 | 1029 | 21 | 1647 | 307 | 39 | 153 | 499 | 3 | 179 | 226 | 408 |
| \% App. Total | 21 | 63 | 16 |  | 36.2 | 62.5 | 1.3 |  | 61.5 | 7.8 | 30.7 |  | 0.7 | 43.9 | 55.4 |  |
| PHF | 781 | . 893 | . 594 | . 875 | . 883 | . 775 | . 875 | . 856 | . 925 | . 609 | . 850 | . 945 | 750 | . 861 | . 869 | . 872 |

File Name : 01_MRV_Day_Ironwood
Start Date : 8/20/2019
Page No : 1
E/W: Box Springs Rd/Ironwood Avenue
Weather: Clear

|  | Day Street Southbound |  |  |  |  | Ironwood Avenue Westbound |  |  |  |  | Day Street Northbound |  |  |  |  | Box Springs Road Eastbound |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | RTOR | App. Total | Left | Thru | Right | RTOR | App. Total | Left | Thru | Right | RTOR | App. Total | Left | Thru | Right | RTOR | App. Total | Exclu. Total | Inclu. Total | Int. Tote |
| 04:00 PM | 4 | 3 | 2 | 2 | 9 | 74 | 90 | 8 | 1 | 172 | 75 | 9 | 106 | 49 | 190 | 3 | 102 | 49 | 19 | 154 | 71 | 525 | 59 |
| 04:15 PM | 4 | 7 | 4 | 1 | 15 | 63 | 87 | 4 | 0 | 154 | 66 | 14 | 115 | 39 | 195 | 1 | 107 | 60 | 37 | 168 | 77 | 532 | 60 |
| 04:30 PM | 2 | 7 | 1 | 0 | 10 | 52 | 66 | 1 | 0 | 119 | 67 | 15 | 137 | 50 | 219 | 5 | 106 | 49 | 25 | 160 | 75 | 508 | 58: |
| 04:45 PM | 5 | 11 | 1 | 0 | 17 | 90 | 72 | 6 | 1 | 168 | 59 | 13 | 142 | 60 | 214 | 4 | 118 | 37 | 19 | 159 | 80 | 558 | 63: |
| Total | 15 | 28 | 8 | 3 | 51 | 279 | 315 | 19 | 2 | 613 | 267 | 51 | 500 | 198 | 818 | 13 | 433 | 195 | 100 | 641 | 303 | 2123 | 2421 |
| 05:00 PM | 4 | 8 | 0 | 0 | 12 | 70 | 74 | 3 | 0 | 147 | 54 | 18 | 168 | 49 | 240 | 2 | 122 | 53 | 27 | 177 | 76 | 576 | 65: |
| 05:15 PM | 6 | 8 | 0 | 0 | 14 | 69 | 81 | 5 | 2 | 155 | 64 | 27 | 192 | 61 | 283 | 0 | 118 | 56 | 45 | 174 | 108 | 626 | 73. |
| 05:30 PM | 2 | 9 | 1 | 0 | 12 | 66 | 68 | 2 | 0 | 136 | 71 | 11 | 163 | 61 | 245 | 4 | 123 | 71 | 45 | 198 | 106 | 591 | 69 |
| 05:45 PM | 6 | 15 | 1 | 1 | 22 | 95 | 84 | 2 | 0 | 181 | 77 | 15 | 148 | 65 | 240 | 3 | 131 | 61 | 33 | 195 | 99 | 638 | 73 |
| Total | 18 | 40 | 2 | 1 | 60 | 300 | 307 | 12 | 2 | 619 | 266 | 71 | 671 | 236 | 1008 | 9 | 494 | 241 | 150 | 744 | 389 | 2431 | 282 |
| Grand Total | 33 | 68 | 10 | 4 | 111 | 579 | 622 | 31 | 4 | 1232 | 533 | 122 | 1171 | 434 | 1826 | 22 | 927 | 436 | 250 | 1385 | 692 | 4554 | 5241 |
| Apprch \% | 29.7 | 61.3 | 9 |  |  | 47 | 50.5 | 2.5 |  |  | 29.2 | 6.7 | 64.1 |  |  | 1.6 | 66.9 | 31.5 |  |  |  |  |  |
| Total \% | 0.7 | 1.5 | 0.2 |  | 2.4 | 12.7 | 13.7 | 0.7 |  | 27.1 | 11.7 | 2.7 | 25.7 |  | 40.1 | 0.5 | 20.4 | 9.6 |  | 30.4 | 13.2 | 86.8 |  |

 . 95

|  | Day Street Southbound |  |  |  | Ironwood Avenue Westbound |  |  |  | Day Street Northbound |  |  |  | Box Springs Road Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Tot |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Peak Hour for Entire Intersection Begins at 05:00 PM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 05:00 PM | 4 | 8 | 0 | 12 | 70 | 74 | 3 | 147 | 54 | 18 | 168 | 240 | 2 | 122 | 53 | 177 | 5 |
| 05:15 PM | 6 | 8 | 0 | 14 | 69 | 81 | 5 | 155 | 64 | 27 | 192 | 283 | 0 | 118 | 56 | 174 | 6 |
| 05:30 PM | 2 | 9 | 1 | 12 | 66 | 68 | 2 | 136 | 71 | 11 | 163 | 245 | 4 | 123 | 71 | 198 | 5 |
| 05:45 PM | 6 | 15 | 1 | 22 | 95 | 84 | 2 | 181 | 77 | 15 | 148 | 240 | 3 | 131 | 61 | 195 | 6 |
| Total Volume | 18 | 40 | 2 | 60 | 300 | 307 | 12 | 619 | 266 | 71 | 671 | 1008 | 9 | 494 | 241 | 744 | 24 |
| \% App. Total | 30 | 66.7 | 3.3 |  | 48.5 | 49.6 | 1.9 |  | 26.4 | 7 | 66.6 |  | 1.2 | 66.4 | 32.4 |  |  |
| PHF | . 750 | . 667 | . 500 | . 682 | . 789 | . 914 | . 600 | . 855 | . 864 | . 657 | . 874 | . 890 | . 563 | . 943 | . 849 | . 939 | . 9 |

File Name : 01 MRV Day Ironwood
Site Code : 05119512
Start Date : 8/20/2019
Page No :

File Name : 01 MRV Day Ironwood
Site Code : 05119512
Start Date : 8/20/2019
Page No :


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  | 05:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 4 | 8 | 0 | 12 | 70 | 74 | 3 | 147 | 54 | 18 | 168 | 240 | 2 | 122 | 53 | 177 |
| +15 mins. | 6 | 8 | 0 | 14 | 69 | 81 | 5 | 155 | 64 | 27 | 192 | 283 | 0 | 118 | 56 | 174 |
| +30 mins. | 2 | 9 | 1 | 12 | 66 | 68 | 2 | 136 | 71 | 11 | 163 | 245 | 4 | 123 | 71 | 198 |
| +45 mins. | 6 | 15 | 1 | 22 | 95 | 84 | 2 | 181 | 77 | 15 | 148 | 240 | 3 | 131 | 61 | 195 |
| Total Volume | 18 | 40 | 2 | 60 | 300 | 307 | 12 | 619 | 266 | 71 | 671 | 1008 | 9 | 494 | 241 | 744 |
| \% App. Total | 30 | 66.7 | 3.3 |  | 48.5 | 49.6 | 1.9 |  | 26.4 | 7 | 66.6 |  | 1.2 | 66.4 | 32.4 |  |
| PHF | . 750 | . 667 | . 500 | . 682 | . 789 | . 914 | . 600 | . 855 | . 864 | . 657 | . 874 | . 890 | . 563 | . 943 | . 849 | . 939 |

Day: Tuesday

| PEDESTRIANS |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | North Leg Day Street | East Leg Ironwood Avenue | South Leg Day Street | West Leg <br> Box Springs Road |  |
|  | Pedestrians | Pedestrians | Pedestrians | Pedestrians |  |
| 7:00 AM | 2 | 0 | 0 | 0 | 2 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 2 | 0 | 0 | 0 | 2 |
| 7:45 AM | 3 | 0 | 0 | 0 | 3 |
| 8:00 AM | 1 | 0 | 0 | 0 | 1 |
| 8:15 AM | 1 | 0 | 0 | 0 | 1 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES: | 9 | 0 | 0 | 0 | 9 |


| BICYCLES |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Southbound Day Street |  |  | WestboundIronwood Avenue |  |  | Northbound Day Street |  |  | EastboundBox Springs Road |  |  |  |
|  | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |  |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES: | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |

## Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
(951) 268-6268
counts@countsunlimited.com
City of Moreno Valley
File Name : MRV_Day_Ironwood_AM
N/S: Day Street
Site Code : 99921046
E/W: Box Springs Rd / Ironwood Ave
Start Date: 2/2/2021
Weather: Clear
Page No : 1

|  | Day Street Southbound |  |  |  | Ironwood Avenue Westbound |  |  |  | Day Street Northbound |  |  |  | Box Springs Road Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 7 | 3 | 10 | 32 | 98 | 0 | 130 | 16 | 3 | 16 | 35 | 0 | 14 | 26 | 40 | 215 |
| 07:15 AM | 1 | 8 | 1 | 10 | 30 | 110 | 2 | 142 | 28 | 3 | 15 | 46 | 2 | 15 | 24 | 41 | 239 |
| 07:30 AM | 5 | 9 | 5 | 19 | 33 | 136 | 4 | 173 | 37 | 8 | 18 | 63 | 0 | 13 | 32 | 45 | 300 |
| 07:45 AM | 4 | 13 | 3 | 20 | 43 | 115 | 4 | 162 | 39 | 11 | 29 | 79 | 0 | 17 | 37 | 54 | 315 |
| Total | 10 | 37 | 12 | 59 | 138 | 459 | 10 | 607 | 120 | 25 | 78 | 223 | 2 | 59 | 119 | 180 | 1069 |
| 08:00 AM | 0 | 8 | 4 | 12 | 44 | 105 | 1 | 150 | 40 | 8 | 20 | 68 | 1 | 16 | 20 | 37 | 267 |
| 08:15 AM | 0 | 12 | 1 | 13 | 38 | 85 | 2 | 125 | 34 | 4 | 16 | 54 | 0 | 25 | 25 | 50 | 242 |
| 08:30 AM | 1 | 9 | 3 | 13 | 32 | 75 | 1 | 108 | 22 | 8 | 25 | 55 | 0 | 26 | 37 | 63 | 239 |
| 08:45 AM | 0 | 4 | 1 | 5 | 48 | 61 | 0 | 109 | 34 | 4 | 34 | 72 | 0 | 19 | 42 | 61 | 247 |
| Total | 1 | 33 | 9 | 43 | 162 | 326 | 4 | 492 | 130 | 24 | 95 | 249 | 1 | 86 | 124 | 211 | 995 |
| Grand Total | 11 | 70 | 21 | 102 | 300 | 785 | 14 | 1099 | 250 | 49 | 173 | 472 | 3 | 145 | 243 | 391 | 2064 |
| Apprch \% | 10.8 | 68.6 | 20.6 |  | 27.3 | 71.4 | 1.3 |  | 53 | 10.4 | 36.7 |  | 0.8 | 37.1 | 62.1 |  |  |
| Total \% | 0.5 | 3.4 | 1 | 4.9 | 14.5 | 38 | 0.7 | 53.2 | 12.1 | 2.4 | 8.4 | 22.9 | 0.1 | 7 | 11.8 | 18.9 |  |


|  | Day Street Southbound |  |  |  | Ironwood Avenue Westbound |  |  |  | Day Street Northbound |  |  |  | Box Springs Road |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Peak Hour for Entire Intersection Begins at 07:30 AM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 07:30 AM | 5 | 9 | 5 | 19 | 33 | 136 | 4 | 173 | 37 | 8 | 18 | 63 | 0 | 13 | 32 | 45 | 300 |
| 07:45 AM | 4 | 13 | 3 | 20 | 43 | 115 | 4 | 162 | 39 | 11 | 29 | 79 | 0 | 17 | 37 | 54 | 315 |
| 08:00 AM | 0 | 8 | 4 | 12 | 44 | 105 | 1 | 150 | 40 | 8 | 20 | 68 | 1 | 16 | 20 | 37 | 267 |
| 08:15 AM | 0 | 12 | 1 | 13 | 38 | 85 | 2 | 125 | 34 | 4 | 16 | 54 | 0 | 25 | 25 | 50 | 242 |
| Total Volume | 9 | 42 | 13 | 64 | 158 | 441 | 11 | 610 | 150 | 31 | 83 | 264 | 1 | 71 | 114 | 186 | 1124 |
| \% App. Total | 14.1 | 65.6 | 20.3 |  | 25.9 | 72.3 | 1.8 |  | 56.8 | 11.7 | 31.4 |  | 0.5 | 38.2 | 61.3 |  |  |
| PHF | . 450 | . 808 | . 650 | . 800 | . 898 | . 811 | . 688 | . 882 | . 938 | . 705 | . 716 | 835 | . 250 | . 710 | . 770 | . 861 | . 892 |

Counts Unlimited, Inc. PO Box 1178
Corona, CA 92878
counts@countsunlimited.com
File Name : MRV_Day_Ironwood_AM
Site Code : 99921046
Start Date: 2/2/2021
Page No : 2


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 07:30 AM |  |  |  | 07:15 AM |  |  |  | 07:30 AM |  |  |  | 08:00 AM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 5 | 9 | 5 | 19 | 30 | 110 | 2 | 142 | 37 | 8 | 18 | 63 | 1 | 16 | 20 | 37 |
| +15 mins. | 4 | 13 | 3 | 20 | 33 | 136 | 4 | 173 | 39 | 11 | 29 | 79 | 0 | 25 | 25 | 50 |
| +30 mins. | 0 | 8 | 4 | 12 | 43 | 115 | 4 | 162 | 40 | 8 | 20 | 68 | 0 | 26 | 37 | 63 |
| +45 mins. | 0 | 12 | 1 | 13 | 44 | 105 | 1 | 150 | 34 | 4 | 16 | 54 | 0 | 19 | 42 | 61 |
| Total Volume | 9 | 42 | 13 | 64 | 150 | 466 | 11 | 627 | 150 | 31 | 83 | 264 | 1 | 86 | 124 | 211 |
| \% App. Total | 14.1 | 65.6 | 20.3 |  | 23.9 | 74.3 | 1.8 |  | 56.8 | 11.7 | 31.4 |  | 0.5 | 40.8 | 58.8 |  |
| PHF | . 450 | . 808 | . 650 | . 800 | . 852 | . 857 | . 688 | . 906 | . 938 | . 705 | . 716 | . 835 | . 250 | . 827 | . 738 | . 837 |

## Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
(951) 268-6268
counts@countsunlimited.com
City of Moreno Valley
File Name : MRV_Day_Ironwood_PM
N/S: Day Street
Site Code : 99921046
E/W: Box Springs Rd / Ironwood Ave
Start Date: 2/2/2021
Weather: Clear
Page No : 1

Groups Printed- Total Volume

|  | Day Street Southbound |  |  |  | Ironwood Avenue Westbound |  |  |  | Day Street Northbound |  |  |  | Box Springs Road Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 04:00 PM | 4 | 6 | 1 | 11 | 67 | 68 | 3 | 138 | 65 | 11 | 107 | 183 | 5 | 90 | 61 | 156 | 488 |
| 04:15 PM | 2 | 8 | 2 | 12 | 65 | 69 | 0 | 134 | 68 | 14 | 107 | 189 | 3 | 104 | 56 | 163 | 498 |
| 04:30 PM | 3 | 9 | 2 | 14 | 67 | 83 | 4 | 154 | 73 | 9 | 105 | 187 | 1 | 87 | 62 | 150 | 505 |
| 04:45 PM | 3 | 5 | 0 | 8 | 78 | 85 | 4 | 167 | 70 | 15 | 115 | 200 | 0 | 90 | 48 | 138 | 513 |
| Total | 12 | 28 | 5 | 45 | 277 | 305 | 11 | 593 | 276 | 49 | 434 | 759 | 9 | 371 | 227 | 607 | 2004 |
| 05:00 PM | 2 | 10 | 4 | 16 | 75 | 83 | 2 | 160 | 81 | 10 | 121 | 212 | 3 | 93 | 54 | 150 | 538 |
| 05:15 PM | 5 | 11 | 1 | 17 | 59 | 62 | 3 | 124 | 58 | 26 | 122 | 206 | 1 | 96 | 52 | 149 | 496 |
| 05:30 PM | 5 | 15 | 2 | 22 | 80 | 70 | 7 | 157 | 68 | 18 | 164 | 250 | 1 | 86 | 49 | 136 | 565 |
| 05:45 PM | 9 | 11 | 3 | 23 | 93 | 58 | 4 | 155 | 80 | 25 | 164 | 269 | 2 | 71 | 46 | 119 | 566 |
| Total | 21 | 47 | 10 | 78 | 307 | 273 | 16 | 596 | 287 | 79 | 571 | 937 | 7 | 346 | 201 | 554 | 2165 |
| Grand Total | 33 | 75 | 15 | 123 | 584 | 578 | 27 | 1189 | 563 | 128 | 1005 | 1696 | 16 | 717 | 428 | 1161 | 4169 |
| Apprch \% | 26.8 | 61 | 12.2 |  | 49.1 | 48.6 | 2.3 |  | 33.2 | 7.5 | 59.3 |  | 1.4 | 61.8 | 36.9 |  |  |
| Total \% | 0.8 | 1.8 | 0.4 | 3 | 14 | 13.9 | 0.6 | 28.5 | 13.5 | 3.1 | 24.1 | 40.7 | 0.4 | 17.2 | 10.3 | 27.8 |  |

Counts Unlimited, Inc. PO Box 1178
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File Name : MRV Day Ironwood PM
Site Code : 99921046
Start Date: 2/2/2021
Page No : 2


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

|  | 05:00 PM |  |  |  | 04:15 PM |  |  |  | 05:00 PM |  |  |  | 04:00 PM |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +0 mins. | 2 | 10 | 4 | 16 | 65 | 69 | 0 | 134 | 81 | 10 | 121 | 212 | 5 | 90 | 61 | 156 |
| +15 mins. | 5 | 11 | 1 | 17 | 67 | 83 | 4 | 154 | 58 | 26 | 122 | 206 | 3 | 104 | 56 | 163 |
| +30 mins. | 5 | 15 | 2 | 22 | 78 | 85 | 4 | 167 | 68 | 18 | 164 | 250 | 1 | 87 | 62 | 150 |
| +45 mins. | 9 | 11 | 3 | 23 | 75 | 83 | 2 | 160 | 80 | 25 | 164 | 269 | 0 | 90 | 48 | 138 |
| Total Volume | 21 | 47 | 10 | 78 | 285 | 320 | 10 | 615 | 287 | 79 | 571 | 937 | 9 | 371 | 227 | 607 |
| \% App. Total | 26.9 | 60.3 | 12.8 |  | 46.3 | 52 | 1.6 |  | 30.6 | 8.4 | 60.9 |  | 1.5 | 61.1 | 37.4 |  |
| PHF | . 583 | . 783 | . 625 | . 848 | . 913 | . 941 | . 625 | . 921 | . 886 | . 760 | . 870 | . 871 | . 450 | . 892 | . 915 | . 931 |

## APPENDIX C: <br> VOLUME DEVELOPMENT WORKSHEETS

Table C-1 - Existing Peak Hour Volumes (Intersections With Classification Counts)


| 1. Sycamore Canyon Boulevard/Fair Isle Dr |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBL | 75 | 1 | 0 | 0 | 2 | 77 | 111 | 0 | 0 | 0 | 0 | 111 |
| NBT | 495 | 6 | 3 | 0 | 15 | 510 | 278 | 6 | 1 | 0 | 11 | 289 |
| NBR | 197 | 23 | 1 | 27 | 118 | 315 | 444 | 7 | 3 | 29 | 104 | 548 |
| SBL | 59 | 0 | 0 | 0 | 0 | 59 | 379 | 1 | 0 | 0 | 2 | 381 |
| SBT | 92 | 3 | 0 | 0 | 5 | 97 | 386 | 8 | 1 | 0 | 14 | 400 |
| SBR | 3 | 0 | 0 | 0 | 0 | 3 | 31 | 0 | 0 | 0 | 0 | 31 |
| EBL | 23 | 3 | 0 | 0 | 5 | 28 | 7 | 4 | 0 | 0 | 6 | 13 |
| EBT | 63 | 3 | 0 | 0 | 5 | 68 | 93 | 4 | 0 | 0 | 6 | 99 |
| EBR | 66 | 0 | 0 | 0 | 0 | 66 | 98 | 0 | 0 | 0 | 0 | 98 |
| WBL | 80 | 5 | 0 | 0 | 8 | 88 | 97 | 4 | 0 | 0 | 6 | 103 |
| WBT | 34 | 0 | 0 | 0 | 0 | 34 | 90 | 0 | 0 | 0 | 0 | 90 |
| WBR | 189 | 1 | 0 | 0 | 2 | 191 | 107 | 0 | 0 | 0 | 0 | 107 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 154 | 3 | 0 | 0 | 5 | 159 | 796 | 9 | 1 | 0 | 16 | 812 |
| Departure | 707 | 10 | 3 | 0 | 22 | 729 | 392 | 10 | 1 | 0 | 17 | 409 |
| Total | 861 | 13 | 3 | 0 | 27 | 888 | 1,188 | 19 | 2 | 0 | 33 | 1,221 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 767 | 30 | 4 | 27 | 135 | 902 | 833 | 13 | 4 | 29 | 115 | 948 |
| Departure | 238 | 8 | 0 | 0 | 13 | 251 | 581 | 12 | 1 | 0 | 20 | 601 |
| Total | 1,005 | 38 | 4 | 27 | 148 | 1,153 | 1,414 | 25 | 5 | 29 | 135 | 1,549 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 303 | 6 | 0 | 0 | 10 | 313 | 294 | 4 | 0 | 0 | 6 | 300 |
| Departure | 319 | 26 | 1 | 27 | 123 | 442 | 916 | 12 | 3 | 29 | 112 | 1,028 |
| Total | 622 | 32 | 1 | 27 | 133 | 755 | 1,210 | 16 | 3 | 29 | 118 | 1,328 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 152 | 6 | 0 | 0 | 10 | 162 | 198 | 8 | 0 | 0 | 12 | 210 |
| Departure | 112 | 1 | 0 | 0 | 2 | 114 | 232 | 0 | 0 | 0 | 0 | 232 |
| Total | 264 | 7 | 0 | 0 | 12 | 276 | 430 | 8 | 0 | 0 | 12 | 442 |


| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |
| :--- | :---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Approach | 1,376 | 45 | 4 | 27 | 160 | 1,536 | 2,121 | 34 | 5 | 29 | 149 | 2,270 |
| Departure | 1,376 | 45 | 4 | 27 | 160 | 1,536 | 2,121 | 34 | 5 | 29 | 149 | 2,270 |
| Total | 2,752 | 90 | 8 | 54 | 320 | 3,072 | 4,242 | 68 | 10 | 58 | 298 | 4,540 |

Table C-1 - Existing Peak Hour Volumes (Intersections With Classification Counts)

2. I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road

| NBL | 58 | 1 | 0 | 0 | 2 | 60 | 96 | 0 | 0 | 0 | 0 | 96 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 4 | 0 | 0 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 2 |
| NBR | 3 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 0 | 0 | 8 |
| SBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 159 | 19 | 3 | 30 | 125 | 284 | 258 | 4 | 3 | 31 | 105 | 363 |
| EBT | 145 | 3 | 0 | 0 | 5 | 150 | 657 | 9 | 0 | 0 | 14 | 671 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBT | 244 | 2 | 14 | 0 | 31 | 275 | 190 | 4 | 2 | 0 | 10 | 200 |
| WBR | 453 | 3 | 1 | 0 | 7 | 460 | 249 | 1 | 0 | 0 | 2 | 251 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 616 | 22 | 4 | 30 | 132 | 748 | 509 | 5 | 3 | 31 | 107 | 616 |
| Total | 616 | 22 | 4 | 30 | 132 | 748 | 509 | 5 | 3 | 31 | 107 | 616 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 65 | 1 | 0 | 0 | 2 | 67 | 106 | 0 | 0 | 0 | 0 | 106 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 65 | 1 | 0 | 0 | 2 | 67 | 106 | 0 | 0 | 0 | 0 | 106 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 697 | 5 | 15 | 0 | 38 | 735 | 439 | 5 | 2 | 0 | 12 | 451 |
| Departure | 148 | 3 | 0 | 0 | 5 | 153 | 665 | 9 | 0 | 0 | 14 | 679 |
| Total | 845 | 8 | 15 | 0 | 43 | 888 | 1,104 | 14 | 2 | 0 | 26 | 1,130 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 304 | 22 | 3 | 30 | 130 | 434 | 915 | 13 | 3 | 31 | 119 | 1,034 |
| Departure | 302 | 3 | 14 | 0 | 33 | 335 | 286 | 4 | 2 | 0 | 10 | 296 |
| Total | 606 | 25 | 17 | 30 | 163 | 769 | 1,201 | 17 | 5 | 31 | 129 | 1,330 |
| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 1,066 | 28 | 18 | 30 | 170 | 1,236 | 1,460 | 18 | 5 | 31 | 131 | 1,591 |
| Departure | 1,066 | 28 | 18 | 30 | 170 | 1,236 | 1,460 | 18 | 5 | 31 | 131 | 1,591 |
| Total | 2,132 | 56 | 36 | 60 | 340 | 2,472 | 2,920 | 36 | 10 | 62 | 262 | 3,182 |

Table C-1 - Existing Peak Hour Volumes (Intersections With Classification Counts)

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Pass. | Trucks | Total PCE | Pass. | Trucks | Total PCE |
| Veh. | 2 Axle 3 Axle 4 Axle PCE | Volume | Veh. | 2 Axle 3 Axle 4 Axle PCE | Volume |

Table C-1 - Existing Peak Hour Volumes (Intersections With Classification Counts)

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Pass. | Trucks | Total PCE | Pass. | Trucks | Total PCE |
| Veh. | 2 Axle 3 Axle 4 Axle PCE | Volume | Veh. | 2 Axle 3 Axle 4 Axle PCE | Volume |

Table C-1 - Existing Peak Hour Volumes (Intersections With Classification Counts)

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Pass. | Trucks | Total PCE | Pass. | Trucks | Total PCE |
| Veh. | 2 Axle 3 Axle 4 Axle PCE | Volume | Veh. | 2 Axle 3 Axle 4 Axle PCE | Volume |

Table C-1 - Existing Peak Hour Volumes (Intersections With Classification Counts)

|  | AM Peak Hour |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Pass. Veh. | Trucks |  |  |  |  | Pass. <br> Veh. | Trucks |  |  |  | Total PCE <br> Volume |
| 6 . Morton Road/Box Springs Road |  |  |  |  |  |  |  |  |  |  |  |  |
| NBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBL | 15 | 1 | 0 | 0 | 2 | 17 | 35 | 1 | 0 | 0 | 2 | 37 |
| SBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBR | 78 | 1 | 0 | 0 | 2 | 80 | 41 | 0 | 0 | 0 | 0 | 41 |
| EBL | 30 | 1 | 0 | 0 | 2 | 32 | 83 | 1 | 0 | 0 | 2 | 85 |
| EBT | 122 | 2 | 0 | 0 | 3 | 125 | 606 | 8 | 0 | 0 | 12 | 618 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBT | 634 | 3 | 1 | 1 | 10 | 644 | 409 | 5 | 0 | 0 | 8 | 417 |
| WBR | 4 | 1 | 0 | 0 | 2 | 6 | 23 | 0 | 0 | 0 | 0 | 23 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 93 | 2 | 0 | 0 | 4 | 97 | 76 | 1 | 0 | 0 | 2 | 78 |
| Departure | 34 | 2 | 0 | 0 | 4 | 38 | 106 | 1 | 0 | 0 | 2 | 108 |
| Total | 127 | 4 | 0 | 0 | 8 | 135 | 182 | 2 | 0 | 0 | 4 | 186 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 638 | 4 | 1 | 1 | 12 | 650 | 432 | 5 | 0 | 0 | 8 | 440 |
| Departure | 137 | 3 | 0 | 0 | 5 | 142 | 641 | 9 | 0 | 0 | 14 | 655 |
| Total | 775 | 7 | 1 | 1 | 17 | 792 | 1,073 | 14 | 0 | 0 | 22 | 1,095 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 152 | 3 | 0 | 0 | 5 | 157 | 689 | 9 | 0 | 0 | 14 | 703 |
| Departure | 712 | 4 | 1 | 1 | 12 | 724 | 450 | 5 | 0 | 0 | 8 | 458 |
| Total | 864 | 7 | 1 | 1 | 17 | 881 | 1,139 | 14 | 0 | 0 | 22 | 1,161 |
| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 883 | 9 | 1 | 1 | 21 | 904 | 1,197 | 15 | 0 | 0 | 24 | 1,221 |
| Departure | 883 | 9 | 1 | 1 | 21 | 904 | 1,197 | 15 | 0 | 0 | 24 | 1,221 |
| Total | 1,766 | 18 | 2 | 2 | 42 | 1,808 | 2,394 | 30 | 0 | 0 | 48 | 2,442 |

Table C-2 - Existing Peak Hour Truck Percentages

|  | AM Peak Hour |  |  |  | PM Peak Hour |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Passenger Vehicles | Total Trucks |  | Truck \% | Passenger Vehicles | Total Trucks | Total Vehicle Volume | Truck \% |
| 1 . Sycamore Canyon Boulevard/Fair Isle Dr |  |  |  |  |  |  |  |  |
| NBL | 75 | 1 | 76 | 1.32\% | 111 | 0 | 111 | 0.00\% |
| NBT | 495 | 9 | 504 | 1.79\% | 278 | 7 | 285 | 2.46\% |
| NBR | 197 | 51 | 248 | 20.56\% | 444 | 39 | 483 | 8.07\% |
| SBL | 59 | 0 | 59 | 0.00\% | 379 | 1 | 380 | 0.26\% |
| SBT | 92 | 3 | 95 | 3.16\% | 386 | 9 | 395 | 2.28\% |
| SBR | 3 | 0 | 3 | 0.00\% | 31 | 0 | 31 | 0.00\% |
| EBL | 23 | 3 | 26 | 11.54\% | 7 | 4 | 11 | 36.36\% |
| EBT | 63 | 3 | 66 | 4.55\% | 93 | 4 | 97 | 4.12\% |
| EBR | 66 | 0 | 66 | 0.00\% | 98 | 0 | 98 | 0.00\% |
| WBL | 80 | 5 | 85 | 5.88\% | 97 | 4 | 101 | 3.96\% |
| WBT | 34 | 0 | 34 | 0.00\% | 90 | 0 | 90 | 0.00\% |
| WBR | 189 | 1 | 190 | 0.53\% | 107 | 0 | 107 | 0.00\% |
| North Leg |  |  |  |  |  |  |  |  |
| Approach | 154 | 3 | 157 |  | 796 | 10 | 806 | 1.2\% |
| Departure | 707 | 13 | 720 |  | 392 | 11 | 403 | 2.7\% |
| Total | 861 | 16 | 877 | 1.8\% | 1,188 | 21 | 1,209 | 1.7\% |
| South Leg |  |  |  |  |  |  |  |  |
| Approach | 767 | 61 | 828 |  | 833 | 46 | 879 | 5.2\% |
| Departure | 238 | 8 | 246 |  | 581 | 13 | 594 | 2.2\% |
| Total | 1,005 | 69 | 1,074 | 6.4\% | 1,414 | 59 | 1,473 | 4.0\% |
| East Leg |  |  |  |  |  |  |  |  |
| Approach | 303 | 6 | 309 |  | 294 | 4 | 298 | 1.3\% |
| Departure | 319 | 54 | 373 |  | 916 | 44 | 960 | 4.6\% |
| Total | 622 | 60 | 682 | 8.8\% | 1,210 | 48 | 1,258 | 3.8\% |
| West Leg |  |  |  |  |  |  |  |  |
| Approach | 152 | 6 | 158 |  | 198 | 8 | 206 | 3.9\% |
| Departure | 112 | 1 | 113 |  | 232 | 0 | 232 | 0.0\% |
| Total | 264 | 7 | 271 | 2.6\% | 430 | 8 | 438 | 1.8\% |
| Total Approaches |  |  |  |  |  |  |  |  |
| Approach | 1,376 | 76 | 1,452 |  | 2,121 | 68 | 2,189 |  |
| Departure | 1,376 | 76 | 1,452 |  | 2,121 | 68 | 2,189 |  |
| Total | 2,752 | 152 | 2,904 | 5.2\% | 4,242 | 136 | 4,378 | 3.1\% |

Table C-2 - Existing Peak Hour Truck Percentages

|  | AM Peak Hour |  |  |  | PM Peak Hour |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Passenger Vehicles | Total Trucks |  | Truck \% | Passenger Vehicles | Total Trucks |  | Truck \% |
| 2 . I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road |  |  |  |  |  |  |  |  |
| NBL | 58 | 1 | 59 | 1.69\% | 96 | 0 | 96 | 0.00\% |
| NBT | 4 | 0 | 4 | 0.00\% | 2 | 0 | 2 | 0.00\% |
| NBR | 3 | 0 | 3 | 0.00\% | 8 | 0 | 8 | 0.00\% |
| SBL | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| SBT | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| SBR | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| EBL | 159 | 52 | 211 | 24.64\% | 258 | 38 | 296 | 12.84\% |
| EBT | 145 | 3 | 148 | 2.03\% | 657 | 9 | 666 | 1.35\% |
| EBR | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| WBL | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| WBT | 244 | 16 | 260 | 6.15\% | 190 | 6 | 196 | 3.06\% |
| WBR | 453 | 4 | 457 | 0.88\% | 249 | 1 | 250 | 0.40\% |
| North Leg |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 |  | 0 | 0 | 0 |  |
| Departure | 616 | 56 | 672 |  | 509 | 39 | 548 |  |
| Total | 616 | 56 | 672 | 8.3\% | 509 | 39 | 548 | 7.1\% |
| South Leg |  |  |  |  |  |  |  |  |
| Approach | 65 | 1 | 66 |  | 106 | 0 | 106 |  |
| Departure | 0 | 0 | 0 |  | 0 | 0 | 0 |  |
| Total | 65 | 1 | 66 | 1.5\% | 106 | 0 | 106 | 0.0\% |
| East Leg |  |  |  |  |  |  |  |  |
| Approach | 697 | 20 | 717 |  | 439 | 7 | 446 |  |
| Departure | 148 | 3 | 151 |  | 665 | 9 | 674 |  |
| Total | 845 | 23 | 868 | 2.6\% | 1,104 | 16 | 1,120 | 1.4\% |
| West Leg |  |  |  |  |  |  |  |  |
| Approach | 304 | 55 | 359 |  | 915 | 47 | 962 |  |
| Departure | 302 | 17 | 319 |  | 286 | 6 | 292 |  |
| Total | 606 | 72 | 678 | 10.6\% | 1,201 | 53 | 1,254 | 4.2\% |
| Total Approaches |  |  |  |  |  |  |  |  |
| Approach | 1,066 | 76 | 1,142 |  | 1,460 | 54 | 1,514 |  |
| Departure | 1,066 | 76 | 1,142 |  | 1,460 | 54 | 1,514 |  |
| Total | 2,132 | 152 | 2,284 | 6.7\% | 2,920 | 108 | 3,028 | 3.6\% |

Table C-2 - Existing Peak Hour Truck Percentages

| AM Peak Hour |  |  |  | PM Peak Hour |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Passenger Vehicles | Total Trucks |  | Truck \% | Passenger Vehicles | Total Trucks |  | Truck \% |

Table C-2 - Existing Peak Hour Truck Percentages

| AM Peak Hour |  |  |  | PM Peak Hour |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Passenger Vehicles | Total Trucks |  | Truck \% | Passenger Vehicles | Total Trucks |  | Truck \% |

Table C-2 - Existing Peak Hour Truck Percentages

| AM Peak Hour |  |  |  | PM Peak Hour |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Passenger Vehicles | Total Trucks |  | Truck \% | Passenger Vehicles | Total Trucks |  | Truck \% |

Table C-2 - Existing Peak Hour Truck Percentages

|  | AM Peak Hour |  |  |  | PM Peak Hour |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Passenger Vehicles | Total Trucks |  | $\begin{gathered} \text { Truck } \\ \% \end{gathered}$ | Passenger Vehicles | Total Trucks | Total <br> Vehicle <br> Volume | $\begin{gathered} \text { Truck } \\ \% \end{gathered}$ |
| 6 . Morton Road/Box Springs Road |  |  |  |  |  |  |  |  |
| NBL | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| NBT | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| NBR | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| SBL | 15 | 1 | 16 | 6.25\% | 35 | 1 | 36 | 2.78\% |
| SBT | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| SBR | 78 | 1 | 79 | 1.27\% | 41 | 0 | 41 | 0.00\% |
| EBL | 30 | 1 | 31 | 3.23\% | 83 | 1 | 84 | 1.19\% |
| EBT | 122 | 2 | 124 | 1.61\% | 606 | 8 | 614 | 1.30\% |
| EBR | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| WBL | 0 | 0 | 0 | 0.00\% | 0 | 0 | 0 | 0.00\% |
| WBT | 634 | 5 | 639 | 0.78\% | 409 | 5 | 414 | 1.21\% |
| WBR | 4 | 1 | 5 | 20.00\% | 23 | 0 | 23 | 0.00\% |
| North Leg |  |  |  |  |  |  |  |  |
| Approach | 93 | 2 | 95 |  | 76 | 1 | 77 |  |
| Departure | 34 | 2 | 36 |  | 106 | 1 | 107 |  |
| Total | 127 | 4 | 131 | 3.1\% | 182 | 2 | 184 | 1.1\% |
| South Leg |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 |  | 0 | 0 | 0 |  |
| Departure | 0 | 0 | 0 |  | 0 | 0 | 0 |  |
| Total | 0 | 0 | 0 | 0.0\% | 0 | 0 | 0 | 0.0\% |
| East Leg |  |  |  |  |  |  |  |  |
| Approach | 638 | 6 | 644 |  | 432 | 5 | 437 |  |
| Departure | 137 | 3 | 140 |  | 641 | 9 | 650 |  |
| Total | 775 | 9 | 784 | 1.1\% | 1,073 | 14 | 1,087 | 1.3\% |
| West Leg |  |  |  |  |  |  |  |  |
| Approach | 152 | 3 | 155 |  | 689 | 9 | 698 |  |
| Departure | 712 | 6 | 718 |  | 450 | 5 | 455 |  |
| Total | 864 | 9 | 873 | 1.0\% | 1,139 | 14 | 1,153 | 1.2\% |
| Total Approaches |  |  |  |  |  |  |  |  |
| Approach | 883 | 11 | 894 |  | 1,197 | 15 | 1,212 |  |
| Departure | 883 | 11 | 894 |  | 1,197 | 15 | 1,212 |  |
| Total | 1,766 | 22 | 1,788 | 1.2\% | 2,394 | 30 | 2,424 | 1.2\% |

# Table C-3: Existing PCE Peak Hour Volume Summary 

| AM Peak Hour |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Tota |  |  |  |  |  | Total |
| Total Veh. | $\begin{gathered} \text { Truck } \\ \% \end{gathered}$ | Pass. <br> Veh. | Truck | $\begin{aligned} & \text { Truck } \\ & \text { PCE } \end{aligned}$ | $\begin{gathered} \text { PCE } \\ \text { Vol } \end{gathered}$ | Total Veh. | $\begin{gathered} \text { Truck } \\ \% \end{gathered}$ | Pass. <br> Veh. | Truck | $\begin{aligned} & \text { Truck } \\ & \text { PCE } \end{aligned}$ | $\begin{gathered} \text { PCE } \\ \text { Vol } \end{gathered}$ |

Table C-3: Existing PCE Peak Hour Volume Summary


Table C-3: Existing PCE Peak Hour Volume Summary


Table C-3: Existing PCE Peak Hour Volume Summary

| AM Peak Hour |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total Veh. | $\begin{gathered} \text { Truck } \\ \% \end{gathered}$ | Pass. <br> Veh. | Truck | $\begin{aligned} & \text { Truck } \\ & \text { PCE } \end{aligned}$ | $\begin{gathered} \text { Total } \\ \text { PCE } \\ \text { Vol } \end{gathered}$ | Total Veh. | $\begin{gathered} \text { Truck } \\ \% \end{gathered}$ | Pass. <br> Veh. | Truck | Truck PCE | $\begin{gathered} \hline \text { Total } \\ \text { PCE } \\ \text { Vol } \end{gathered}$ |

## 4 . Morton Road/Woodsworth Road N

| NBL | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 13 |  | 13 | 0 | 0 | 13 | 33 |  | 33 | 0 | 0 | 33 |
| NBR | 5 | 3.1\% | 5 | 0 | 0 | 5 | 13 | 1.1\% | 13 | 0 | 0 | 13 |
| SBL | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| SBT | 26 |  | 26 | 0 | 0 | 26 | 19 |  | 19 | 0 | 0 | 19 |
| SBR | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| EBL | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| EBT | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| EBR | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| WBL | 3 | 3.1\% | 3 | 0 | 0 | 3 | 2 | 1.1\% | 2 | 0 | 0 | 2 |
| WBT | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| WBR | 1 |  | 1 | 0 | 0 | 1 | 2 |  | 2 | 0 | 0 | 2 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 26 |  | 26 | 0 | 0 | 26 | 19 |  | 19 | 0 | 0 | 19 |
| Departure | 14 |  | 14 | 0 | 0 | 14 | 35 |  | 35 | 0 | 0 | 35 |
| Total | 40 |  | 40 | 0 | 0 | 40 | 54 |  | 54 | 0 | 0 | 54 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 18 |  | 18 | 0 | 0 | 18 | 46 |  | 46 | 0 | 0 | 46 |
| Departure | 29 |  | 29 | 0 | 0 | 29 | 21 |  | 21 | 0 | 0 | 21 |
| Total | 47 |  | 47 | 0 | 0 | 47 | 67 |  | 67 | 0 | 0 | 67 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 4 |  | 4 | 0 | 0 | 4 | 4 |  | 4 | 0 | 0 | 4 |
| Departure | 5 |  | 5 | 0 | 0 | 5 | 13 |  | 13 | 0 | 0 | 13 |
| Total | 9 |  | 9 | 0 | 0 | 9 | 17 |  | 17 | 0 | 0 | 17 |

West Leg

| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Total Approaches

| Approach | 48 | 48 | 0 | 0 | 48 | 69 | 69 | 0 | 0 | 69 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Departure | 48 | 48 | 0 | 0 | 48 | 69 | 69 | 0 | 0 | 69 |
| Total | 96 | 96 | 0 | 0 | 96 | 138 | 138 | 0 | 0 | 138 |

Table C-3: Existing PCE Peak Hour Volume Summary

| AM Peak Hour |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total Veh. | $\begin{gathered} \text { Truck } \\ \% \end{gathered}$ | Pass. <br> Veh. | Truck | $\begin{aligned} & \text { Truck } \\ & \text { PCE } \end{aligned}$ | $\begin{gathered} \text { Total } \\ \text { PCE } \\ \text { Vol } \end{gathered}$ | Total Veh. | $\begin{gathered} \text { Truck } \\ \% \end{gathered}$ | Pass. <br> Veh. | Truck | $\begin{aligned} & \text { Truck } \\ & \text { PCE } \end{aligned}$ | $\begin{gathered} \hline \text { Total } \\ \text { PCE } \\ \text { Vol } \end{gathered}$ |

## 5 . Morton Road/Woodsworth Road S

| NBL | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 17 | $3.1 \%$ | 16 | 1 | 3 | 19 | 32 | $1.1 \%$ | 32 | 0 | 0 | 32 |
| NBR | 12 | $3.1 \%$ | 12 | 0 | 0 | 12 | 41 | $1.1 \%$ | 41 | 0 | 0 | 41 |
| SBL | 1 |  | 1 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 0 |
| SBT | 22 | $3.1 \%$ | 21 | 1 | 3 | 24 | 26 | $1.1 \%$ | 26 | 0 | 0 | 26 |
| SBR | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| EBL | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| EBT | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| EBR | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| WBL | 51 | $3.1 \%$ | 49 | 2 | 5 | 54 | 38 | $1.1 \%$ | 38 | 0 | 0 | 38 |
| WBT | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 |
| WBR | 0 |  | 0 | 0 | 0 | 0 | 1 |  | 1 | 0 | 0 | 1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| North Leg |  |  | 22 | 1 | 3 | 25 | 26 |  | 26 | 0 | 0 | 26 |
| Approach | 23 |  | 16 | 1 | 3 | 19 | 33 |  | 33 | 0 | 0 | 33 |
| Departure | 17 |  | 38 | 2 | 6 | 44 | 59 |  | 59 | 0 | 0 | 59 |
| Total | 40 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| South Leg |  |  | 28 | 1 | 3 | 31 | 73 |  | 73 | 0 | 0 | 73 |
| Approach | 29 |  | 70 | 3 | 8 | 78 | 64 |  | 64 | 0 | 0 | 64 |
| Departure | 73 |  | 98 | 4 | 11 | 109 | 137 |  | 137 | 0 | 0 | 137 |
| Total | 102 |  |  |  |  |  |  |  |  |  |  |  |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 51 |  | 49 | 2 | 5 | 54 | 39 |  | 39 | 0 | 0 | 39 |
| Departure | 13 | 13 | 0 | 0 | 13 | 41 | 41 | 0 | 0 | 41 |  |  |
| Total | 64 | 62 | 2 | 5 | 67 | 80 | 80 | 0 | 0 | 80 |  |  |

West Leg

| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Total Approaches

| Approach | 103 | 99 | 4 | 11 | 110 | 138 | 138 | 0 | 0 | 138 |
| :--- | :--- | :---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Departure | 103 | 99 | 4 | 11 | 110 | 138 | 138 | 0 | 0 | 138 |
| Total | 206 | 198 | 8 | 22 | 220 | 276 | 276 | 0 | 0 | 276 |

Table C-3: Existing PCE Peak Hour Volume Summary


Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

| A.M. Peak Hour Volumes |  |  | P.M. Peak Hour Volumes |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \hline \text { PCE } \\ \text { Volume } \end{gathered}$ | Adjust. | Balanced Volume | $\begin{gathered} \hline \text { PCE } \\ \text { Volume } \end{gathered}$ | Adjust. | Balanced Volume |

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Morton Road/Box Springs Road

| NBL | 0 |  | 0 | 0 |  | 0 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 0 |  | 0 | 0 |  | 0 |
| NBR | 0 |  | 0 | 0 |  | 0 |
| SBL | 17 | 28 | 45 | 37 | 5 | 42 |
| SBT | 0 |  | 0 | 0 |  | 0 |
| SBR | 80 |  | 80 | 41 |  | 41 |
| EBL | 32 |  | 32 | 85 |  | 85 |
| EBT | 125 | 210 | 335 | 618 | 84 | 702 |
| EBR | 0 |  | 0 | 0 |  | 0 |
| WBL | 0 |  | 0 | 0 |  | 0 |
| WBT | 644 | 655 | 1,299 | 417 | 128 | 545 |
| WBR | 6 | 6 | 12 | 23 | 7 | 30 |
|  |  |  |  |  |  |  |
| North Leg |  |  |  |  |  |  |
| Approach | 97 | 28 | 125 | 78 | 5 | 83 |
| Departure | 38 | 6 | 44 | 108 | 7 | 115 |
| Total | 135 | 34 | 169 | 186 | 12 | 198 |
|  |  |  |  |  |  |  |
| South Leg |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  |
| East Leg |  |  |  |  |  |  |
| Approach | 650 | 661 | 1,311 | 440 | 135 | 575 |
| Departure | 142 | 238 | 380 | 655 | 89 | 744 |
| Total | 792 | 899 | 1,691 | 1,095 | 224 | 1,319 |
| West Leg |  |  |  |  |  |  |
| Approach | 157 | 210 | 367 | 703 | 84 | 787 |
| Departure | 724 | 655 | 1,379 | 458 | 128 | 586 |
| Total | 881 | 865 | 1,746 | 1,161 | 212 | 1,373 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 904 | 899 | 1,803 | 1,221 | 224 | 1,445 |
| Departure | 904 | 899 | 1,803 | 1,221 | 224 | 1,445 |
| Total | 1,808 | 1,798 | 3,606 | 2,442 | 448 | 2,890 |

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

| A.M. Peak Hour Volumes |  |  | P.M. Peak Hour Volumes |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \hline \text { PCE } \\ \text { Volume } \end{gathered}$ | Adjust. | Balanced Volume | PCE Volume | Adjust. | Balanced Volume |

7 Day St/Ironwood Ave-Box Springs Rd

| NBL | 258 |  | 258 | 266 |  | 266 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 30 |  | 30 | 71 |  | 71 |
| NBR | 126 |  | 126 | 671 |  | 671 |
| SBL | 27 |  | 27 | 18 |  | 18 |
| SBT | 67 |  | 67 | 40 |  | 40 |
| SBR | 24 |  | 24 | 2 |  | 2 |
| EBL | 2 |  | 2 | 9 |  | 9 |
| EBT | 162 |  | 162 | 494 |  | 494 |
| EBR | 216 |  | 216 | 241 |  | 241 |
| WBL | 597 |  | 597 | 300 |  | 300 |
| WBT | 1,029 |  | 1,029 | 307 |  | 307 |
| WBR | 21 |  | 21 | 12 |  | 12 |
| North Leg |  |  |  |  |  |  |
| Approach | 118 | 0 | 118 | 60 | 0 | 60 |
| Departure | 53 | 0 | 53 | 92 | 0 | 92 |
| Total | 171 | 0 | 171 | 152 | 0 | 152 |
| South Leg |  |  |  |  |  |  |
| Approach | 414 | 0 | 414 | 1,008 | 0 | 1,008 |
| Departure | 880 | 0 | 880 | 581 | 0 | 581 |
| Total | 1,294 | 0 | 1,294 | 1,589 | 0 | 1,589 |
| East Leg |  |  |  |  |  |  |
| Approach | 1,647 | 0 | 1,647 | 619 | 0 | 619 |
| Departure | 315 | 0 | 315 | 1,183 | 0 | 1,183 |
| Total | 1,962 | 0 | 1,962 | 1,802 | 0 | 1,802 |
| West Leg |  |  |  |  |  |  |
| Approach | 380 | 0 | 380 | 744 | 0 | 744 |
| Departure | 1,311 | 0 | 1,311 | 575 | 0 | 575 |
| Total | 1,691 | 0 | 1,691 | 1,319 | 0 | 1,319 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 2,559 | 0 | 2,559 | 2,431 | 0 | 2,431 |
| Departure | 2,559 | 0 | 2,559 | 2,431 | 0 | 2,431 |
| Total | 5,118 | 0 | 5,118 | 4,862 | 0 | 4,862 |

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

| A.M. Peak Hour Volumes |  |  | P.M. Peak Hour Volumes |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| PCE Volume | Adjust. | Balanced Volume | PCE Volume | Adjust. | Balanced Volume |

2
I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road

| NBL | 60 |  | 60 | 96 |  | 96 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 4 |  | 4 | 2 |  | 2 |
| NBR | 3 | 4 | 7 | 8 | 1 | 9 |
| SBL | 0 |  | 0 | 0 |  | 0 |
| SBT | 0 |  | 0 | 0 |  | 0 |
| SBR | 0 |  | 0 | 0 |  | 0 |
| EBL | 284 |  | 284 | 363 |  | 363 |
| EBT | 150 | 210 | 360 | 671 | 107 | 778 |
| EBR | 0 |  | 0 | 0 |  | 0 |
| WBL | 0 |  | 0 | 0 |  | 0 |
| WBT | 275 | 241 | 516 | 200 | 60 | 260 |
| WBR | 460 | 403 | 863 | 251 | 75 | 326 |
|  |  |  |  |  |  |  |
| North Leg |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 748 | 403 | 1,151 | 616 | 75 | 691 |
| Total | 748 | 403 | 1,151 | 616 | 75 | 691 |
| South Leg |  |  |  |  |  |  |
| Approach | 67 | 4 | 71 | 106 | 1 | 107 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 67 | 4 | 71 | 106 | 1 | 107 |
|  |  |  |  |  |  |  |
| East Leg |  |  |  |  |  |  |
| Approach | 735 | 644 | 1,379 | 451 | 135 | 586 |
| Departure | 153 | 214 | 367 | 679 | 108 | 787 |
| Total | 888 | 858 | 1,746 | 1,130 | 243 | 1,373 |
| West Leg |  |  |  |  |  |  |
| Approach | 434 | 210 | 644 | 1,034 | 107 | 1,141 |
| Departure | 335 | 241 | 576 | 296 | 60 | 356 |
| Total | 769 | 451 | 1,220 | 1,330 | 167 | 1,497 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 1,236 | 858 | 2,094 | 1,591 | 243 | 1,834 |
| Departure | 1,236 | 858 | 2,094 | 1,591 | 243 | 1,834 |
| Total | 2,472 | 1,716 | 4,188 | 3,182 | 486 | 3,668 |
|  |  |  |  |  |  |  |

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

| A.M. Peak Hour Volumes |  |  | P.M. Peak Hour Volumes |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \hline \text { PCE } \\ \text { Volume } \end{gathered}$ | Adjust. | Balanced Volume | PCE Volume | Adjust. | Balanced Volume |

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Morton Road/Box Springs Road

| NBL | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: |
| NBT | 0 | 0 | 0 | 0 |
| NBR | 0 | 0 | 0 | 0 |
| SBL | 45 | 45 | 42 | 42 |
| SBT | 0 | 0 | 0 | 0 |
| SBR | 80 | 80 | 41 | 41 |
| EBL | 32 | 32 | 85 | 85 |
| EBT | 335 | 335 | 702 | 702 |
| EBR | 0 | 0 | 0 | 0 |
| WBL | 0 | 0 | 0 | 0 |
| WBT | 1,299 | 1,299 | 545 | 545 |
| WBR | 12 | 12 | 30 | 30 |

North Leg

| Approach | 125 | 0 | 125 | 83 | 0 | 83 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Departure | 44 | 0 | 44 | 115 | 0 | 115 |
| Total | 169 | 0 | 169 | 198 | 0 | 198 |

South Leg

| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 |

East Leg

| Approach | 1,311 | 0 | 1,311 | 575 | 0 | 575 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Departure | 380 | 0 | 380 | 744 | 0 | 744 |
| Total | 1,691 | 0 | 1,691 | 1,319 | 0 | 1,319 |

West Leg

| Approach | 367 | 0 | 367 | 787 | 0 | 787 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Departure | 1,379 | 0 | 1,379 | 586 | 0 | 586 |
| Total | 1,746 | 0 | 1,746 | 1,373 | 0 | 1,373 |
|  |  |  |  |  |  |  |
| Approaches |  |  |  |  |  |  |
| Approach | 1,803 | 0 | 1,803 | 1,445 | 0 | 1,445 |
| Departure | 1,803 | 0 | 1,803 | 1,445 | 0 | 1,445 |
| Total | 3,606 | 0 | 3,606 | 2,890 | 0 | 2,890 |

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

| A.M. Peak Hour Volumes |  |  | P.M. Peak Hour Volumes |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| PCE Volume | Adjust. | Balanced Volume | PCE Volume | Adjust. | Balanced Volume |

1 Sycamore Canyon Boulevard/Fair Isle Dr

| NBL | 77 |  | 77 | 111 |  | 111 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 510 |  | 510 | 289 |  | 289 |
| NBR | 315 | -53 | 262 | 548 | -128 | 420 |
| SBL | 59 | -10 | 49 | 381 | -89 | 292 |
| SBT | 97 |  | 97 | 400 |  | 400 |
| SBR | 3 |  | 3 | 31 |  | 31 |
| EBL | 28 |  | 28 | 13 |  | 13 |
| EBT | 68 | -12 | 56 | 99 | -23 | 76 |
| EBR | 66 |  | 66 | 98 |  | 98 |
| WBL | 88 | 300 | 388 | 103 | 98 | 201 |
| WBT | 34 | 116 | 150 | 90 | 86 | 176 |
| WBR | 191 | 650 | 841 | 107 | 102 | 209 |
| North Leg |  |  |  |  |  |  |
| Approach | 159 | -10 | 149 | 812 | -89 | 723 |
| Departure | 729 | 650 | 1,379 | 409 | 102 | 511 |
| Total | 888 | 640 | 1,528 | 1,221 | 13 | 1,234 |
| South Leg |  |  |  |  |  |  |
| Approach | 902 | -53 | 849 | 948 | -128 | 820 |
| Departure | 251 | 300 | 551 | 601 | 98 | 699 |
| Total | 1,153 | 247 | 1,400 | 1,549 | -30 | 1,519 |
| East Leg |  |  |  |  |  |  |
| Approach | 313 | 1,066 | 1,379 | 300 | 286 | 586 |
| Departure | 442 | -75 | 367 | 1,028 | -240 | 788 |
| Total | 755 | 991 | 1,746 | 1,328 | 46 | 1,374 |
| West Leg |  |  |  |  |  |  |
| Approach | 162 | -12 | 150 | 210 | -23 | 187 |
| Departure | 114 | 116 | 230 | 232 | 86 | 318 |
| Total | 276 | 104 | 380 | 442 | 63 | 505 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 1,536 | 991 | 2,527 | 2,270 | 46 | 2,316 |
| Departure | 1,536 | 991 | 2,527 | 2,270 | 46 | 2,316 |
| Total | 3,072 | 1,982 | 5,054 | 4,540 | 92 | 4,632 |

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

| A.M. Peak Hour Volumes |  |  | P.M. Peak Hour Volumes |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \hline \text { PCE } \\ \text { Volume } \end{gathered}$ | Adjust. | Balanced Volume | PCE Volume | Adjust. | Balanced Volume |

2
I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road

| NBL | 0 |  | 0 | 0 |  | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 0 |  | 0 | 0 |  | 0 |
| NBR | 0 |  | 0 | 0 |  | 0 |
| SBL | 45 |  | 45 | 42 |  | 42 |
| SBT | 0 |  | 0 | 0 |  | 0 |
| SBR | 80 |  | 80 | 41 |  | 41 |
| EBL | 32 |  | 32 | 85 |  | 85 |
| EBT | 335 |  | 335 | 702 |  | 702 |
| EBR | 0 |  | 0 | 0 |  | 0 |
| WBL | 0 |  | 0 | 0 |  | 0 |
| WBT | 1,299 |  | 1,299 | 545 |  | 545 |
| WBR | 12 |  | 12 | 30 |  | 30 |
| North Leg |  |  |  |  |  |  |
| Approach | 125 | 0 | 125 | 83 | 0 | 83 |
| Departure | 44 | 0 | 44 | 115 | 0 | 115 |
| Total | 169 | 0 | 169 | 198 | 0 | 198 |
| South Leg |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 |
| East Leg |  |  |  |  |  |  |
| Approach | 1,311 | 0 | 1,311 | 575 | 0 | 575 |
| Departure | 380 | 0 | 380 | 744 | 0 | 744 |
| Total | 1,691 | 0 | 1,691 | 1,319 | 0 | 1,319 |
| West Leg |  |  |  |  |  |  |
| Approach | 367 | 0 | 367 | 787 | 0 | 787 |
| Departure | 1,379 | 0 | 1,379 | 586 | 0 | 586 |
| Total | 1,746 | 0 | 1,746 | 1,373 | 0 | 1,373 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 1,803 | 0 | 1,803 | 1,445 | 0 | 1,445 |
| Departure | 1,803 | 0 | 1,803 | 1,445 | 0 | 1,445 |
| Total | 3,606 | 0 | 3,606 | 2,890 | 0 | 2,890 |

Table C-5: Existing With Project Peak Hour Volume Summary

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Exist |  | Exist | Exist |  | Exist |
| PCE <br> Volume | Project Trips | WP | PCE Volume | Project Trips | WP |

## 1. Sycamore Canyon Boulevard/Fair Isle Dr

| NBL | 77 | 0 | 77 | 111 | 0 | 111 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 510 | 0 | 510 | 289 | 0 | 289 |
| NBR | 262 | 5 | 267 | 420 | 17 | 437 |
| SBL | 49 | 4 | 53 | 292 | 13 | 305 |
| SBT | 97 | 0 | 97 | 400 | 0 | 400 |
| SBR | 3 | 0 | 3 | 31 | 0 | 31 |
| EBL | 28 | 0 | 28 | 13 | 0 | 13 |
| EBT | 56 | 0 | 56 | 76 | 0 | 76 |
| EBR | 66 | 0 | 66 | 98 | 0 | 98 |
| WBL | 388 | 15 | 403 | 201 | 10 | 211 |
| WBT | 150 | 0 | 150 | 176 | 0 | 176 |
| WBR | 841 | 12 | 853 | 209 | 8 | 217 |
| North Leg |  |  |  |  |  |  |
| Approach | 149 | 4 | 153 | 723 | 13 | 736 |
| Departure | 1,379 | 12 | 1,391 | 511 | 8 | 519 |
| Total | 1,528 | 16 | 1,544 | 1,234 | 21 | 1,255 |
| South Leg |  |  |  |  |  |  |
| Approach | 849 | 5 | 854 | 820 | 17 | 837 |
| Departure | 551 | 15 | 566 | 699 | 10 | 709 |
| Total | 1,400 | 20 | 1,420 | 1,519 | 27 | 1,546 |
| East Leg |  |  |  |  |  |  |
| Approach | 1,379 | 27 | 1,406 | 586 | 18 | 604 |
| Departure | 367 | 9 | 376 | 788 | 30 | 818 |
| Total | 1,746 | 36 | 1,782 | 1,374 | 48 | 1,422 |
| West Leg |  |  |  |  |  |  |
| Approach | 150 | 0 | 150 | 187 | 0 | 187 |
| Departure | 230 | 0 | 230 | 318 | 0 | 318 |
| Total | 380 | 0 | 380 | 505 | 0 | 505 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 2,527 | 36 | 2,563 | 2,316 | 48 | 2,364 |
| Departure | 2,527 | 36 | 2,563 | 2,316 | 48 | 2,364 |
| Total | 5,054 | 72 | 5,126 | 4,632 | 96 | 4,728 |

Table C-5: Existing With Project Peak Hour Volume Summary

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Exist |  | Exist | Exist |  | Exist |
| PCE Volume | Project Trips | WP | PCE Volume | Project Trips | WP |

## 2. I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road

| NBL | 60 | 0 | 60 | 96 | 0 | 96 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 4 | 0 | 4 | 2 | 0 | 2 |
| NBR | 7 | 5 | 12 | 9 | 17 | 26 |
| SBL | 0 | 0 | 0 | 0 | 0 | 0 |
| SBT | 0 | 0 | 0 | 0 | 0 | 0 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 284 | 0 | 284 | 363 | 0 | 363 |
| EBT | 360 | 9 | 369 | 778 | 30 | 808 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 0 | 0 | 0 | 0 | 0 | 0 |
| WBT | 516 | 27 | 543 | 260 | 18 | 278 |
| WBR | 863 | 15 | 878 | 326 | 10 | 336 |
| North Leg |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 1,151 | 15 | 1,166 | 691 | 10 | 701 |
| Total | 1,151 | 15 | 1,166 | 691 | 10 | 701 |
| South Leg |  |  |  |  |  |  |
| Approach | 71 | 5 | 76 | 107 | 17 | 124 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 71 | 5 | 76 | 107 | 17 | 124 |
| East Leg |  |  |  |  |  |  |
| Approach | 1,379 | 42 | 1,421 | 586 | 28 | 614 |
| Departure | 367 | 14 | 381 | 787 | 47 | 834 |
| Total | 1,746 | 56 | 1,802 | 1,373 | 75 | 1,448 |
| West Leg |  |  |  |  |  |  |
| Approach | 644 | 9 | 653 | 1,141 | 30 | 1,171 |
| Departure | 576 | 27 | 603 | 356 | 18 | 374 |
| Total | 1,220 | 36 | 1,256 | 1,497 | 48 | 1,545 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 2,094 | 56 | 2,150 | 1,834 | 75 | 1,909 |
| Departure | 2,094 | 56 | 2,150 | 1,834 | 75 | 1,909 |
| Total | 4,188 | 112 | 4,300 | 3,668 | 150 | 3,818 |

Table C-5: Existing With Project Peak Hour Volume Summary

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Exist |  | Exist | Exist |  | Exist |
| PCE <br> Volume | Project Trips | WP | PCE <br> Volume | Project Trips | WP |

## 3. Morton Road/Project Driveway

| NBL | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 4 | 0 | 4 | 9 | 0 | 9 |
| NBR | 0 | 20 | 20 | 0 | 67 | 67 |
| SBL | 0 | 0 | 0 | 0 | 0 | 0 |
| SBT | 7 | 0 | 7 | 5 | 0 | 5 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 0 | 0 | 0 | 0 | 0 | 0 |
| EBT | 0 | 0 | 0 | 0 | 0 | 0 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 0 | 60 | 60 | 0 | 40 | 40 |
| WBT | 0 | 0 | 0 | 0 | 0 | 0 |
| WBR | 0 | 0 | 0 | 0 | 0 | 0 |
| North Leg |  |  |  |  |  |  |
| Approach | 7 | 0 | 7 | 5 | 0 | 5 |
| Departure | 4 | 0 | 4 | 9 | 0 | 9 |
| Total | 11 | 0 | 11 | 14 | 0 | 14 |
| South Leg |  |  |  |  |  |  |
| Approach | 4 | 20 | 24 | 9 | 67 | 76 |
| Departure | 7 | 60 | 67 | 5 | 40 | 45 |
| Total | 11 | 80 | 91 | 14 | 107 | 121 |
| East Leg |  |  |  |  |  |  |
| Approach | 0 | 60 | 60 | 0 | 40 | 40 |
| Departure | 0 | 20 | 20 | 0 | 67 | 67 |
| Total | 0 | 80 | 80 | 0 | 107 | 107 |
| West Leg |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 11 | 80 | 91 | 14 | 107 | 121 |
| Departure | 11 | 80 | 91 | 14 | 107 | 121 |
| Total | 22 | 160 | 182 | 28 | 214 | 242 |

Table C-5: Existing With Project Peak Hour Volume Summary

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Exist |  | Exist | Exist |  | Exist |
| PCE <br> Volume | Project Trips | WP | PCE Volume | Project Trips | WP |

## 4. Morton Road/Woodsworth Road N

| NBL | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 13 | 20 | 33 | 33 | 67 | 100 |
| NBR | 5 | 0 | 5 | 13 | 0 | 13 |
| SBL | 0 | 0 | 0 | 0 | 0 | 0 |
| SBT | 26 | 60 | 86 | 19 | 40 | 59 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 0 | 0 | 0 | 0 | 0 | 0 |
| EBT | 0 | 0 | 0 | 0 | 0 | 0 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 3 | 0 | 3 | 2 | 0 | 2 |
| WBT | 0 | 0 | 0 | 0 | 0 | 0 |
| WBR | 1 | 0 | 1 | 2 | 0 | 2 |
| North Leg |  |  |  |  |  |  |
| Approach | 26 | 60 | 86 | 19 | 40 | 59 |
| Departure | 14 | 20 | 34 | 35 | 67 | 102 |
| Total | 40 | 80 | 120 | 54 | 107 | 161 |
| South Leg |  |  |  |  |  |  |
| Approach | 18 | 20 | 38 | 46 | 67 | 113 |
| Departure | 29 | 60 | 89 | 21 | 40 | 61 |
| Total | 47 | 80 | 127 | 67 | 107 | 174 |
| East Leg |  |  |  |  |  |  |
| Approach | 4 | 0 | 4 | 4 | 0 | 4 |
| Departure | 5 | 0 | 5 | 13 | 0 | 13 |
| Total | 9 | 0 | 9 | 17 | 0 | 17 |
| West Leg |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 48 | 80 | 128 | 69 | 107 | 176 |
| Departure | 48 | 80 | 128 | 69 | 107 | 176 |
| Total | 96 | 160 | 256 | 138 | 214 | 352 |

Table C-5: Existing With Project Peak Hour Volume Summary

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Exist |  | Exist | Exist |  | Exist |
| PCE <br> Volume | Project Trips | WP | PCE Volume | Project Trips | WP |

## 5. Morton Road/Woodsworth Road S

| NBL | 0 | 0 | 0 | 0 | 0 | 0 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 19 | 20 | 39 | 32 | 67 | 99 |
| NBR | 12 | 0 | 12 | 41 | 0 | 41 |
| SBL | 1 | 0 | 1 | 0 | 0 | 0 |
| SBT | 24 | 60 | 84 | 26 | 40 | 66 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 0 | 0 | 0 | 0 | 0 | 0 |
| EBT | 0 | 0 | 0 | 0 | 0 | 0 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 54 | 0 | 54 | 38 | 0 | 38 |
| WBT | 0 | 0 | 0 | 0 | 0 | 0 |
| WBR | 0 | 0 | 0 | 1 | 0 | 1 |
|  |  |  |  |  |  |  |
| North Leg |  |  |  |  |  |  |
| $\quad$ Approach | 25 | 60 | 85 | 26 | 40 | 66 |
| Departure | 19 | 20 | 39 | 33 | 67 | 100 |
| Total | 44 | 80 | 124 | 59 | 107 | 166 |
|  |  |  |  |  |  |  |
| South Leg |  |  |  |  |  |  |
| Approach | 31 | 20 | 51 | 73 | 67 | 140 |
| Departure | 78 | 60 | 138 | 64 | 40 | 104 |
| Total | 109 | 80 | 189 | 137 | 107 | 244 |
| East Leg |  |  |  |  |  |  |
| Approach | 54 | 0 | 54 | 39 | 0 | 39 |
| Departure | 13 | 0 | 13 | 41 | 0 | 41 |
| Total | 67 | 0 | 67 | 80 | 0 | 80 |

West Leg

| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 |

Total Approaches

| Approach | 110 | 80 | 190 | 138 | 107 | 245 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Departure | 110 | 80 | 190 | 138 | 107 | 245 |
| Total | 220 | 160 | 380 | 276 | 214 | 490 |

Table C-5: Existing With Project Peak Hour Volume Summary

| AM Peak Hour |  |  | PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Exist |  | Exist | Exist |  | Exist |
| PCE <br> Volume | Project Trips | WP | PCE Volume | Project Trips | WP |

## 6. Morton Road/Box Springs Road

| NBL | 0 | 0 | 0 | 0 | 0 | 0 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 0 | 0 | 0 | 0 | 0 | 0 |
| NBR | 0 | 0 | 0 | 0 | 0 | 0 |
| SBL | 45 | 18 | 63 | 42 | 12 | 54 |
| SBT | 0 | 0 | 0 | 0 | 0 | 0 |
| SBR | 80 | 42 | 122 | 41 | 28 | 69 |
| EBL | 32 | 14 | 46 | 85 | 47 | 132 |
| EBT | 335 | 0 | 335 | 702 | 0 | 702 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 0 | 0 | 0 | 0 | 0 | 0 |
| WBT | 1,299 | 0 | 1,299 | 545 | 0 | 545 |
| WBR | 12 | 6 | 18 | 30 | 20 | 50 |
|  |  |  |  |  |  |  |
| North Leg |  |  |  |  |  |  |
| Approach | 125 | 60 | 185 | 83 | 40 | 123 |
| Departure | 44 | 20 | 64 | 115 | 67 | 182 |
| Total | 169 | 80 | 249 | 198 | 107 | 305 |


| South Leg |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 |


| East Leg |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Approach | 1,311 | 6 | 1,317 | 575 | 20 | 595 |
| Departure | 380 | 18 | 398 | 744 | 12 | 756 |
| Total | 1,691 | 24 | 1,715 | 1,319 | 32 | 1,351 |


| West Leg |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Approach | 367 | 14 | 381 | 787 | 47 | 834 |
| Departure | 1,379 | 42 | 1,421 | 586 | 28 | 614 |
| Total | 1,746 | 56 | 1,802 | 1,373 | 75 | 1,448 |
| Total Approaches |  |  |  |  |  |  |
| Approach | 1,803 | 80 | 1,883 | 1,445 | 107 | 1,552 |
| Departure | 1,803 | 80 | 1,883 | 1,445 | 107 | 1,552 |
| Total | 3,606 | 160 | 3,766 | 2,890 | 214 | 3,104 |

Table C-6: Project Completion (2023) Peak Hour Volume Summary

|  | AM Peak Hour |  |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \hline \text { Existing } \\ 2,021 \\ \text { Total } \\ \hline \end{gathered}$ | Growth | $\begin{aligned} & \hline \text { Pr. } \\ & \text { Comp. } \\ & \text { Back. } \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { Cumul. } \\ & \text { Pr. } \end{aligned}$ | $\begin{gathered} \mathrm{Pr} \\ \text { Comp. } \\ \text { NP } \end{gathered}$ | Project Trips | $\begin{gathered} \text { Pr. } \\ \text { Comp. } \\ \text { WP } \end{gathered}$ | $\begin{gathered} \text { Existing } \\ 2,021 \\ \text { Total } \end{gathered}$ | Growth | $\begin{gathered} \text { Pr. } \\ \text { Comp. } \\ \text { Back. } \end{gathered}$ | Cumul. <br> Pr. | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \\ & \text { NP } \end{aligned}$ | Project Trips | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \\ & \text { WPP } \end{aligned}$ |
| . Sycamore Canyon Blvd/Fair Isle Dr |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NBL | 77 | 3 | 80 | 1 | 81 | 0 | 81 | 111 | 4 | 115 | 4 | 119 | 0 | 119 |
| NBT | 510 | 20 | 530 | 3 | 533 | 0 | 533 | 289 | 12 | 301 | 12 | 313 | 0 | 313 |
| NBR | 262 | 10 | 272 | 35 | 307 | 5 | 312 | 420 | 17 | 437 | 121 | 558 | 17 | 575 |
| SBL | 49 | 2 | 51 | 7 | 58 | 4 | 62 | 292 | 12 | 304 | 5 | 309 | 13 | 322 |
| SBT | 97 | 4 | 101 | 11 | 112 | 0 | 112 | 400 | 16 | 416 | 5 | 421 | 0 | 421 |
| SBR | 3 | 0 | 3 | 0 | 3 | 0 | 3 | 31 | 1 | 32 | 0 | 32 | 0 | 32 |
| EBL | 28 | 1 | 29 | 0 | 29 | 0 | 29 | 13 | 1 | 14 | 0 | 14 | 0 | 14 |
| EBT | 56 | 2 | 58 | 2 | 60 | 0 | 60 | 76 | 3 | 79 | 2 | 81 | 0 | 81 |
| EBR | 66 | 3 | 69 | 4 | 73 | 0 | 73 | 98 | 4 | 102 | 2 | 104 | 0 | 104 |
| WBL | 388 | 16 | 404 | 14 | 418 | 15 | 433 | 201 | 8 | 209 | 8 | 217 | 10 | 227 |
| WBT | 150 | 6 | 156 | 1 | 157 | 0 | 157 | 176 | 7 | 183 | 2 | 185 | 0 | 185 |
| WBR | 841 | 34 | 875 | 3 | 878 | 12 | 890 | 209 | 8 | 217 | 7 | 224 | 8 | 232 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 149 | 6 | 155 | 18 | 173 | 4 | 177 | 723 | 29 | 752 | 10 | 762 | 13 | 775 |
| Departure | 1,379 | 55 | 1,434 | 6 | 1,440 | 12 | 1,452 | 511 | 21 | 532 | 19 | 551 | 8 | 559 |
| Total | 1,528 | 61 | 1,589 | 24 | 1,613 | 16 | 1,629 | 1,234 | 50 | 1,284 | 29 | 1,313 | 21 | 1,334 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 849 | 33 | 882 | 39 | 921 | 5 | 926 | 820 | 33 | 853 | 137 | 990 | 17 | 1,007 |
| Departure | 551 | 23 | 574 | 29 | 603 | 15 | 618 | 699 | 28 | 727 | 15 | 742 | 10 | 752 |
| Total | 1,400 | 56 | 1,456 | 68 | 1,524 | 20 | 1,544 | 1,519 | 61 | 1,580 | 152 | 1,732 | 27 | 1,759 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 1,379 | 56 | 1,435 | 18 | 1,453 | 27 | 1,480 | 586 | 23 | 609 | 17 | 626 | 18 | 644 |
| Departure | 367 | 14 | 381 | 44 | 425 | 9 | 434 | 788 | 32 | 820 | 128 | 948 | 30 | 978 |
| Total | 1,746 | 70 | 1,816 | 62 | 1,878 | 36 | 1,914 | 1,374 | 55 | 1,429 | 145 | 1,574 | 48 | 1,622 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 150 | 6 | 156 | 6 | 162 | 0 | 162 | 187 | 8 | 195 | 4 | 199 | 0 | 199 |
| Departure | 230 | 9 | 239 | 2 | 241 | 0 | 241 | 318 | 12 | 330 | 6 | 336 | 0 | 336 |
| Total | 380 | 15 | 395 | 8 | 403 | 0 | 403 | 505 | 20 | 525 | 10 | 535 | 0 | 535 |
| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 2,527 | 101 | 2,628 | 81 | 2,709 | 36 | 2,745 | 2,316 | 93 | 2,409 | 168 | 2,577 | 48 | 2,625 |
| Departure | 2,527 | 101 | 2,628 | 81 | 2,709 | 36 | 2,745 | 2,316 | 93 | 2,409 | 168 | 2,577 | 48 | 2,625 |
| Total | 5,054 | 202 | 5,256 | 162 | 5,418 | 72 | 5,490 | 4,632 | 186 | 4,818 | 336 | 5,154 | 96 | 5,250 |

Table C-6: Project Completion (2023) Peak Hour Volume Summary

|  | AM Peak Hour |  |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \hline \text { Existing } \\ 2,021 \\ \text { Total } \\ \hline \end{gathered}$ | Growth | $\begin{gathered} \text { Pr. } \\ \text { Comp. } \\ \text { Back. } \end{gathered}$ | Cumul. Pr. | $\begin{gathered} \mathrm{Pr} \\ \text { Comp. } \\ \mathrm{NP} \end{gathered}$ | Project Trips | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \\ & \text { WP. } \end{aligned}$ | $\begin{gathered} \hline \text { Existing } \\ 2,021 \\ \text { Total } \\ \hline \end{gathered}$ | Growth | Pr. Comp. Back. | Cumul. Pr. | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \\ & \text { NP } \end{aligned}$ | $\begin{aligned} & \text { Project } \\ & \text { Trips } \end{aligned}$ | $\begin{gathered} \text { Pr. } \\ \text { Comp. } \\ \text { WP } \end{gathered}$ |
| . 1-215 NB Ramps/Fair Isle Dr-Box Springs Rd |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NBL | 60 | 2 | 62 | 7 | 69 | 0 | 69 | 96 | 4 | 100 | 3 | 103 | 0 | 103 |
| NBT | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 2 | 0 | 2 | 0 | 2 | 0 | 2 |
| NBR | 7 | 0 | 7 | 2 | 9 | 5 | 14 | 9 | 0 | 9 | 7 | 16 | 17 | 33 |
| SBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 284 | 11 | 295 | 19 | 314 | 0 | 314 | 363 | 15 | 378 | 75 | 453 | 0 | 453 |
| EBT | 360 | 14 | 374 | 25 | 399 | 9 | 408 | 778 | 31 | 809 | 54 | 863 | 30 | 893 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBT | 516 | 21 | 537 | 11 | 548 | 27 | 575 | 260 | 10 | 270 | 14 | 284 | 18 | 302 |
| WBR | 863 | 35 | 898 | 46 | 944 | 15 | 959 | 326 | 13 | 339 | 30 | 369 | 10 | 379 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 1,151 | 46 | 1,197 | 65 | 1,262 | 15 | 1,277 | 691 | 28 | 719 | 105 | 824 | 10 | 834 |
| Total | 1,151 | 46 | 1,197 | 65 | 1,262 | 15 | 1,277 | 691 | 28 | 719 | 105 | 824 | 10 | 834 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 71 | 2 | 73 | 9 | 82 | 5 | 87 | 107 | 4 | 111 | 10 | 121 | 17 | 138 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 71 | 2 | 73 | 9 | 82 | 5 | 87 | 107 | 4 | 111 | 10 | 121 | 17 | 138 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 1,379 | 56 | 1,435 | 57 | 1,492 | 42 | 1,534 | 586 | 23 | 609 | 44 | 653 | 28 | 681 |
| Departure | 367 | 14 | 381 | 27 | 408 | 14 | 422 | 787 | 31 | 818 | 61 | 879 | 47 | 926 |
| Total | 1,746 | 70 | 1,816 | 84 | 1,900 | 56 | 1,956 | 1,373 | 54 | 1,427 | 105 | 1,532 | 75 | 1,607 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 644 | 25 | 669 | 44 | 713 | 9 | 722 | 1,141 | 46 | 1,187 | 129 | 1,316 | 30 | 1,346 |
| Departure | 576 | 23 | 599 | 18 | 617 | 27 | 644 | 356 | 14 | 370 | 17 | 387 | 18 | 405 |
| Total | 1,220 | 48 | 1,268 | 62 | 1,330 | 36 | 1,366 | 1,497 | 60 | 1,557 | 146 | 1,703 | 48 | 1,751 |
| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 2,094 | 83 | 2,177 | 110 | 2,287 | 56 | 2,343 | 1,834 | 73 | 1,907 | 183 | 2,090 | 75 | 2,165 |
| Departure | 2,094 | 83 | 2,177 | 110 | 2,287 | 56 | 2,343 | 1,834 | 73 | 1,907 | 183 | 2,090 | 75 | 2,165 |
| Total | 4,188 | 166 | 4,354 | 220 | 4,574 | 112 | 4,686 | 3,668 | 146 | 3,814 | 366 | 4,180 | 150 | 4,330 |

Table C-6: Project Completion (2023) Peak Hour Volume Summary

|  | AM Peak Hour |  |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \hline \text { Existing } \\ 2,021 \\ \text { Total } \\ \hline \end{gathered}$ | Growth | $\begin{gathered} \text { Pr. } \\ \text { Comp. } \\ \text { Back. } \end{gathered}$ | Cumul. Pr. | $\begin{gathered} \text { Pr } \\ \text { Comp. } \\ \mathrm{NP} . \end{gathered}$ | Project Trips | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \\ & \text { WP. } \end{aligned}$ | $\begin{gathered} \hline \text { Existing } \\ 2,021 \\ \text { Total } \\ \hline \end{gathered}$ | Growth | Pr. Comp. Back. | Cumul. Pr. | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \\ & \text { NP } \end{aligned}$ | Project Trips | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \\ & \text { WP } \end{aligned}$ |
| . Morton Rd/Project Driveway |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NBT | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 9 | 0 | 9 | 0 | 9 | 0 | 9 |
| NBR | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 67 | 67 |
| SBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBT | 7 | 0 | 7 | 0 | 7 | 0 | 7 | 5 | 0 | 5 | 0 | 5 | 0 | 5 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | , | 0 | 0 | 0 | 0 | 0 | 0 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 0 | 0 | 0 | 0 | 0 | 60 | 60 | 0 | 0 | 0 | 0 | 0 | 40 | 40 |
| WBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 7 | 0 | 7 | 0 | 7 | 0 | 7 | 5 | 0 | 5 | 0 | 5 | 0 | 5 |
| Departure | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 9 | 0 | 9 | 0 | 9 | 0 | 9 |
| Total | 11 | 0 | 11 | 0 | 11 | 0 | 11 | 14 | 0 | 14 | 0 | 14 | 0 | 14 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 4 | 0 | 4 | 0 | 4 | 20 | 24 | 9 | 0 | 9 | 0 | 9 | 67 | 76 |
| Departure | 7 | 0 | 7 | 0 | 7 | 60 | 67 | 5 | 0 | 5 | 0 | 5 | 40 | 45 |
| Total | 11 | 0 | 11 | 0 | 11 | 80 | 91 | 14 | 0 | 14 | 0 | 14 | 107 | 121 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 60 | 60 | 0 | 0 | 0 | 0 | 0 | 40 | 40 |
| Departure | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 67 | 67 |
| Total | 0 | 0 | 0 | 0 | 0 | 80 | 80 | 0 | 0 | 0 | 0 | 0 | 107 | 107 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 11 | 0 | 11 | 0 | 11 | 80 | 91 | 14 | 0 | 14 | 0 | 14 | 107 | 121 |
| Departure | 11 | 0 | 11 | 0 | 11 | 80 | 91 | 14 | 0 | 14 | 0 | 14 | 107 | 121 |
| Total | 22 | 0 | 22 | 0 | 22 | 160 | 182 | 28 | 0 | 28 | 0 | 28 | 214 | 242 |

Table C-6: Project Completion (2023) Peak Hour Volume Summary

| AM Peak Hour |  |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Existing |  | Pr. |  | Pr |  | Pr. | Existing |  | Pr. |  | Pr. |  | Pr. |
| $\begin{aligned} & 2,021 \\ & \text { Total } \end{aligned}$ | Growth | Comp. Back. | Cumul. Pr. | Comp. NP | Project Trips | Comp. WP | $\begin{aligned} & 2,021 \\ & \text { Total } \end{aligned}$ | Growth | Comp. Back. | Cumul. Pr. | Comp. NP | Project Trips | Comp. WP |


| Morton Rd/Woodsworth Rd N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NBT | 13 | 1 | 14 | 2 | 16 | 20 | 36 | 33 | 1 | 34 | 3 | 37 | 67 | 104 |
| NBR | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 13 | 1 | 14 | 0 | 14 | 0 | 14 |
| SBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBT | 26 | 1 | 27 | 3 | 30 | 60 | 90 | 19 | 1 | 20 | 4 | 24 | 40 | 64 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 3 | 0 | 3 | 0 | 3 | 0 | 3 | 2 | 0 | 2 | 0 | 2 | 0 | 2 |
| WBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBR | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 2 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 26 | 1 | 27 | 3 | 30 | 60 | 90 | 19 | 1 | 20 | 4 | 24 | 40 | 64 |
| Departure | 14 | 1 | 15 | 2 | 17 | 20 | 37 | 35 | 1 | 36 | 3 | 39 | 67 | 106 |
| Total | 40 | 2 | 42 | 5 | 47 | 80 | 127 | 54 | 2 | 56 | 7 | 63 | 107 | 170 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 18 | 1 | 19 | 2 | 21 | 20 | 41 | 46 | 2 | 48 | 3 | 51 | 67 | 118 |
| Departure | 29 | 1 | 30 | 3 | 33 | 60 | 93 | 21 | 1 | 22 | 4 | 26 | 40 | 66 |
| Total | 47 | 2 | 49 | 5 | 54 | 80 | 134 | 67 | 3 | 70 | 7 | 77 | 107 | 184 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 4 | 0 | 4 | 0 | 4 | 0 | 4 | 4 | 0 | 4 | 0 | 4 | 0 | 4 |
| Departure | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 13 | 1 | 14 | 0 | 14 | 0 | 14 |
| Total | 9 | 0 | 9 | 0 | 9 | 0 | 9 | 17 | 1 | 18 | 0 | 18 | 0 | 18 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 48 | 2 | 50 | 5 | 55 | 80 | 135 | 69 | 3 | 72 | 7 | 79 | 107 | 186 |
| Departure | 48 | 2 | 50 | 5 | 55 | 80 | 135 | 69 | 3 | 72 | 7 | 79 | 107 | 186 |
| Total | 96 | 4 | 100 | 10 | 110 | 160 | 270 | 138 | 6 | 144 | 14 | 158 | 214 | 372 |

Table C-6: Project Completion (2023) Peak Hour Volume Summary

|  | AM Peak Hour |  |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { Existing } \\ 2,021 \\ \text { Total } \end{gathered}$ | Growth | $\begin{gathered} \text { Pr. } \\ \text { Comp. } \\ \text { Back. } \end{gathered}$ | Cumul. Pr. | $\begin{gathered} \mathrm{Pr} \\ \text { Comp. } \\ \mathrm{NP} \end{gathered}$ | Project Trips | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \end{aligned}$ | $\begin{gathered} \text { Existing } \\ 2,021 \\ \text { Total } \end{gathered}$ | Growth | $\begin{gathered} \text { Pr. } \\ \text { Comp. } \\ \text { Back. } \end{gathered}$ | Cumul. Pr. | $\begin{gathered} \text { Pr. } \\ \text { Comp. } \\ \text { NP } \end{gathered}$ | Project Trips | $\begin{aligned} & \text { Pr. } \\ & \text { Comp. } \\ & \text { WP } \end{aligned}$ |
| . Morton Rd/Woodsworth Rd S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NBT | 19 | 1 | 20 | 2 | 22 | 20 | 42 | 32 | 1 | 33 | 3 | 36 | 67 | 103 |
| NBR | 12 | 0 | 12 | 0 | 12 | 0 | 12 | 41 | 2 | 43 | 0 | 43 | 0 | 43 |
| SBL | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBT | 24 | 1 | 25 | 3 | 28 | 60 | 88 | 26 | 1 | 27 | 4 | 31 | 40 | 71 |
| SBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 54 | 2 | 56 | 0 | 56 | 0 | 56 | 38 | 2 | 40 | 0 | 40 | 0 | 40 |
| WBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 25 | 1 | 26 | 3 | 29 | 60 | 89 | 26 | 1 | 27 | 4 | 31 | 40 | 71 |
| Departure | 19 | 1 | 20 | 2 | 22 | 20 | 42 | 33 | 1 | 34 | 3 | 37 | 67 | 104 |
| Total | 44 | 2 | 46 | 5 | 51 | 80 | 131 | 59 | 2 | 61 | 7 | 68 | 107 | 175 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 31 | 1 | 32 | 2 | 34 | 20 | 54 | 73 | 3 | 76 | 3 | 79 | 67 | 146 |
| Departure | 78 | 3 | 81 | 3 | 84 | 60 | 144 | 64 | 3 | 67 | 4 | 71 | 40 | 111 |
| Total | 109 | 4 | 113 | 5 | 118 | 80 | 198 | 137 | 6 | 143 | 7 | 150 | 107 | 257 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 54 | 2 | 56 | 0 | 56 | 0 | 56 | 39 | 2 | 41 | 0 | 41 | 0 | 41 |
| Departure | 13 | 0 | 13 | 0 | 13 | 0 | 13 | 41 | 2 | 43 | 0 | 43 | 0 | 43 |
| Total | 67 | 2 | 69 | 0 | 69 | 0 | 69 | 80 | 4 | 84 | 0 | 84 | 0 | 84 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 110 | 4 | 114 | 5 | 119 | 80 | 199 | 138 | 6 | 144 | 7 | 151 | 107 | 258 |
| Departure | 110 | 4 | 114 | 5 | 119 | 80 | 199 | 138 | 6 | 144 | 7 | 151 | 107 | 258 |
| Total | 220 | 8 | 228 | 10 | 238 | 160 | 398 | 276 | 12 | 288 | 14 | 302 | 214 | 516 |

Table C-6: Project Completion (2023) Peak Hour Volume Summary

| AM Peak Hour |  |  |  |  |  |  | PM Peak Hour |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Existing |  | Pr. |  | Pr |  | Pr. | Existing |  | Pr. |  | Pr. |  | Pr. |
| $2,021$ <br> Total | Growth | Comp. Back. | Cumul. | Comp. | Project Trips | Comp. <br> WP | $2,021$ Total | Growth | Comp. Back. | Cumul. Pr. | Comp. | Project Trips | Comp. WP |

6. Morton Rd/Box Springs Rd

| NBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBL | 45 | 2 | 47 | 5 | 52 | 18 | 70 | 42 | 2 | 44 | 7 | 51 | 12 | 63 |
| SBT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SBR | 80 | 3 | 83 | 0 | 83 | 42 | 125 | 41 | 2 | 43 | 0 | 43 | 28 | 71 |
| EBL | 32 | 1 | 33 | 0 | 33 | 14 | 47 | 85 | 3 | 88 | 0 | 88 | 47 | 135 |
| EBT | 335 | 13 | 348 | 28 | 376 | 0 | 376 | 702 | 28 | 730 | 62 | 792 | 0 | 792 |
| EBR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WBT | 1,299 | 52 | 1,351 | 57 | 1,408 | 0 | 1,408 | 545 | 22 | 567 | 43 | 610 | 0 | 610 |
| WBR | 12 | 0 | 12 | 4 | 16 | 6 | 22 | 30 | 1 | 31 | 7 | 38 | 20 | 58 |
| North Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 125 | 5 | 130 | 5 | 135 | 60 | 195 | 83 | 4 | 87 | 7 | 94 | 40 | 134 |
| Departure | 44 | 1 | 45 | 4 | 49 | 20 | 69 | 115 | 4 | 119 | 7 | 126 | 67 | 193 |
| Total | 169 | 6 | 175 | 9 | 184 | 80 | 264 | 198 | 8 | 206 | 14 | 220 | 107 | 327 |
| South Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Departure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| East Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 1,311 | 52 | 1,363 | 61 | 1,424 | 6 | 1,430 | 575 | 23 | 598 | 50 | 648 | 20 | 668 |
| Departure | 380 | 15 | 395 | 33 | 428 | 18 | 446 | 744 | 30 | 774 | 69 | 843 | 12 | 855 |
| Total | 1,691 | 67 | 1,758 | 94 | 1,852 | 24 | 1,876 | 1,319 | 53 | 1,372 | 119 | 1,491 | 32 | 1,523 |
| West Leg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 367 | 14 | 381 | 28 | 409 | 14 | 423 | 787 | 31 | 818 | 62 | 880 | 47 | 927 |
| Departure | 1,379 | 55 | 1,434 | 57 | 1,491 | 42 | 1,533 | 586 | 24 | 610 | 43 | 653 | 28 | 681 |
| Total | 1,746 | 69 | 1,815 | 85 | 1,900 | 56 | 1,956 | 1,373 | 55 | 1,428 | 105 | 1,533 | 75 | 1,608 |
| Total Approaches |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Approach | 1,803 | 71 | 1,874 | 94 | 1,968 | 80 | 2,048 | 1,445 | 58 | 1,503 | 119 | 1,622 | 107 | 1,729 |
| Departure | 1,803 | 71 | 1,874 | 94 | 1,968 | 80 | 2,048 | 1,445 | 58 | 1,503 | 119 | 1,622 | 107 | 1,729 |
| Total | 3,606 | 142 | 3,748 | 188 | 3,936 | 160 | 4,096 | 2,890 | 116 | 3,006 | 238 | 3,244 | 214 | 3,458 |

## APPENDIX D: LEVEL OF SERVICE WORKSHEETS

HCM 6th Signalized Intersection Summary
1: Sycamore Canyon Blvd \& Fair Isle Dr

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |

HCM 6th Signalized Intersection Summary
2: I-215 NB Ramps \& Fair Isle Dr/Box Springs Rd



## Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th TWSC
4: Morton Rd \& Wordsworth Rd N.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.7 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | M |  | $\uparrow$ |  |  | - |
| Traffic Vol, veh/h | 3 | 1 | 13 | 5 | 0 | 26 |
| Future Vol, veh/h | 3 | 1 | 13 | 5 | 0 | 26 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 1 | 15 | 6 | 0 | 30 |



HCM 6th TWSC
5: Morton Rd \& Wordsworth Rd S.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 4.5 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | M |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 54 | 0 | 19 | 12 | 1 | 24 |
| Future Vol, veh/h | 54 | 0 | 19 | 12 | 1 | 24 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, \% | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 57 | 0 | 20 | 13 | 1 | 25 |


| Major/Minor M | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 54 | 27 | 0 | 0 | 33 | 0 |
| Stage 1 | 27 | - | - | - | - | - |
| Stage 2 | 27 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 959 | 1054 | - | - | 1592 | - |
| Stage 1 | 1001 | - | - | - | - | - |
| Stage 2 | 1001 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 958 | 1054 | - | - | 1592 | - |
| Mov Cap-2 Maneuver | 958 | - | - | - | - | - |
| Stage 1 | 1001 | - | - | - | - | - |
| Stage 2 | 1000 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9 |  | 0 |  | 0.3 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 958 | 1592 | - |
| HCM Lane V/C Ratio |  | - | - | 0.059 | 0.001 | - |
| HCM Control Delay (s) |  | - | - | 9 | 7.3 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.2 | 0 | - |

HCM 6th Signalized Intersection Summary
6：Box Springs Rd \＆Morton Rd

|  | 4 |  | $4$ | 4 | ， | $\downarrow$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | ${ }^{1}$ | 中4 | 㻢 |  | ${ }^{1 /}$ | 「＇ |
| Traffic Volume（veh／h） | 32 | 335 | 1299 | 12 | 45 | 80 |
| Future Volume（veh／h） | 32 | 335 | 1299 | 12 | 45 | 80 |
| Initial Q（Qb），veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped－Bike Adj（A＿pbT） | 1.00 |  |  | 1.00 | 1.00 | 1.00 |
| Parking Bus，Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach |  | No | No |  | No |  |
| Adj Sat Flow，veh／h／ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate，veh／h | 35 | 368 | 1427 | 13 | 49 | 88 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh，\％ | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap，veh／h | 79 | 2635 | 2370 | 22 | 344 | 376 |
| Arrive On Green | 0.04 | 0.73 | 0.65 | 0.65 | 0.19 | 0.19 |
| Sat Flow，veh／h | 1810 | 3705 | 3761 | 33 | 1810 | 1610 |
| Grp Volume（v），veh／h | 35 | 368 | 702 | 738 | 49 | 88 |
| Grp Sat Flow（s），veh／h／ln | 1810 | 1805 | 1805 | 1894 | 1810 | 1610 |
| Q Serve（g＿s），s | 1.9 | 3.1 | 22.5 | 22.5 | 2.3 | 4.4 |
| Cycle Q Clear（g＿c），s | 1.9 | 3.1 | 22.5 | 22.5 | 2.3 | 4.4 |
| Prop In Lane | 1.00 |  |  | 0.02 | 1.00 | 1.00 |
| Lane Grp Cap（c），veh／h | 79 | 2635 | 1167 | 1224 | 344 | 376 |
| V／C Ratio（X） | 0.44 | 0.14 | 0.60 | 0.60 | 0.14 | 0.23 |
| Avail Cap（c＿a），veh／h | 127 | 2635 | 1167 | 1224 | 344 | 376 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter（I） | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay（d），s／veh | 46.6 | 4.1 | 10.2 | 10.2 | 33.7 | 31.1 |
| Incr Delay（d2），s／veh | 3.9 | 0.1 | 2.3 | 2.2 | 0.9 | 1.5 |
| Initial Q Delay（d3），s／veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| \％ile BackOfQ（50\％），veh／ln | 0.9 | 1.0 | 8.7 | 9.1 | 1.1 | 4.5 |
| Unsig．Movement Delay，s／veh |  |  |  |  |  |  |
| LnGrp Delay（d），s／veh | 50.5 | 4.2 | 12.5 | 12.4 | 34.6 | 32.5 |
| LnGrp LOS | D | A | B | B | C | C |
| Approach Vol，veh／h |  | 403 | 1440 |  | 137 |  |
| Approach Delay，s／veh |  | 8.2 | 12.5 |  | 33.3 |  |
| Approach LOS |  | A | B |  | C |  |
| Timer－Assigned Phs |  | 2 |  | 4 | 5 | 6 |
| Phs Duration（ $G+Y+R c$ ），$s$ |  | 77.0 |  | 23.0 | 8.4 | 68.6 |
| Change Period（Y＋Rc），s |  | 4.0 |  | 4.0 | 4.0 | 4.0 |
| Max Green Setting（Gmax），s |  | 73.0 |  | 19.0 | 7.0 | 62.0 |
| Max Q Clear Time（g＿c＋l1），s |  | 5.1 |  | 6.4 | 3.9 | 24.5 |
| Green Ext Time（p＿c），s |  | 2.7 |  | 0.3 | 0.0 | 14.1 |
| Intersection Summary |  |  |  |  |  |  |
| HCM 6th Ctrl DelayHCM 6th LOS |  |  | 13.0 |  |  |  |
|  |  |  | B |  |  |  |

HCM 6th Signalized Intersection Summary
1：Sycamore Canyon Blvd \＆Fair Isle Dr

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations | ${ }^{7}$ | 中 ${ }^{\text {F }}$ |  | ${ }^{7}$ | 44 | 「 | ${ }^{7}$ | 个4 | 「 | ${ }^{7 * 1}$ | $\hat{\beta}$ |  |
| Traffic Volume（veh／h） | 13 | 76 | 98 | 201 | 176 | 209 | 111 | 289 | 420 | 292 | 400 | 31 |
| Future Volume（veh／h） | 13 | 76 | 98 | 201 | 176 | 209 | 111 | 289 | 420 | 292 | 400 | 31 |
| Initial Q（Qb），veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped－Bike Adj（A＿pbT） | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 |
| Parking Bus，Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach |  | No |  |  | No |  |  | No |  |  | No |  |
| Adj Sat Flow，veh／h／ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate，veh／h | 14 | 79 | 102 | 209 | 183 | 218 | 116 | 301 | 438 | 304 | 417 | 32 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Percent Heavy Veh，\％ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap，veh／h | 42 | 401 | 358 | 376 | 1470 | 655 | 147 | 1017 | 454 | 388 | 542 | 42 |
| Arrive On Green | 0.02 | 0.22 | 0.22 | 0.35 | 0.68 | 0.68 | 0.08 | 0.28 | 0.28 | 0.11 | 0.31 | 0.31 |
| Sat Flow，veh／h | 1810 | 1805 | 1610 | 1810 | 3610 | 1610 | 1810 | 3610 | 1610 | 3510 | 1742 | 134 |
| Grp Volume（v），veh／h | 14 | 79 | 102 | 209 | 183 | 218 | 116 | 301 | 438 | 304 | 0 | 449 |
| Grp Sat Flow（s），veh／h／ln | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1755 | 0 | 1876 |
| Q Serve（g＿s），s | 0.7 | 3.2 | 4.7 | 8.4 | 1.6 | 5.0 | 5.7 | 5.9 | 14.2 | 7.6 | 0.0 | 19.5 |
| Cycle Q Clear（g＿c），s | 0.7 | 3.2 | 4.7 | 8.4 | 1.6 | 5.0 | 5.7 | 5.9 | 14.2 | 7.6 | 0.0 | 19.5 |
| Prop In Lane | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 0.07 |
| Lane Grp Cap（c），veh／h | 42 | 401 | 358 | 376 | 1470 | 655 | 147 | 1017 | 454 | 388 | 0 | 584 |
| V／C Ratio（X） | 0.34 | 0.20 | 0.29 | 0.56 | 0.12 | 0.33 | 0.79 | 0.30 | 0.97 | 0.78 | 0.00 | 0.77 |
| Avail Cap（c＿a），veh／h | 141 | 401 | 358 | 376 | 1470 | 655 | 201 | 1017 | 454 | 507 | 0 | 584 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter（I） | 1.00 | 1.00 | 1.00 | 0.92 | 0.92 | 0.92 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay（d），s／veh | 43.3 | 28.5 | 29.1 | 26.0 | 8.8 | 9.3 | 40.6 | 25.3 | 11.0 | 39.0 | 0.0 | 28.1 |
| Incr Delay（d2），s／veh | 4.7 | 1.1 | 2.0 | 1.7 | 0.2 | 1.3 | 13.7 | 0.7 | 34.5 | 5.9 | 0.0 | 9.4 |
| Initial Q Delay（d3），s／veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| \％ile BackOfQ（50\％），veh／In | 0.4 | 1.5 | 2.0 | 3.4 | 0.6 | 1.7 | 3.0 | 2.6 | 8.9 | 3.5 | 0.0 | 10.0 |
| Unsig．Movement Delay，s／veh |  |  |  |  |  |  |  |  |  |  |  |  |
| LnGrp Delay（d），s／veh | 48.0 | 29.6 | 31.1 | 27.7 | 9.0 | 10.6 | 54.3 | 26.1 | 45.5 | 44.9 | 0.0 | 37.5 |
| LnGrp LOS | D | C | C | C | A | B | D | C | D | D | A | D |
| Approach Vol，veh／h |  | 195 |  |  | 610 |  |  | 855 |  |  | 753 |  |
| Approach Delay，s／veh |  | 31.7 |  |  | 16.0 |  |  | 39.8 |  |  | 40.5 |  |
| Approach LOS |  | C |  |  | B |  |  | D |  |  | D |  |


| Timer－Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Phs Duration（G＋Y＋Rc），s | 22.7 | 24.0 | 11.3 | 32.0 | 6.1 | 40.6 | 13.9 | 29.4 |
| Change Period（Y＋Rc），s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting（Gmax），s | 16.0 | 20.0 | 10.0 | 28.0 | 7.0 | 29.0 | 13.0 | 25.0 |
| Max Q Clear Time（g＿c＋I1），s | 10.4 | 6.7 | 7.7 | 21.5 | 2.7 | 7.0 | 9.6 | 16.2 |
| Green Ext Time（p＿c），s | 0.3 | 0.8 | 0.1 | 1.5 | 0.0 | 1.8 | 0.4 | 2.5 |

## Intersection Summary

| HCM 6th Ctrl Delay | 33.3 |
| :--- | ---: |
| HCM 6th LOS | C |

HCM 6th Signalized Intersection Summary
2: I-215 NB Ramps \& Fair Isle Dr/Box Springs Rd



## Notes

User approved volume balancing among the lanes for turning movement.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | M |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 0 | 9 | 0 | 0 | 5 |
| Future Vol, veh/h | 0 | 0 | 9 | 0 | 0 | 5 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 10 | 0 | 0 | 5 |



HCM 6th TWSC
4: Morton Rd \& Wordsworth Rd N.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.5 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | r |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 2 | 2 | 33 | 13 | 0 | 19 |
| Future Vol, veh/h | 2 | 2 | 33 | 13 | 0 | 19 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 75 | 75 | 75 | 75 | 75 | 75 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 3 | 44 | 17 | 0 | 25 |



HCM 6th TWSC
5: Morton Rd \& Wordsworth Rd S.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 2.6 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | F |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 38 | 1 | 32 | 41 | 0 | 26 |
| Future Vol, veh/h | 38 | 1 | 32 | 41 | 0 | 26 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 43 | 1 | 36 | 46 | 0 | 29 |



HCM 6th Signalized Intersection Summary
6: Box Springs Rd \& Morton Rd


HCM 6th Signalized Intersection Summary
1：Sycamore Canyon Blvd \＆Fair Isle Dr

|  | 4 |  | － | 7 | 4 | 4 | 4 | $\dagger$ | $p$ |  | $\downarrow$ | $\pm$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ${ }^{7}$ | 中 ${ }^{\text {a }}$ |  | ${ }^{7}$ | 中4 | 「 | ${ }^{7}$ | 中4 | 「 | ${ }^{7 *}$ | $\hat{\dagger}$ |  |
| Traffic Volume（veh／h） | 29 | 60 | 73 | 418 | 157 | 878 | 81 | 533 | 307 | 58 | 112 | 3 |
| Future Volume（veh／h） | 29 | 60 | 73 | 418 | 157 | 878 | 81 | 533 | 307 | 58 | 112 | 3 |
| Initial Q（Qb），veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped－Bike Adj（A＿pbT） | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 |
| Parking Bus，Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach |  | No |  |  | No |  |  | No |  |  | No |  |
| Adj Sat Flow，veh／h／ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate，veh／h | 33 | 68 | 83 | 475 | 178 | 998 | 92 | 606 | 349 | 66 | 127 | 3 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Percent Heavy Veh，\％ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap，veh／h | 76 | 383 | 341 | 679 | 1969 | 878 | 117 | 679 | 303 | 227 | 348 | 8 |
| Arrive On Green | 0.04 | 0.21 | 0.21 | 0.12 | 0.18 | 0.18 | 0.06 | 0.19 | 0.19 | 0.06 | 0.19 | 0.19 |
| Sat Flow，veh／h | 1810 | 1805 | 1610 | 1810 | 3610 | 1610 | 1810 | 3610 | 1610 | 3510 | 1848 | 44 |
| Grp Volume（v），veh／h | 33 | 68 | 83 | 475 | 178 | 998 | 92 | 606 | 349 | 66 | 0 | 130 |
| Grp Sat Flow（s），veh／h／ln | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1755 | 0 | 1892 |
| Q Serve（g＿s），s | 1.8 | 3.1 | 4.3 | 25.2 | 4.1 | 37.2 | 5.0 | 16.4 | 18.8 | 1.8 | 0.0 | 6.0 |
| Cycle Q Clear（g＿c），s | 1.8 | 3.1 | 4.3 | 25.2 | 4.1 | 37.2 | 5.0 | 16.4 | 18.8 | 1.8 | 0.0 | 6.0 |
| Prop In Lane | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 0.02 |
| Lane Grp Cap（c），veh／h | 76 | 383 | 341 | 679 | 1969 | 878 | 117 | 679 | 303 | 227 | 0 | 356 |
| V／C Ratio（X） | 0.43 | 0.18 | 0.24 | 0.70 | 0.09 | 1.14 | 0.79 | 0.89 | 1.15 | 0.29 | 0.00 | 0.37 |
| Avail Cap（c＿a），veh／h | 127 | 383 | 341 | 679 | 1969 | 878 | 127 | 679 | 303 | 246 | 0 | 356 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter（I） | 1.00 | 1.00 | 1.00 | 0.40 | 0.40 | 0.40 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay（d），s／veh | 46.7 | 32.3 | 32.7 | 38.4 | 20.3 | 19.1 | 46.1 | 39.6 | 40.6 | 44.6 | 0.0 | 35.4 |
| Incr Delay（d2），s／veh | 3.9 | 1.0 | 1.7 | 1.3 | 0.0 | 67.7 | 25.5 | 16.5 | 99.7 | 0.7 | 0.0 | 2.9 |
| Initial Q Delay（d3），s／veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| \％ile BackOfQ（50\％），veh／ln | 0.9 | 1.4 | 1.8 | 12.4 | 1.7 | 32.1 | 3.1 | 8.7 | 15.7 | 0.8 | 0.0 | 3.0 |
| Unsig．Movement Delay，s／veh |  |  |  |  |  |  |  |  |  |  |  |  |
| LnGrp Delay（d），s／veh | 50.6 | 33.3 | 34.4 | 39.7 | 20.4 | 86.7 | 71.6 | 56.1 | 140.3 | 45.3 | 0.0 | 38.3 |
| LnGrp LOS | D | C | C | D | C | F | E | E | F | D | A | D |
| Approach Vol，veh／h |  | 184 |  |  | 1651 |  |  | 1047 |  |  | 196 |  |
| Approach Delay，s／veh |  | 36.9 |  |  | 66.0 |  |  | 85.5 |  |  | 40.6 |  |
| Approach LOS |  | D |  |  | E |  |  | F |  |  | D |  |
| Timer－Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |  |  |
| Phs Duration（ $G+Y+R c$ ），$s$ | 41.5 | 25.2 | 10.5 | 22.8 | 8.2 | 58.5 | 10.5 | 22.8 |  |  |  |  |
| Change Period（Y＋Rc），s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |  |  |  |  |
| Max Green Setting（Gmax），s | 37.0 | 21.2 | 7.0 | 18.8 | 7.0 | 51.2 | 7.0 | 18.8 |  |  |  |  |
| Max Q Clear Time（g＿c＋11），s | 27.2 | 6.3 | 7.0 | 8.0 | 3.8 | 39.2 | 3.8 | 20.8 |  |  |  |  |
| Green Ext Time（p＿c），s | 1.2 | 0.7 | 0.0 | 0.4 | 0.0 | 4.9 | 0.0 | 0.0 |  |  |  |  |
| Intersection Summary |  |  |  |  |  |  |  |  |  |  |  |  |
| HCM 6th Ctrl Delay |  |  | 69.3 |  |  |  |  |  |  |  |  |  |
| HCM 6th LOS |  |  | E |  |  |  |  |  |  |  |  |  |

HCM 6th Signalized Intersection Summary
2: I-215 NB Ramps \& Fair Isle Dr/Box Springs Rd



## Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th TWSC
4: Morton Rd \& Wordsworth Rd N.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.6 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq$ |
| Traffic Vol, veh/h | 3 | 1 | 16 | 5 | 0 | 30 |
| Future Vol, veh/h | 3 | 1 | 16 | 5 | 0 | 30 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 1 | 19 | 6 | 0 | 35 |



HCM 6th TWSC
5: Morton Rd \& Wordsworth Rd S.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 4.3 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | - |
| Traffic Vol, veh/h | 56 | 0 | 22 | 12 | 1 | 28 |
| Future Vol, veh/h | 56 | 0 | 22 | 12 | 1 | 28 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 59 | 0 | 23 | 13 | 1 | 29 |



HCM 6th Signalized Intersection Summary
6: Box Springs Rd \& Morton Rd


HCM 6th Signalized Intersection Summary
1：Sycamore Canyon Blvd \＆Fair Isle Dr

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations | ${ }^{*}$ | 中 ${ }^{\text {a }}$ |  | ${ }^{1}$ | 44 | 「 | \％ | 中4 | 「 | 7 | F |  |
| Traffic Volume（veh／h） | 14 | 81 | 104 | 217 | 185 | 224 | 119 | 313 | 558 | 309 | 421 | 32 |
| Future Volume（veh／h） | 14 | 81 | 104 | 217 | 185 | 224 | 119 | 313 | 558 | 309 | 421 | 32 |
| Initial Q（Qb），veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped－Bike Adj（A＿pbT） | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 |
| Parking Bus，Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach |  | No |  |  | No |  |  | No |  |  | No |  |
| Adj Sat Flow，veh／h／ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate，veh／h | 15 | 84 | 108 | 226 | 193 | 233 | 124 | 326 | 581 | 322 | 439 | 33 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Percent Heavy Veh，\％ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap，veh／h | 44 | 441 | 394 | 318 | 1429 | 637 | 155 | 1043 | 465 | 397 | 552 | 41 |
| Arrive On Green | 0.02 | 0.24 | 0.24 | 0.29 | 0.66 | 0.66 | 0.09 | 0.29 | 0.29 | 0.11 | 0.32 | 0.32 |
| Sat Flow，veh／h | 1810 | 1805 | 1610 | 1810 | 3610 | 1610 | 1810 | 3610 | 1610 | 3510 | 1745 | 131 |
| Grp Volume（v），veh／h | 15 | 84 | 108 | 226 | 193 | 233 | 124 | 326 | 581 | 322 | 0 | 472 |
| Grp Sat Flow（s），veh／h／ln | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1755 | 0 | 1876 |
| Q Serve（g＿s），s | 0.7 | 3.3 | 4.9 | 10.0 | 1.8 | 5.8 | 6.1 | 6.4 | 16.3 | 8.1 | 0.0 | 20.7 |
| Cycle Q Clear（g＿c），s | 0.7 | 3.3 | 4.9 | 10.0 | 1.8 | 5.8 | 6.1 | 6.4 | 16.3 | 8.1 | 0.0 | 20.7 |
| Prop In Lane | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 0.07 |
| Lane Grp Cap（c），veh／h | 44 | 441 | 394 | 318 | 1429 | 637 | 155 | 1043 | 465 | 397 | 0 | 593 |
| V／C Ratio（X） | 0.34 | 0.19 | 0.27 | 0.71 | 0.14 | 0.37 | 0.80 | 0.31 | 1.25 | 0.81 | 0.00 | 0.80 |
| Avail Cap（c＿a），veh／h | 141 | 441 | 394 | 318 | 1429 | 637 | 181 | 1043 | 465 | 429 | 0 | 593 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter（l） | 1.00 | 1.00 | 1.00 | 0.88 | 0.88 | 0.88 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay（d），s／veh | 43.2 | 26.9 | 27.5 | 29.7 | 9.5 | 10.2 | 40.4 | 25.0 | 12.6 | 39.0 | 0.0 | 28.1 |
| Incr Delay（d2），s／veh | 4.5 | 1.0 | 1.7 | 6.4 | 0.2 | 1.4 | 19.3 | 0.8 | 128.9 | 10.5 | 0.0 | 10.6 |
| Initial Q Delay（d3），s／veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| \％ile BackOfQ（50\％），veh／ln | 0.4 | 1.5 | 2.0 | 4.4 | 0.7 | 2.0 | 3.5 | 2.8 | 22.1 | 4.0 | 0.0 | 10.7 |
| Unsig．Movement Delay，s／veh |  |  |  |  |  |  |  |  |  |  |  |  |
| LnGrp Delay（d），s／veh | 47.7 | 27.9 | 29.3 | 36.1 | 9.7 | 11.6 | 59.7 | 25.8 | 141.5 | 49.5 | 0.0 | 38.7 |


| LnGrp LOS | D | C | C | D | A | B | E | C |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Approach Vol，veh／h | 207 |  | 652 |  | F | D | D |  |
| Approach Delay，s／veh | 30.0 |  | 19.5 |  | 95.1 | 794 |  |  |
| Approach LOS | C | B |  | F | 43.1 |  |  |  |


| Timer－Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Phs Duration（G＋Y＋Rc），s | 19.8 | 26.0 | 11.7 | 32.5 | 6.2 | 39.6 | 14.2 | 30.0 |
| Change Period（Y＋Rc），s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting（Gmax），s | 15.0 | 22.0 | 9.0 | 28.0 | 7.0 | 30.0 | 11.0 | 26.0 |
| Max Q Clear Time（g＿c＋I1），s | 12.0 | 6.9 | 8.1 | 22.7 | 2.7 | 7.8 | 10.1 | 18.3 |
| Green Ext Time（p＿c），s | 0.2 | 0.9 | 0.0 | 1.4 | 0.0 | 2.0 | 0.1 | 2.8 |

Intersection Summary

| HCM 6th Ctrl Delay | 56.3 |
| :--- | ---: |
| HCM 6th LOS | E |

HCM 6th Signalized Intersection Summary
2: I-215 NB Ramps \& Fair Isle Dr/Box Springs Rd



## Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th TWSC
4: Morton Rd \& Wordsworth Rd N.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.4 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | r |  | $\mathbf{F}$ |  |  | - |
| Traffic Vol, veh/h | 2 | 2 | 37 | 14 | 0 | 24 |
| Future Vol, veh/h | 2 | 2 | 37 | 14 | 0 | 24 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 75 | 75 | 75 | 75 | 75 | 75 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 3 | 49 | 19 | 0 | 32 |



HCM 6th TWSC
5: Morton Rd \& Wordsworth Rd S.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 2.5 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq$ |
| Traffic Vol, veh/h | 40 | 1 | 36 | 43 | 0 | 31 |
| Future Vol, veh/h | 40 | 1 | 36 | 43 | 0 | 31 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 45 | 1 | 40 | 48 | 0 | 35 |



HCM 6th Signalized Intersection Summary
6: Box Springs Rd \& Morton Rd


HCM 6th Signalized Intersection Summary
1：Sycamore Canyon Blvd \＆Fair Isle Dr

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations | \％ | 个t |  | \％ | 个4 | 「 | 7 | 个 $\uparrow$ | 「 | ${ }^{7+1}$ | 1 |  |
| Traffic Volume（veh／h） | 29 | 60 | 73 | 433 | 157 | 890 | 81 | 533 | 312 | 62 | 112 | 3 |
| Future Volume（veh／h） | 29 | 60 | 73 | 433 | 157 | 890 | 81 | 533 | 312 | 62 | 112 | 3 |
| Initial $\mathrm{Q}(\mathrm{Qb})$ ，veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped－Bike Adj（A＿pbT） | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 |
| Parking Bus，Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach |  | No |  |  | No |  |  | No |  |  | No |  |
| Adj Sat Flow，veh／h／ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate，veh／h | 33 | 68 | 83 | 492 | 178 | 1011 | 92 | 606 | 355 | 70 | 127 | 3 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Percent Heavy Veh，\％ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap，veh／h | 76 | 383 | 341 | 679 | 1969 | 878 | 117 | 679 | 303 | 227 | 348 | 8 |
| Arrive On Green | 0.04 | 0.21 | 0.21 | 0.12 | 0.18 | 0.18 | 0.06 | 0.19 | 0.19 | 0.06 | 0.19 | 0.19 |
| Sat Flow，veh／h | 1810 | 1805 | 1610 | 1810 | 3610 | 1610 | 1810 | 3610 | 1610 | 3510 | 1848 | 44 |
| Grp Volume（v），veh／h | 33 | 68 | 83 | 492 | 178 | 1011 | 92 | 606 | 355 | 70 | 0 | 130 |
| Grp Sat Flow（s），veh／h／ln | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1755 | 0 | 1892 |
| Q Serve（g＿s），s | 1.8 | 3.1 | 4.3 | 26.2 | 4.1 | 37.2 | 5.0 | 16.4 | 18.8 | 1.9 | 0.0 | 6.0 |
| Cycle Q Clear（g＿c），s | 1.8 | 3.1 | 4.3 | 26.2 | 4.1 | 37.2 | 5.0 | 16.4 | 18.8 | 1.9 | 0.0 | 6.0 |
| Prop In Lane | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 0.02 |
| Lane Grp Cap（c），veh／h | 76 | 383 | 341 | 679 | 1969 | 878 | 117 | 679 | 303 | 227 | 0 | 356 |
| V／C Ratio（X） | 0.43 | 0.18 | 0.24 | 0.72 | 0.09 | 1.15 | 0.79 | 0.89 | 1.17 | 0.31 | 0.00 | 0.37 |
| Avail Cap（c＿a），veh／h | 127 | 383 | 341 | 679 | 1969 | 878 | 127 | 679 | 303 | 246 | 0 | 356 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter（l） | 1.00 | 1.00 | 1.00 | 0.34 | 0.34 | 0.34 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay（d），s／veh | 46.7 | 32.3 | 32.7 | 38.8 | 20.3 | 19.1 | 46.1 | 39.6 | 40.6 | 44.6 | 0.0 | 35.4 |
| Incr Delay（d2），s／veh | 3.9 | 1.0 | 1.7 | 1.3 | 0.0 | 73.1 | 25.5 | 16.5 | 107.0 | 0.8 | 0.0 | 2.9 |
| Initial Q Delay（d3），s／veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| \％ile BackOfQ（50\％），veh／ln | 0.9 | 1.4 | 1.8 | 12.9 | 1.7 | 33.4 | 3.1 | 8.7 | 16.3 | 0.8 | 0.0 | 3.0 |
| Unsig．Movement Delay，s／veh |  |  |  |  |  |  |  |  |  |  |  |  |
| LnGrp Delay（d），s／veh | 50.6 | 33.3 | 34.4 | 40.2 | 20.4 | 92.1 | 71.6 | 56.1 | 147.6 | 45.4 | 0.0 | 38.3 |
| LnGrp LOS | D | C | C | D | C | F | E | E | F | D | A | D |
| Approach Vol，veh／h |  | 184 |  |  | 1681 |  |  | 1053 |  |  | 200 |  |
| Approach Delay，s／veh |  | 36.9 |  |  | 69.3 |  |  | 88.3 |  |  | 40.8 |  |
| Approach LOS |  | D |  |  | E |  |  | F |  |  | D |  |


| Timer－Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Phs Duration $(G+Y+R c), ~ s$ | 41.5 | 25.2 | 10.5 | 22.8 | 8.2 | 58.5 | 10.5 | 22.8 |
| Change Period（Y＋Rc），s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting（Gmax），s | 37.0 | 21.2 | 7.0 | 18.8 | 7.0 | 51.2 | 7.0 | 18.8 |
| Max Q Clear Time（g＿c＋11），s | 28.2 | 6.3 | 7.0 | 8.0 | 3.8 | 39.2 | 3.9 | 20.8 |
| Green Ext Time（p＿C），s | 1.2 | 0.7 | 0.0 | 0.4 | 0.0 | 5.0 | 0.0 | 0.0 |

Intersection Summary
HCM 6th Ctrl Delay 72.0
HCM 6th LOS E

HCM 6th Signalized Intersection Summary
2: I-215 NB Ramps \& Fair Isle Dr/Box Springs Rd



## Notes

User approved volume balancing among the lanes for turning movement.



HCM 6th TWSC
4: Morton Rd \& Wordsworth Rd N.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.3 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | -1 |
| Traffic Vol, veh/h | 3 | 1 | 36 | 5 | 0 | 90 |
| Future Vol, veh/h | 3 | 1 | 36 | 5 | 0 | 90 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 1 | 42 | 6 | 0 | 105 |



HCM 6th TWSC
5: Morton Rd \& Wordsworth Rd S.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 2.7 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | r |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 56 | 0 | 42 | 12 | 1 | 88 |
| Future Vol, veh/h | 56 | 0 | 42 | 12 | 1 | 88 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 59 | 0 | 44 | 13 | 1 | 93 |



HCM 6th Signalized Intersection Summary
6: Box Springs Rd \& Morton Rd


HCM 6th Signalized Intersection Summary
1：Sycamore Canyon Blvd \＆Fair Isle Dr

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations | ${ }^{4}$ | 中\％ |  | ${ }^{7}$ | 44 | 「 | ${ }^{7}$ | 44 | 「 | 41 | F |  |
| Traffic Volume（veh／h） | 14 | 81 | 104 | 227 | 185 | 232 | 119 | 313 | 575 | 322 | 421 | 32 |
| Future Volume（veh／h） | 14 | 81 | 104 | 227 | 185 | 232 | 119 | 313 | 575 | 322 | 421 | 32 |
| Initial Q（Qb），veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped－Bike Adj（A＿pbT） | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 |
| Parking Bus，Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach |  | No |  |  | No |  |  | No |  |  | No |  |
| Adj Sat Flow，veh／h／ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate，veh／h | 15 | 84 | 108 | 236 | 193 | 242 | 124 | 326 | 599 | 335 | 439 | 33 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Percent Heavy Veh，\％ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap，veh／h | 44 | 441 | 394 | 312 | 1417 | 632 | 155 | 1043 | 465 | 408 | 558 | 42 |
| Arrive On Green | 0.02 | 0.24 | 0.24 | 0.29 | 0.66 | 0.66 | 0.09 | 0.29 | 0.29 | 0.12 | 0.32 | 0.32 |
| Sat Flow，veh／h | 1810 | 1805 | 1610 | 1810 | 3610 | 1610 | 1810 | 3610 | 1610 | 3510 | 1745 | 131 |
| Grp Volume（v），veh／h | 15 | 84 | 108 | 236 | 193 | 242 | 124 | 326 | 599 | 335 | 0 | 472 |
| Grp Sat Flow（s），veh／h／ln | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1755 | 0 | 1876 |
| Q Serve（g＿s），s | 0.7 | 3.3 | 4.9 | 10.7 | 1.8 | 6.2 | 6.1 | 6.4 | 16.4 | 8.4 | 0.0 | 20.6 |
| Cycle Q Clear（g＿c），s | 0.7 | 3.3 | 4.9 | 10.7 | 1.8 | 6.2 | 6.1 | 6.4 | 16.4 | 8.4 | 0.0 | 20.6 |
| Prop In Lane | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 0.07 |
| Lane Grp Cap（c），veh／h | 44 | 441 | 394 | 312 | 1417 | 632 | 155 | 1043 | 465 | 408 | 0 | 600 |
| V／C Ratio（X） | 0.34 | 0.19 | 0.27 | 0.76 | 0.14 | 0.38 | 0.80 | 0.31 | 1.29 | 0.82 | 0.00 | 0.79 |
| Avail Cap（c＿a），veh／h | 141 | 441 | 394 | 312 | 1417 | 632 | 181 | 1043 | 465 | 429 | 0 | 600 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter（I） | 1.00 | 1.00 | 1.00 | 0.87 | 0.87 | 0.87 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay（d），s／veh | 43.2 | 26.9 | 27.5 | 30.3 | 9.7 | 10.5 | 40.4 | 25.0 | 12.8 | 38.8 | 0.0 | 27.8 |
| Incr Delay（d2），s／veh | 4.5 | 1.0 | 1.7 | 8.9 | 0.2 | 1.5 | 19.3 | 0.8 | 144.9 | 11.5 | 0.0 | 10.1 |
| Initial Q Delay（d3），s／veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| \％ile BackOfQ（50\％），veh／ln | 0.4 | 1.5 | 2.0 | 4.8 | 0.7 | 2.1 | 3.5 | 2.8 | 24.2 | 4.2 | 0.0 | 10.6 |
| Unsig．Movement Delay，s／veh |  |  |  |  |  |  |  |  |  |  |  |  |
| LnGrp Delay（d），s／veh | 47.7 | 27.9 | 29.3 | 39.2 | 9.9 | 12.0 | 59.7 | 25.8 | 157.7 | 50.4 | 0.0 | 37.9 |
| LnGrp LOS | D | C | C | D | A | B | E | C | F | D | A | D |
| Approach Vol，veh／h |  | 207 |  |  | 671 |  |  | 1049 |  |  | 807 |  |
| Approach Delay，s／veh |  | 30.0 |  |  | 21.0 |  |  | 105.1 |  |  | 43.1 |  |
| Approach LOS |  | C |  |  | C |  |  | F |  |  | D |  |


| Timer－Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Phs Duration（G＋Y＋Rc），s | 19.5 | 26.0 | 11.7 | 32.8 | 6.2 | 39.3 | 14.5 | 30.0 |
| Change Period（Y＋Rc），s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting（Gmax），s | 15.0 | 22.0 | 9.0 | 28.0 | 7.0 | 30.0 | 11.0 | 26.0 |
| Max Q Clear Time（g＿c＋I1），s | 12.7 | 6.9 | 8.1 | 22.6 | 2.7 | 8.2 | 10.4 | 18.4 |
| Green Ext Time（p＿c），s | 0.2 | 0.9 | 0.0 | 1.4 | 0.0 | 2.0 | 0.1 | 2.8 |

## Intersection Summary

| HCM 6th Ctrl Delay | 60.5 |
| :--- | ---: |
| HCM 6th LOS | E |

HCM 6th Signalized Intersection Summary
2: I-215 NB Ramps \& Fair Isle Dr/Box Springs Rd


| Movement EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations | 个 $\uparrow$ |  |  | $\hat{\beta}$ | 「 | \% | ¢ |  |  |  |  |  |
| Traffic Volume (veh/h) 453 | 893 | 0 | 0 | 302 | 379 | 103 | 2 | 33 | 0 | 0 | 0 |  |
| Future Volume (veh/h) 453 | 893 | 0 | 0 | 302 | 379 | 103 | 2 | 33 | 0 | 0 | 0 |  |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |
| Ped-Bike Adj(A_pbT) 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 |  |  |  |  |
| Parking Bus, Adj 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |  |  |  |  |
| Work Zone On Approach | No |  |  | No |  |  | No |  |  |  |  |  |
| Adj Sat Flow, veh/h/ln 1900 | 1900 | 0 | 0 | 1900 | 1900 | 1900 | 1900 | 1900 |  |  |  |  |
| Adj Flow Rate, veh/h 482 | 950 | 0 | 0 | 382 | 362 | 74 | 53 | 35 |  |  |  |  |
| Peak Hour Factor 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |  |  |  |  |
| Percent Heavy Veh, \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |
| Cap, veh/h 858 | 2487 | 0 | 0 | 760 | 644 | 402 | 237 | 157 |  |  |  |  |
| Arrive On Green 0.24 | 0.69 | 0.00 | 0.00 | 0.40 | 0.40 | 0.22 | 0.22 | 0.22 |  |  |  |  |
| Sat Flow, veh/h 3510 | 3705 | 0 | 0 | 1900 | 1610 | 1810 | 1068 | 705 |  |  |  |  |
| Grp Volume(v), veh/h 482 | 950 | 0 | 0 | 382 | 362 | 74 | 0 | 88 |  |  |  |  |
| Grp Sat Flow(s), veh/h/ln1755 | 1805 | 0 | 0 | 1900 | 1610 | 1810 | 0 | 1773 |  |  |  |  |
| Q Serve(g_s), s $\quad 10.8$ | 10.0 | 0.0 | 0.0 | 13.6 | 15.7 | 3.0 | 0.0 | 3.7 |  |  |  |  |
| Cycle Q Clear(g_c), s 10.8 | 10.0 | 0.0 | 0.0 | 13.6 | 15.7 | 3.0 | 0.0 | 3.7 |  |  |  |  |
| Prop In Lane $\quad 1.00$ |  | 0.00 | 0.00 |  | 1.00 | 1.00 |  | 0.40 |  |  |  |  |
| Lane Grp Cap(c), veh/h 858 | 2487 | 0 | 0 | 760 | 644 | 402 | 0 | 394 |  |  |  |  |
| V/C Ratio(X) 0.56 | 0.38 | 0.00 | 0.00 | 0.50 | 0.56 | 0.18 | 0.00 | 0.22 |  |  |  |  |
| Avail Cap(c_a), veh/h 858 | 2487 | 0 | 0 | 760 | 644 | 402 | 0 | 394 |  |  |  |  |
| HCM Platoon Ratio 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |  |  |  |  |
| Upstream Filter(l) 0.74 | 0.74 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |  |  |  |  |
| Uniform Delay (d), s/veh 29.8 | 5.9 | 0.0 | 0.0 | 20.3 | 20.9 | 28.4 | 0.0 | 28.6 |  |  |  |  |
| Incr Delay (d2), s/veh 0.6 | 0.3 | 0.0 | 0.0 | 2.4 | 3.5 | 1.0 | 0.0 | 1.3 |  |  |  |  |
| Initial Q Delay(d3),s/veh 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |  |  |  |  |
| \%ile BackOfQ(50\%),veh/IIf4. 5 | 3.3 | 0.0 | 0.0 | 6.3 | 6.3 | 1.4 | 0.0 | 1.7 |  |  |  |  |
| Unsig. Movement Delay, s/veh |  |  |  |  |  |  |  |  |  |  |  |  |
| LnGrp Delay(d),s/veh 30.4 | 6.2 | 0.0 | 0.0 | 22.6 | 24.4 | 29.4 | 0.0 | 30.0 |  |  |  |  |
| LnGrp LOS C | A | A | A | C | C | C | A | C |  |  |  |  |
| Approach Vol, veh/h | 1432 |  |  | 744 |  |  | 162 |  |  |  |  |  |
| Approach Delay, s/veh | 14.4 |  |  | 23.5 |  |  | 29.7 |  |  |  |  |  |
| Approach LOS | B |  |  |  |  |  | C |  |  |  |  |  |
| Timer - Assigned Phs | 2 |  |  | 5 | 6 |  | 8 |  |  |  |  |  |
| Phs Duration ( $\mathrm{G}+\mathrm{Y}+\mathrm{Rc}$ ), s | 66.0 |  |  | 26.0 | 40.0 |  | 24.0 |  |  |  |  |  |
| Change Period ( $\mathrm{Y}+\mathrm{Rc}$ ), s | 4.0 |  |  | 4.0 | 4.0 |  | 4.0 |  |  |  |  |  |
| Max Green Setting (Gmax), s | 62.0 |  |  | 22.0 | 36.0 |  | 20.0 |  |  |  |  |  |
| Max Q Clear Time (g_c+1), s | 12.0 |  |  | 12.8 | 17.7 |  | 5.7 |  |  |  |  |  |
| Green Ext Time (p_c), s | 8.7 |  |  | 1.3 | 3.5 |  | 0.5 |  |  |  |  |  |
| Intersection Summary |  |  |  |  |  |  |  |  |  |  |  |  |
| HCM 6th Ctrl DelayHCM 6th LOS |  | 18.3 |  |  |  |  |  |  |  |  |  |  |
|  |  | B |  |  |  |  |  |  |  |  |  |  |

## Notes

User approved volume balancing among the lanes for turning movement.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 2.9 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | r |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 40 | 0 | 9 | 67 | 0 | 5 |
| Future Vol, veh/h | 40 | 0 | 9 | 67 | 0 | 5 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 43 | 0 | 10 | 73 | 0 | 5 |



HCM 6th TWSC
4: Morton Rd \& Wordsworth Rd N.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.2 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | r |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 2 | 2 | 104 | 14 | 0 | 64 |
| Future Vol, veh/h | 2 | 2 | 104 | 14 | 0 | 64 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 75 | 75 | 75 | 75 | 75 | 75 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 3 | 139 | 19 | 0 | 85 |



HCM 6th TWSC
5: Morton Rd \& Wordsworth Rd S.

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 1.6 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq$ |
| Traffic Vol, veh/h | 40 | 1 | 103 | 43 | 0 | 71 |
| Future Vol, veh/h | 40 | 1 | 103 | 43 | 0 | 71 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, $\#$ | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, $\%$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 45 | 1 | 116 | 48 | 0 | 80 |



HCM 6th Signalized Intersection Summary
6: Box Springs Rd \& Morton Rd


Attachment: Appendicies H-L (6434 : Gateway Heights Tract 38459)

HCM 6th Signalized Intersection Summary
1: Sycamore Canyon Blvd \& Fair Isle Dr

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations | ${ }^{7}$ | 4\% |  | ${ }^{7}$ | 44 | 「 | ${ }^{7}$ | 44 | F | 41 | F |  |
| Traffic Volume (veh/h) | 29 | 60 | 73 | 433 | 157 | 890 | 81 | 533 | 312 | 62 | 112 | 3 |
| Future Volume (veh/h) | 29 | 60 | 73 | 433 | 157 | 890 | 81 | 533 | 312 | 62 | 112 | 3 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach |  | No |  |  | No |  |  | No |  |  | No |  |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate, veh/h | 33 | 68 | 83 | 492 | 178 | 1011 | 92 | 606 | 355 | 70 | 127 | 3 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Percent Heavy Veh, \% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 76 | 437 | 390 | 625 | 1969 | 878 | 117 | 679 | 859 | 227 | 348 | 8 |
| Arrive On Green | 0.04 | 0.24 | 0.24 | 0.35 | 0.55 | 0.55 | 0.06 | 0.19 | 0.19 | 0.06 | 0.19 | 0.19 |
| Sat Flow, veh/h | 1810 | 1805 | 1610 | 1810 | 3610 | 1610 | 1810 | 3610 | 1610 | 3510 | 1848 | 44 |
| Grp Volume(v), veh/h | 33 | 68 | 83 | 492 | 178 | 1011 | 92 | 606 | 355 | 70 | 0 | 130 |
| Grp Sat Flow(s), veh/h/ln | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1755 | 0 | 1892 |
| Q Serve(g_s), s | 1.8 | 3.0 | 4.1 | 24.4 | 2.4 | 37.2 | 5.0 | 16.4 | 0.0 | 1.9 | 0.0 | 6.0 |
| Cycle Q Clear(g_c), s | 1.8 | 3.0 | 4.1 | 24.4 | 2.4 | 37.2 | 5.0 | 16.4 | 0.0 | 1.9 | 0.0 | 6.0 |
| Prop In Lane | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 0.02 |
| Lane Grp Cap(c), veh/h | 76 | 437 | 390 | 625 | 1969 | 878 | 117 | 679 | 859 | 227 | 0 | 356 |
| V/C Ratio(X) | 0.43 | 0.16 | 0.21 | 0.79 | 0.09 | 1.15 | 0.79 | 0.89 | 0.41 | 0.31 | 0.00 | 0.37 |
| Avail Cap(c_a), veh/h | 127 | 437 | 390 | 625 | 1969 | 878 | 127 | 679 | 859 | 246 | 0 | 356 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 0.34 | 0.34 | 0.34 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 46.7 | 29.9 | 30.3 | 29.4 | 10.9 | 10.6 | 46.1 | 39.6 | 14.0 | 44.6 | 0.0 | 35.4 |
| Incr Delay (d2), s/veh | 3.9 | 0.8 | 1.2 | 2.4 | 0.0 | 73.1 | 25.5 | 16.5 | 1.5 | 0.8 | 0.0 | 2.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| \%ile BackOfQ(50\%),veh/ln | 0.9 | 1.4 | 1.7 | 10.7 | 0.9 | 28.9 | 3.1 | 8.7 | 4.9 | 0.8 | 0.0 | 3.0 |
| Unsig. Movement Delay, s/veh |  |  |  |  |  |  |  |  |  |  |  |  |
| LnGrp Delay(d),s/veh | 50.6 | 30.6 | 31.5 | 31.8 | 10.9 | 83.6 | 71.6 | 56.1 | 15.4 | 45.4 | 0.0 | 38.3 |
| LnGrp LOS | D | C | C | C | B | F | E | E | B | D | A | D |
| Approach Vol, veh/h |  | 184 |  |  | 1681 |  |  | 1053 |  |  | 200 |  |
| Approach Delay, s/veh |  | 34.6 |  |  | 60.8 |  |  | 43.7 |  |  | 40.8 |  |
| Approach LOS |  | C |  |  | E |  |  | D |  |  | D |  |


| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Phs Duration (G+Y+Rc), s | 38.5 | 28.2 | 10.5 | 22.8 | 8.2 | 58.5 | 10.5 | 22.8 |
| Change Period (Y+Rc), s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting (Gmax), s | 34.0 | 24.2 | 7.0 | 18.8 | 7.0 | 51.2 | 7.0 | 18.8 |
| Max Q Clear Time (g_c+I1), s | 26.4 | 6.1 | 7.0 | 8.0 | 3.8 | 39.2 | 3.9 | 18.4 |
| Green Ext Time (p_c), s | 1.1 | 0.7 | 0.0 | 0.4 | 0.0 | 5.0 | 0.0 | 0.2 |

Intersection Summary

| HCM 6th Ctrl Delay | 52.2 |
| :--- | ---: |
| HCM 6th LOS | D |

HCM 6th Signalized Intersection Summary
1：Sycamore Canyon Blvd \＆Fair Isle Dr

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations | ${ }^{4}$ | 中\％ |  | ${ }^{7}$ | 44 | 「 | ${ }^{7}$ | 44 | 「 | 41 | F |  |
| Traffic Volume（veh／h） | 14 | 81 | 104 | 227 | 185 | 232 | 119 | 313 | 575 | 322 | 421 | 32 |
| Future Volume（veh／h） | 14 | 81 | 104 | 227 | 185 | 232 | 119 | 313 | 575 | 322 | 421 | 32 |
| Initial Q（Qb），veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped－Bike Adj（A＿pbT） | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 |
| Parking Bus，Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach |  | No |  |  | No |  |  | No |  |  | No |  |
| Adj Sat Flow，veh／h／ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adj Flow Rate，veh／h | 15 | 84 | 108 | 236 | 193 | 242 | 124 | 326 | 599 | 335 | 439 | 33 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Percent Heavy Veh，\％ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap，veh／h | 44 | 441 | 394 | 312 | 1417 | 632 | 155 | 1043 | 743 | 408 | 558 | 42 |
| Arrive On Green | 0.02 | 0.24 | 0.24 | 0.29 | 0.66 | 0.66 | 0.09 | 0.29 | 0.29 | 0.12 | 0.32 | 0.32 |
| Sat Flow，veh／h | 1810 | 1805 | 1610 | 1810 | 3610 | 1610 | 1810 | 3610 | 1610 | 3510 | 1745 | 131 |
| Grp Volume（v），veh／h | 15 | 84 | 108 | 236 | 193 | 242 | 124 | 326 | 599 | 335 | 0 | 472 |
| Grp Sat Flow（s），veh／h／ln | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1810 | 1805 | 1610 | 1755 | 0 | 1876 |
| Q Serve（g＿s），s | 0.7 | 3.3 | 4.9 | 10.7 | 1.8 | 6.2 | 6.1 | 6.4 | 8.6 | 8.4 | 0.0 | 20.6 |
| Cycle Q Clear（g＿c），s | 0.7 | 3.3 | 4.9 | 10.7 | 1.8 | 6.2 | 6.1 | 6.4 | 8.6 | 8.4 | 0.0 | 20.6 |
| Prop In Lane | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  | 0.07 |
| Lane Grp Cap（c），veh／h | 44 | 441 | 394 | 312 | 1417 | 632 | 155 | 1043 | 743 | 408 | 0 | 600 |
| V／C Ratio（X） | 0.34 | 0.19 | 0.27 | 0.76 | 0.14 | 0.38 | 0.80 | 0.31 | 0.81 | 0.82 | 0.00 | 0.79 |
| Avail Cap（c＿a），veh／h | 141 | 441 | 394 | 312 | 1417 | 632 | 181 | 1043 | 743 | 429 | 0 | 600 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter（I） | 1.00 | 1.00 | 1.00 | 0.87 | 0.87 | 0.87 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay（d），s／veh | 43.2 | 26.9 | 27.5 | 30.3 | 9.7 | 10.5 | 40.4 | 25.0 | 7.8 | 38.8 | 0.0 | 27.8 |
| Incr Delay（d2），s／veh | 4.5 | 1.0 | 1.7 | 8.9 | 0.2 | 1.5 | 19.3 | 0.8 | 9.1 | 11.5 | 0.0 | 10.1 |
| Initial Q Delay（d3），s／veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| \％ile BackOfQ（50\％），veh／ln | 0.4 | 1.5 | 2.0 | 4.8 | 0.7 | 2.1 | 3.5 | 2.8 | 6.0 | 4.2 | 0.0 | 10.6 |
| Unsig．Movement Delay，s／veh |  |  |  |  |  |  |  |  |  |  |  |  |
| LnGrp Delay（d），s／veh | 47.7 | 27.9 | 29.3 | 39.2 | 9.9 | 12.0 | 59.7 | 25.8 | 17.0 | 50.4 | 0.0 | 37.9 |
| LnGrp LOS | D | C | C | D | A | B | E | C | B | D | A | D |
| Approach Vol，veh／h |  | 207 |  |  | 671 |  |  | 1049 |  |  | 807 |  |
| Approach Delay，s／veh |  | 30.0 |  |  | 21.0 |  |  | 24.8 |  |  | 43.1 |  |
| Approach LOS |  | C |  |  | C |  |  | C |  |  | D |  |


| Timer－Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Phs Duration（G＋Y＋Rc），s | 19.5 | 26.0 | 11.7 | 32.8 | 6.2 | 39.3 | 14.5 | 30.0 |
| Change Period（Y＋Rc），s | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Max Green Setting（Gmax），s | 15.0 | 22.0 | 9.0 | 28.0 | 7.0 | 30.0 | 11.0 | 26.0 |
| Max Q Clear Time（g＿c＋I1），s | 12.7 | 6.9 | 8.1 | 22.6 | 2.7 | 8.2 | 10.4 | 10.6 |
| Green Ext Time（p＿c），s | 0.2 | 0.9 | 0.0 | 1.4 | 0.0 | 2.0 | 0.1 | 4.1 |

## Intersection Summary

| HCM 6th Ctrl Delay | 29.6 |
| :--- | ---: |
| HCM 6th LOS | C |

## Appendix L

Fire Hazard Analysis and Approach Memorandum

## TECHNICAL FIRE PROTECTION MEMORANDUM

| To: | Douglas Bloom, Fire Marshal, Moreno Valley Fire Department |
| :--- | :--- |
| From: | Dudek Fire Protection Planning Team, Michael Huff, Director |
| Subject: | Gateway Heights Project Fire Hazard Analysis and Approach |
| Date: | 03/31/2022 |
| cc: | Jason Ackerman, Esq., Ackerman Law |
| Attachment(s): | Figures 1-2 |
|  | Attachment 1 - Site Aerial Photograph |
|  | Attachment 2 - Fuel Modification Plan |
|  | Attachment 3-- Site Plan with Revised Dual Project Access |

This Technical Fire Protection Memorandum documents fire protection planning related to project constraints analysis for the subject project. The approach outlined herein responds to your recommended direction during our recent communications regarding emergency ingress/egress to/from the project site and access to defensible space areas.

## Project description

The proposed Gateway Heights development is a 108 unit detached townhouse project on an approximately 33acre site in the City of Moreno Valley.

- "Detached townhouses" (townhouses by CBC definition are attached; structures are likely to be considered SFDs per code)
- Structures are two-story townhouses
- Proposed 16-acre open space lot north of the developed project site


## Existing Site Observations

## Onsite

- Attachment 1 provides a site aerial photograph.
- Vegetation is primarily scattered sage scrub, forbs, and scattered native shrubs and a few ornamental trees in the northeast corner;
- Unmaintained roads/trails traverse the property;
- Evidence of recent fuel reduction activities are present on site.


## Topography

The project site is relatively flat, with a slight upslope gradient to the north; beyond the project to the north is a steep, rocky hillside with sparse scrub and forb vegetation. To the west and south the terrain has gently rolling hills with intermittent drainages. Along the eastern edge of the property is a drainage channel strewn with boulders. To the east of the project is a residential subdivision.

## Vicinity

The project is located in the northeast area of the City of Moreno Valley. The western and northern property lines coincide with the city limits; the lands immediately to the west and north of the property are within unincorporated Riverside County.

- North: open space;
- East of northern open space lot: open space;
- Southeast of project site: residential development;
- West: open space.


## Proposed site plan review / code compliance issues

## Issues to address:

- Driveway lengths: proposed lengths range from 136 to 273 feet with 24 ' width. The driveways for Pads 1 , $3,4,6$ and 8 are less than 150 feet long and would thereby qualify as fire apparatus access roads. The driveways for Pads $2,5,7$ and 9 through 13 are greater than 150 feet long and would not qualify as fire apparatus access roads since no turnarounds are proposed.
- Fuel modification width: 100 -foot FMZ can be provided for most units (Attachment 2). The western most units on Pad 13 (NW corner) are 30 feet from the property line; the units on Pad 7 are 69 feet from the property line; obtaining an off-site FMZ easement would be one approach to resolving this potential issue. However, if an off-site FMZ easement is not feasible due to an unwilling neighboring property owner; then onsite "hardening" features may be required as an alternative method of fire protection (i.e., firewalls on the property line).


## Primary access

Primary access is proposed using Morton Road on the southern side of the project, which has access to Box Springs Road and the SR60/I-215 Freeway.

## Secondary access

In reviewing the Moreno Valley Fire Code, there is no reference identified whereby a secondary access is required for the project. CFC 503.1.2 authorizes the fire code official to require more than one access road based on the potential for impairment of a single road, but it does not require that an additional access road must be provided.

The project design provides two 36 ' foot wide roadways at the entrance to minimize any potential traffic congestion during an emergency setting; one for ingress and one for egress (see Attachment 3). Each entrance roadway connects to separate "legs" of the internal circulation loop road allowing for approximately half of the occupants to exit in each of two distinct directions without conflict.

## Internal circulation

- Loop road system;
- Direct access is provided to all structures;
- Unobstructed internal circulation loop roadway width of 24 feet;
- No dead-end fire apparatus access roads.


## Fuel modification and Vegetation Management

A fuel modification landscape plan has been prepared and submitted for review and approval.
The two "legs" of the internal circulation loop road, along the eastern and western edges of the project, will be located between the property line and structures providing a paved, non-combustible, defensible space as part of the fuel modification zone.

The project will also comply with the following requirements related to fuel modification and vegetation management outlined in the 2022 California Fire Code. The Project-provided fuel modification landscape plan provides additional details on the Project's consistency with these requirements and has been submitted for review to Moreno Valley Fire Department.

### 4906.1 General

Planting of vegetation for new landscaping shall be selected to reduce non-fire-resistant vegetation in proximity to a structure and to maintain vegetation as it matures.

### 4906.2 Application

All new plantings of vegetation in State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) designated as a Very High Fire Hazard Severity Zone shall comply with Sections 4906.3 through 4906.5.3.

### 4906.3 Landscape Plans

Landscape plans shall be provided when required by the enforcing agency. The landscape plan shall include development and maintenance requirements for the vegetation management zone adjacent to structures and roadways, and to provide significant fire hazard reduction benefits for public and firefighting safety.

### 4906.3.1 Contents

Landscape plans shall contain the following:

1. Delineation of the 30 -foot ( 9144 mm ) and 100 -foot ( 30.5 m ) fuel management zones from all structures.
2. Identification of existing vegetation to remain and proposed new vegetation.
3. Identification of irrigated areas.
4. A plant legend with both botanical and common names, and identification of all plant material symbols.
5. Identification of ground coverings within the 30 -foot ( 9144 mm ) zone.

### 4906.4 Vegetation

All new vegetation shall be fire-resistant vegetation in accordance with this section.
Exception: Trees classified as non-fire-resistant vegetation complying with Section 4906.4.2.1.
To be considered fire-resistant vegetation, it must meet at least one of the following:

1. Be identified as fire-resistant vegetation in an approved book, journal or listing from an approved organization.
2. Be identified as fire-resistant vegetation by a licensed landscape architect with supporting justification.
3. Plants considered fire-resistant vegetation and approved by the local enforcing agency.

### 4906.4.1 Shrubs

All new plantings of shrubs shall comply with the following:

1. Shrubs shall not exceed 6 feet ( 1829 mm ) in height.
2. Groupings of shrubs are limited to a maximum aggregate diameter of 10 feet ( 3048 mm ).
3. Shrub groupings shall be separated from other groupings a minimum of 15 feet ( 4572 mm ).
4. Shrub groupings shall be separated from structures a minimum of 30 feet ( 9144 mm ).
5. Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of three times the height of the understory shrubs or 10 feet ( 3048 mm ), whichever is greater.

### 4906.4.2 Trees

Trees shall be managed as follows within the 30 -foot ( 9144 mm ) zone of a structure:

1. New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet ( 3048 mm ) from any combustible structure.
2. The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet ( 3048 mm ).
3. Existing trees shall be trimmed to provide a minimum separation of 10 feet ( 3048 mm ) away from chimney and stovepipe outlets per Title 14, Section 1299.03.

### 4906.4.2.1 Non-Fire-Resistant Vegetation

New trees not classified as fire-resistant vegetation, such as conifers, palms, pepper trees and eucalyptus species, shall be permitted provided the tree is planted and maintained so that the tree's drip line at maturity is a minimum 30 feet ( 9144 mm ) from any combustible structure.

## Defensible Space

The project will comply with the following defensible space requirements outlined in the 2022 California Fire Code.

### 4907.1 General

Hazardous vegetation and fuels shall be managed to reduce the severity of potential exterior wildfire exposure to buildings and to reduce the risk of fire spreading to buildings as required by applicable laws and regulations. Defensible space will be managed around all buildings and structures in State Responsibility Areas (SRA) as required in Public Resources Code 4291.

### 4907.2 Application

Buildings and structures located in the following areas shall maintain the required hazardous vegetation and fuel management:

1. All unincorporated lands designated by the State Board of Forestry and Fire Protection as a State Responsibility Area (SRA).
2. Land designated as a Very High Fire Hazard Severity Zone by the Director.
3. Land designated in ordinance by local agencies as a Very High Fire Hazard Severity Zone pursuant to Government Code Section 51179.

### 4907.3 Requirements

Hazardous vegetation and fuels around all buildings and structures shall be maintained in accordance with the following laws and regulations:

1. Public Resources Code, Section 4291.
2. California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3, Article 3, Section 1299.03.
3. California Government Code, Section 51182.
4. California Code of Regulations, Title 19, Division 1, Chapter 7, Subchapter 1, Section 3.07.

## Relevant code sections:

California Residential Code R337. Materials and Construction Methods for Exterior Wildfire Exposure: minimum standards for a new building located in a WUI area to resist the intrusion of flame or burning embers projected by a vegetation fire.

California Fire Code 503.1.2 Additional access. Authorizes the fire code official to require more than one access road based on the potential for impairment of a single road, but it does not require that an additional access road must be provided.

## Moreno Valley Fire Code Amendments

- 503.2.1 Fire apparatus access roads - 24 feet wide
- 903.2 Single Family Dwellings shall have automatic fire sprinkler systems
- 4906.4 Fuel Modification Requirements for New Construction. Must meet the criteria established by Riverside County Fire Department (Information Bulletin \#08-05). Submit a Fuel Modification Plan; indicate setback, irrigated and thinning zones (30’ Green Zone; 100' total defensible space).
- App B. Fire Flow and Hydrant Spacing


## Fire environment assessment

The project site's fire environment assessment was performed by Dudek fire protection planners with extensive similar experience throughout California over the last 25 years.

- The site is located within a Very High Fire Hazard Severity Zone.
- No evidence of recent fire on site; fire history data indicates the site has had multiple fires within a fivemile radius and the site itself has burned four times since 1980.
- Vegetation on site and to the north, west and south is sparse and low growing, which would reduce the impacts from a wildland fire;
- Adjacent hillslopes to the north exist up and away from the project site. This reduces wildfire risks at the project site as wildfire is more likely to spread at slower rates when moving downslope compared to an upslope direction.
- The project may be subject to an approaching wildland fire from the northeast during Santa Ana wind conditions. While direct impacts from wildfire cannot be completely ruled out, structural ignition risks from ember cast are minimal given modern construction requirements in alignment with Chapter 7A of the California Building Code, per California Office of the State Fire Marshals Office data.


## Fire Behavior assessment

- Selected fuel models Sh1 (low load, dry climate shrub) and Sh2 (moderate load, dry climate shrub) to represent the existing vegetative fuels. Site photographs provided in Attachment 4 depicts the fuels present on and adjacent to the project site.
- Selected wildland fire run scenarios from the NE and SW representing an offshore Santa Ana wind event and an onshore wind event. Santa Ana wind events represent "worst-case" conditions and represent the highest wind speeds and lowest fuel moistures likely to occur at the project site.
- Conducted fire behavior modeling using the BehavePlus 6 modeling system for existing conditions and post-development fuel modification (see results in Table 1). The location of model runs is provided in Figure 1.

Table 1. Fire Behavior Modeling Results

| Fire Scenarios | Flame Length (feet) | Fireline Intensity (BTU/feet/second) | Spread Rate (mph) | Spotting Distance (miles) |
| :---: | :---: | :---: | :---: | :---: |
| Scenario 1: $15 \%$ slope, 40 mph NE wind |  |  |  |  |
| Fuel Model Sh1 (scrub/mustard) | 8.4 | 584 | 1.0 | 0.7 |
| Fuel Model Sh2 (scrub/mustard) | 14.1 | 1,781 | 0.8 | 0.9 |
| Scenario 1 Fuel Mod: 10\% slope, 40 mph NE wind |  |  |  |  |
| Fuel Model 8 (irrigated landscaping) | 2.6 | 46 | 0.1 | 0.3 |
| Scenario 2: 15\% slope, 20 mph SW wind |  |  |  |  |
| Fuel Model Sh1 (scrub/mustard) | 8.5 | 589 | 1.0 | 0.7 |
| Fuel Model Sh2 (scrub/mustard) | 14.1 | 1,796 | 0.8 | 0.9 |
| Scenario 2 Fuel Mod: 15\% slope, 20 mph SW wind |  |  |  |  |
| Fuel Model 8 (irrigated landscaping) | 2.6 | 46 | 0.1 | 0.3 |

- An additional assessment was conducted to determine fire behavior during a Santa Ana wind event (worstcase weather conditions) in areas adjacent to the project site using the FlamMap software package. Direct impacts from wildfire are not likely at the project site due to flame lengths less than 20 feet in adjacent lands and the planned Fuel Modification Zones.

The following paragraphs provide descriptions of the inputs used in processing the FlamMap model. In addition, data sources are cited, and any assumptions made during the modeling process are described. A graphical representation of the model results is provided in Figure 2

## Elevation

The elevation data file represents units of meters above mean sea level (AMSL). Elevations in the FlamMap analysis area range from 1,585 to 2,625 feet AMSL. Elevation data is a required input file for FlamMap runs and are necessary for adiabatic adjustment of temperature and humidity and for conversion of fire spread between horizontal and slope distances.

## Slope

The slope data file represents values in degrees of inclination from horizontal. Slope values in the FlamMap analysis area range from 0-32 degrees. The slope input file is necessary for computing slope effects on fire spread and solar radiance.

## Aspect

The aspect data file represents values in azimuth degrees. Aspect values are important in determining the solar exposure of grid cells.

## Wind and Fuel Moisture

Wind speed and fuel moisture values for the FlamMap analysis utilized the same values as those used in the BehavePlus runs for Santa Ana weather scenarios. Fuel moisture data was collected from local RAWS stations. Wind alignment was set at 70 degrees, and wind speed was set to 40 mph .

## Fuel Model

The fuel model data file was based on the 40 Scott and Burgan (2005) models and represents distinct distributions of fuel loading found among surface fuel components (live and dead), size classes, and fuel types.

## Recommendations / AM\&M Justification

The Project includes the need for alternative materials and methods for FMZ and dead-end road length. This Fire Protection Technical Report proposes the following approach (AM\&Ms) and justification. The AM\&M's are evaluated to provide at least equivalent protection based on the experience of the preparers of this report.

1. Site fire environment and fire behavior is not significant. The vegetation on site and on adjacent lands is sparse - dried mustard and scattered sage. The ridge behind the project site slopes up and away from project, is covered with sparse light vegetation and rocks, which is beneficial.
2. Structures must be constructed in accordance with CRC R337 building codes (within FHSZ) and will include features such as ember resistant vents (baffled not just mesh).
3. FMZ will be provided around entire perimeter of the project site (see Fuel Modification Plan - Attachment 2). (Where the FMZ and Jurisdictional Delineation area overlaps along the upper portion of the
southeastern property line, active fuel treatment will be conducted so as to avoid impacts. The channel is comprised of large boulders with limited vegetation and in its existing state acts as a fuel modification area.) The Project will be hardened throughout.
a. The Project shall attempt to obtain an interim off-site FMZ easement for Pads 7 and 13 so that a total of 100 feet of FMZ from the Project's structures can be achieved. The off-site FMZ would be limited to thinning/mowing of existing vegetation annually. Should the off-site easement be infeasible based on an unwilling neighbor, then alternative fire protection is proposed:
i. Wherever less than 100 feet of FMZ (on and off site combined) is achievable, a 6 foot tall, masonry wall will be constructed at the property line in lieu of the additional FMZ.

Wall Justification: When buildings are set back from slopes, and a wall is placed at the property line, flames and radiant heat are deflected vertically reducing the effects of heat on the structure. If a structure cannot be setback adequately, or where the slope is less than $30 \%$, a noncombustible wall can help deflect the flames from the structure (NFPA 2005). The duration of radiant heat impact on the exposed side of the house is also reduced. The structure setback is important to avoid heat and/or flame intersection with the structure.

Heat-deflecting landscape walls of masonry construction that are six feet in height will be incorporated at the edge of lots where FMZs are the most constrained (Pads 7 and 13). The landscape walls provide a vertical, non-combustible surface in the line of heat, fumes, and flame. Once these fire byproducts intersect the wall, they are deflected upward or, in the case where lighter fuels are encountered, they are quickly consumed, heat and flame are absorbed or deflected by the wall, and the fuels burn peaks out within a short ( 30 second2 minute) time frame (Quarles and Beall 2002). Walls like these have been observed to deflect heat and airborne embers on numerous wildfires in San Diego, Orange, Los Angeles, Ventura, and Santa Barbara County.

Rancho Santa Fe Fire Protection District, Laguna Beach Fire Department, Orange County Fire Authority, Murieta Fire Protection District, and others utilize these walls as alternative methods based on observed performance during wildfires. This has led to these agencies approving use of non-combustible landscape walls as mitigations for reduced fuel modification zones and reduced setbacks at top of slope. While fuel moistures vary slightly across these jurisdictions, Santa Ana wind events create similar fuel moistures across a broad geographical area due to intensive drying of fuels. Therefore, this mitigation is also justified within the Moreno Valley Fire Protection District. These walls are consistent with NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire - 2008 Edition, Section 5.1.3.3 and A.5.1.3.3 and International Urban Wildland Interface Code (ICC 2012). NFPA 1144, A.5.1.3.3 states: "Noncombustible walls and barriers are effective for deflecting radiant heat and windblown embers from structures." These walls and barriers are usually constructed of noncombustible materials (concrete block, bricks, stone, stucco) or earth where 30 feet ( 9 meters) of defensible space is not available.
4. Provide FMZ inspections annually. Inspections will be performed by RCFD or, at their preference, the Project would fund inspections by a $3^{\text {rd }}$ party to their satisfaction. This measure will ensure that the FMZ is functioning as intended.
5. Identify and mark fire lane and/or no parking areas as required.
6. Provide enlarged turns at both internal loop roadway turns.
7. Dual pane (both panes) tempered glass for openings on exposed sides of the structures on Pads 7 and 13.
8. Loop internal road system with two 36-foot wide, multi-lane, physically-separated ingress/egress roadways.
9. Hardening at Project access point via pavement and landscaping.
10. Fire access points at the terminus of each driveway along the north side of Project for firefighting. Additionally, the area behind the northeast side of the project includes a 10-to-12-foot flat area that will be available to pedestrian firefighters via the provided accesses at the end of each driveway in that area.

## Summary

The structures will be constructed following CRC R337 requirements to ensure reduced ignition potential. In addition, hardening of the structures including enhanced vents and enhanced glazing requirements will be included on selected units as noted above.

The internal circulation provides the necessary access to all structures with no dead-end fire apparatus access roads that require fire department turnarounds. The minimum roadway width of 36 feet meets the requirements for buildings less than 30 feet in height. Hydrants will need to be installed within the project site.

The primary access off Morton Road has been enhanced to include two 36' wide physically separated roadways for ingress and egress to reduce traffic congestion during emergencies, by providing dedicated ingress and egress routes.

Figures 1-2


SOURCE: AERRAL- BING MAPPING SERVICE; DEVELOPMENT. EDWIN SAMLIN 2021


FIGURE 2

## Attachment 1 Site Aerial Photograph



Aerial view of Project site. Land cover on site is disturbed, grassland, with minimal shrubs. Slopes to the north/northeast are sparsely vegetated with heavy rock outcrop ground cover. East/southeast includes large property single family homes. Land to the west is vacant and planned for development. Morton Road is directly to the west/southwest.

# Attachment 2 Fuel Modification Plan 



## Attachment 3 Revised Site Plan Including Two Separate Ingress/Egress Roads







parcel numeress: zso-150-001

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NTHE CITY OF MORENO $V$

## SITE PLAN

being a portion of section 34, TOWNSHIP 2 SOUTH, RANGE 4 WESt, SAn bernardino meridian
UNITED ENGINEERING GROUP CA. INC NOVEMBER 202


## Attachment 4 Site Photographs



Photograph 1: Photograph taken from Morton Road looking northeast at the project site showing on and offsite fuels and adjacent hillslopes that exists up and away from the project site. Rock outcroppings covering the hillslope reduce wildfire hazard by taking away burnable fuels.

Photograph 2: Photograph taken from the western edge of the project site looking east. On-site fuels are low load and comprised of short shrubs and annual grasses.


Photograph 3: Photograph taken from the northern boundary of the project site looking west picturing adjacent shrub and grass fuels and electrical transmission line. Spacing between vegetation decreases wildfire spread.


Photograph 4: Photograph taken from northeastern boundary of project site showing shrub and grass fuels in addition to adjacent trees and rock outcroppings. Fuel loads are highest along the project site's northern boundary.



TOTAL PROJECT AREA: 32.8 acres. Plantsto to be chosen from County of
Riverside Califormia F Fiendly Plant List Riveride Cairiornia Friendly Plant List



NOTE: This information is conceptual in nature and is
subject to adiustments pending furl subject to adiustments sendinine further vererification and
Client and Govermental Agency approval. .o warranties Client and Governmental Agency approval. No wart
or guarantes are given or or mplied by the Architect.



## Exhibit B

Notice of Intent to Adopt a Mitigated Negative Declaration/Newspaper Notice

## CITY OF MORENO VALLEY NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

NOTICE IS HEREBY GIVEN that the City of Moreno Valley is considering a recommendation that the project herein identified will have no significant environmental impact in compliance with Section 15070 of the CEQA guidelines. A copy of the MITIGATED NEGATIVE DECLARATION and the ENVIRONMENTAL CHECKLIST, which supports the proposed findings, are on file at the City of Moreno Valley.

Project: General Plan Amendment (PEN20-0095)
Change of Zone (PEN20-0096);
Conditional Use Permit for a Planned Unit Development (PEN21-0066), and
Tentative Tract Map No. 38459 (PEN22-0127)
Applicant: HengHou Group
Owner:
Representative:
Location:
Proposal:
Shizao Zheng
Jason Ackerman
East side of Morton Road approximately 300 feet north of Jennings Court. (APN: 256-150-001)
To allow construction of a 108 -unit detached townhouse Planned Unit Development with private streets, a 0.89 -acre community park, and common area improvements on a 16.59 -acre portion of 32.56 acres of vacant land.

## Council District: 2

This Notice of Intent (NOI) has been prepared to notify agencies and interested parties that the City of Moreno Valley, as the Lead Agency, has prepared an Initial Study/Mitigated Negative Declaration (IS/MND) pursuant to the requirements of the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts associated with construction and operation of the project as described below.

Project Description: The Project consists of the following entitlements: General Plan Amendment (PEN20-0095) from "R2 Residential" and "Hillside Residential" to "R10 Residential" and "Open Space"; Change of Zone (PEN20-0096) from Residential 2 (R2) District and Hillside Residential (HR) District to Residential 10 (R10) District and Open Space (OS) District; Conditional Use Permit (PEN21-0066) to establish flexible standards using the Planned Unit Development regulations for a new 108 -unit detached townhouse condominium development with a 0.89 -acre community park; Tentative Tract Map No. 38459 will subdivide the 32.56 gross acres of vacant land into a 16.59 -acre common-area lot with 108 air space parcels for condominium purposes and a public park and a 15.97-acre remainder open-space lot.

The Project site is not included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Document Availability: The Initial Study/Mitigated Negative Declaration, and all documents incorporated and/or referenced therein, can be reviewed during normal business hours (7:30 a.m. to 5:30 p.m., Monday through Thursday and Friday, 7:30 a.m. to $4: 30$ p.m.) at the City of Moreno Valley Planning Division counter, located at 14177 Frederick Street, Moreno Valley, CA 92553. The documents may also be reviewed on the City's website at http://www.moreno-valley.ca.us/cdd/documents/about-projects.html.

Potential Environmental Impacts: The City of Moreno Valley has prepared an Initial Study to determine the environmental effects associated with the above actions and finds the issuance of a Mitigated Negative Declaration is the appropriate level of environmental review. The Initial Study/Mitigated Negative Declaration concludes that all potentially significant impacts of the Project would be mitigated to a less than significant level.

Comment Deadline: Pursuant to Section 15105(b) of the CEQA Guidelines, the City has established a 30 -day public review period for the Initial Study/Mitigated Negative Declaration, which begins March 2, 2023 and ends March 31, 2023. Written comments on the Initial Study/Mitigated Negative Declaration must be received at the City of Moreno Valley Community Development Department by no later than the conclusion of the 30-day review period, 5:30 p.m. on March 31, 2023. Written comments on the Initial Study/Mitigated Negative Declaration should be addressed to:

Luis Lopez, Contract Planner<br>14177 Frederick Street<br>Post Office Box 88005<br>Moreno Valley, California 92552<br>Phone: (951) 413-3206<br>Email: luisl@moval.org

## Exhibit C

Mitigation Monitoring and Reporting Program

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
City of Moreno Valley

| Mitigation Measure | Timing of Verification | Party Responsible for Implementation and Reporting | Status/Date/Initials |
| :---: | :---: | :---: | :---: |
| Aesthetics |  |  |  |
| RR AES-1: The Developer shall prepare a Lighting Plan that provides the type and location of proposed exterior lighting and signage, subject to the review and approval of the City's Development Services Department. All new lighting shall be shielded and down-cast, such that the light is not cast onto adjacent properties or visible from above. Night lighting shall be directed away from the MSHCP Conservation Area to protect species within the MSHCP Conservation Area from direct and indirect night lighting. Prior to approval of the Final Design, an analysis of potential impacts from light and glare from interior and exterior building lighting, safety and security lighting, and vehicular traffic accessing the site shall be submitted to the City for review and approval. This analysis shall demonstrate that due to shielded and directional lighting in compliance with Mt. Palomar lighting standards, no lighting shall be introduced into the adjacent Conservation Area. If potential lighting impacts are identified, the lighting design (placement, light spectrum, and shielding), or other design solutions acceptable to the City of Moreno Valley shall be implemented to eliminate lighting impacts on the adjacent Conservation Areas. Shielding, including Turtle Bay type LED lighting, shall be incorporated into Project designs to ensure ambient lighting in the MSHCP Conservation Area is not increased. The Lighting Plan shall include monitoring during construction and post-project to demonstrate lighting levels do not increase in the Conservation Area. If light standards are exceeded, the Project Applicant is responsible for immediate implementation of remedial actions to reduce light levels to acceptable levels identified in the Lighting Plan. | Prior to commencing ground- or vegetation disturbing activities | Project Proponent |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
City of Moreno Valley

| Mitigation Measure | Timing of Verification | Party Responsible for Implementation and Reporting | Status/Date/Initials |
| :---: | :---: | :---: | :---: |
| Biological Resources |  |  |  |
| RR BIO-1: The Developer shall obtain a tree removal permit from the City, if fuel modification, grading, or other improvements require removal of any heritage trees. The Developer would incorporate mitigation trees, replacing removed heritage trees, resulting from a tree removal permit into the Project's final landscape plan. | Prior to Construction | City's Development Services Department |  |
| MM BIO-1: To maintain compliance with the Migratory Bird Treaty Act (MBTA and California Fish and Game Code Sections 3503, 3503.5, and 3513, site preparation activities (ground disturbance, construction activities, staging equipment, and/or vegetation removal activities for the project shall be avoided, to the greatest extent possible, during the nesting bird season. If ground disturbing and/or vegetation clearance activities are scheduled to occur during the avian nesting season, a pre- construction nesting bird survey shall be conducted by a qualified biologist within the Project Site and a 500 -foot buffer around the Project Site. Surveys shall be conducted within 3 days prior to initiation of activity and shall be conducted between dawn and noon. The survey results shall be provided to the City's Planning Department. The Project Applicant shall adhere to the following: <br> 1. Applicant shall designate a biologist (Designated Biologist) experienced in: identifying local and migratory bird species of special concern; conducting bird surveys using appropriate survey methodology; nesting surveying techniques, recognizing breeding and nesting behaviors, locating nests and breeding territories, and identifying nesting stages and nest success; determining/establishing appropriate avoidance and minimization measures; and monitoring the efficacy of implemented avoidance and minimization measures. | Prior to commencing ground- or vegetation disturbing activities | Project Proponent |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
City of Moreno Valley

| Mitigation Measure | Timing of Verification | Party Responsible for Implementation and Reporting | Status/Date/Initials |
| :---: | :---: | :---: | :---: |
| 2. Pre-activity field surveys shall be conducted at the appropriate time of day/night, during appropriate weather conditions, no more than 3 days prior to the initiation of Project activities. Surveys shall encompass all suitable areas including trees, shrubs, bare ground, burrows, cavities, and structures. Survey duration shall take into consideration the size of the Project site; density, and complexity of the habitat; number of survey participants; survey techniques employed; and shall be sufficient to ensure the data collected is complete and accurate. <br> If nesting birds are not found within the project site, site preparation and construction activities may begin during the nesting/breeding season. If nesting birds (including nesting raptors are detected, then avoidance or minimization measures shall be undertaken in consultation with the City of Moreno Valley and California Department of Fish and Wildlife. Measures shall include immediate establishment of an avoidance buffers shall be implemented as determined by a qualified biologist and approved by the City of Moreno Valley, based on their best professional judgement and experience. The buffer shall be of a distance to ensure avoidance of adverse effects to the nesting bird by accounting for topography, ambient conditions, species, nest location, and activity type. The buffer around the nest shall be delineated and flagged, and no construction activity shall occur within the buffer area until a qualified biologist determines nesting species have fledged and the nest is no longer active or the nest has failed. The biologist shall monitor the nest at the onset of project activities, and at the onset of any changes in such project activities (e.g., increase in number or type of equipment, change in equipment usage, etc.) to determine the efficacy of the buffer. If the biologist determines that such project activities may be causing an adverse reaction, the biologist shall adjust the buffer accordingly or |  |  |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
City of Moreno Valley

| Mitigation Measure | Timing of Verification | Party Responsible for Implementation and Reporting | Status/Date/Initials |
| :---: | :---: | :---: | :---: |
| implement alternative avoidance and minimization measures, such as redirecting or rescheduling construction or erecting sound barriers. All work within these buffers will be halted until the nesting effort is finished (i.e., the juveniles are surviving independent from the nest). All nests shall be monitored as determined by the qualified biologist until nestlings have fledged and dispersed or it is otherwise confirmed that the nest has been unsuccessful or abandoned. Work can resume within these avoidance areas when no other active nests are found. Upon completion of the survey and nesting bird monitoring, a report shall be prepared and submitted to City of Moreno Valley Planning Division for mitigation monitoring compliance record keeping. |  |  |  |
| MM BIO-2: To avoid project-related impacts to burrowing owls potentially occurring on or in the vicinity of the project site, the Developer shall have a qualified biologist conduct a projectspecific habitat assessments and preconstruction survey for burrowing owl in accordance with the March 2006 Burrowing Owl Survey Instructions for the Western Riverside County Multiple Species Habitat Conservation Plan Area. This survey shall occur within 30 days prior to ground-disturbance activities (e.g., vegetation clearing, clearing, and grubbing, tree removal, site watering) within those portions of the project site containing suitable burrowing owl habitat. If ground disturbing activities in these areas are delayed or suspended for more than 30 days after the pre- construction survey, the area shall be resurveyed for owls. The results of the survey should be submitted to the City and California Department of Fish and Wildlife within three days of survey completion. In addition, a preconstruction survey for burrowing owl shall be conducted within 3 days prior to initiation of Project activities and reported to CDFW as described above. | Prior to commencing ground- or vegetation disturbing activities | Project Proponent |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
City of Moreno Valley

| Mitigation Measure | Timing of Verification | Party Responsible for Implementation and Reporting | Status/Date/Initials |
| :---: | :---: | :---: | :---: |
| If no burrowing owls are observed during the survey, site preparation and construction activities may begin. If burrowing owl are present within the survey area, then avoidance or minimization measures shall be undertaken in consultation with the City of Moreno Valley, California Department of Fish and Wildlife (CDFW) and US Fish and Wildlife Service (USFWS). CDFW shall be sent written notification within 48 hours of detection of burrowing owls. If active nests are identified on the Project site, the Project applicant shall not commence activities until it can be determined that the burrows are not being used by adult or juvenile owls or following CDFW approval of a Burrowing Owl Plan as described below. If owl presence is difficult to determine, a qualified biologist shall monitor the burrows with motionactivated trail cameras for at least 24 hours to evaluate burrow occupancy. The onsite qualified biologist will verify the nesting effort has finished according to methods identified in the Burrowing Owl Plan. <br> The qualified biologist and Project Applicant shall coordinate with the City, CDFW, and USFWS to develop a Burrowing Owl Plan to be approved by the City, CDFW, and USFWS prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, relocation, monitoring, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites and details on proposed buffers if avoiding the burrowing owls or information on the adjacent or nearby suitable habitat available to owls for relocation. If no suitable habitat is available nearby for relocation, details regarding the habitat characteristics of the proposed relocation site, creation and funding of artificial burrows (numbers, location, and type of burrows) and management activities for relocated owls shall also be included in the Burrowing Owl Plan. The City shall implement the Burrowing Owl Plan |  |  |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
City of Moreno Valley

| Mitigation Measure | Timing of Verification | Party Responsible for Implementation and Reporting | Status/Date/Initials |
| :---: | :---: | :---: | :---: |
| following CDFW and USFWS review and approval. <br> If burrowing owls are observed within Project Site(s) during Project implementation and construction, the Project applicant shall notify CDFW immediately in writing within 72 hours of detection. A Burrowing Owl Plan shall be submitted to CDFW for review and approval within two weeks of detection and no Project activity shall continue within 1000 feet of the burrowing owls until CDFW approves the Burrowing Owl Plan. The City shall be responsible for implementing appropriate avoidance and mitigation measures, including burrow avoidance, passive or active relocation, or other appropriate mitigation measures as identified in the Burrowing Owl Plan. <br> A final report shall be prepared by the qualified biologist documenting the results of the burrowing owl surveys and detailing avoidance, minimization, and mitigation measures. The final report shall be submitted to the City and CDFW within 30 days of completion of the survey and burrowing monitoring for mitigation monitoring compliance record keeping. |  |  |  |
| MM BIO-3: For all features identified as jurisdictional that cannot be avoided, the Developer shall obtain permits from the respective agencies prior to the initiation of construction activities. These permits include a Clean Water Act (CWA) Section 404 permit from the USACE, a CWA Section 401 water quality certification from the Regional Water Quality Control Board, and a CDFW Section 1602 Notification of Lake or Streambed Alteration. <br> The Developer shall implement and comply with all measures required by the jurisdictional permits. Mitigation for the loss of jurisdictional resources shall be negotiated with the resource agencies (US Army Corps of Engineers, Regional Water Quality Control Board, and California | Prior to Construction | Developer/Respective Agencies |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
City of Moreno Valley

| Mitigation Measure | Timing of Verification | Party Responsible for Implementation and Reporting | Status/Date/Initials |
| :---: | :---: | :---: | :---: |
| Department of Fish and Wildlife) during the regulatory permitting process. |  |  |  |
| MM BIO-4: To ensure long-term conservation of avoided riparian/riverine resources the Project Applicant will record a deed restriction, conservation easement, or other appropriate mechanisms over avoided riparian/riverine resources on the Project Site. The recorded realty instrument shall be provided to the City prior to grading. <br> The Applicant proposes to compensate for impacts to MSHCP riparian/riverine areas by providing a 1:1 ratio of reestablishment or a 2:1 ratio of rehabilitation credits at Riverpark Mitigation Bank. If credits at Riverpark Mitigation Bank are not available prior to grading, the Developer shall compensate for impacts to jurisdictional waters and riparian/riverine areas by providing a $31: 1$ ratio of offsite land within the Santa Ana Watershed to be acquired for the purpose of In-Perpetuity Preservation, or through the purchase of mitigation credits at an established off-site Mitigation Bank in Western Riverside County. Mitigation proposed on land acquired for the purpose of inperpetuity mitigation that is not part of an agency-approved mitigation bank or in-lieu fee program shall include the preservation, creation, restoration, and/or enhancement of similar habitat within the Santa Ana Watershed pursuant to a Habitat Mitigation and Monitoring Plan (HMMP) to be approved by the Lead and Responsible agencies. The HMMP shall be prepared prior to any impacts, and it shall provide details as to the implementation of mitigation, maintenance, future monitoring, and management. The goal of the mitigation shall be to preserve, create, restore, and/or enhance similar habitat with equal or greater function and value than the affected habitat. | Prior to commencing ground- or vegetation disturbing activities | Project Proponent |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
City of Moreno Valley

| Mitigation Measure | Timing of Verification | Party Responsible for Implementation and Reporting | Status/Date/Initials |
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| MM BIO-5: The Developer shall pay the applicable MSHCP Development Mitigation Fee prior to initiation of grading activities. | Prior to Initiation of Grading Activities | Developer |  |
| MM BIO-6: The following avoidance and minimization measures shall be implemented during Project construction activities: <br> - Construction limits along the northern and eastern boundaries of the Project shall be clearly marked so that adjacent native vegetation is avoided. <br> - Staging and storage areas for spoils, equipment, materials, fuels, lubricants, and solvents shall be located within the designated impact area or adjacent developed areas. <br> - A Stormwater Pollution Prevention Plan shall be developed and implemented. <br> - Invasives: Invasive species identified in Table 6-2 of the MSHCP shall not be used in development landscape plans or restoration plan activities. <br> - Construction-related and long-term Project operation noise shall not exceed 65 dBA Leq in the adjacent MSHCP Criteria Cell. Prior to issuance of land development permits, including clearing or grubbing and grading and/or construction permits for areas within or adjacent to the MSHCP Criteria Cell, the applicant shall prepare and submit to the satisfaction of the City, an acoustical analysis to demonstrate that the 65 dBA Leq noise level is not exceeded in the Criteria Cell. The acoustical analysis shall describe the methods by which construction noise shall not exceed 65 dBA Leq | Ongoing During Construction | Developer/Qualified Biologist |  |

## Mitigation Monitoring and Reporting Program

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City of Moreno Valley

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| and how noise levels will be monitored during construction and for the life of the project. Noise abatement methods may include, but are not limited to, reoperation of specific construction activities, installation of noise abatement at the source, and/or installation of noise abatement at the receiving areas. <br> - Noise Plan: Prior to approval of the Final Design, a Noise plan shall be submitted to the City of Moreno Valley for review and approval. The Noise Plan shall identify noise generating land uses that may affecting the MSHCP Conservation Area and shall incorporate setbacks, berms or walls to minimize the effects of noise on MSHCP Conservation Area resources pursuant to applicable rules, regulations and guidelines related to land use noise standards. The MSHCP identifies that Project noise impacts do not exceed the residential standards within the Conservation Areas. For planning purposes, wildlife within the MSHCP Conservation Area should not be subject to noise that would exceed residential noise standards. The Noise Plan shall include monitoring during construction and postproject to demonstrate noise levels in the Conservation Area do not exceed residential standards. If noise standards are exceeded, the Project Applicant is responsible for immediate implementation of remedial actions to reduce noise levels to acceptable levels. |  |  |  |

## Mitigation Monitoring and Reporting Program

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| - Landscaping Plan: develop a landscaping plan that includes the use of native plant material on the Project site and avoids the use of invasive plant species identified in Table 6-2 of the MSHCP for landscaping portions of development that are adjacent to the MSHCP Conservation Area including avoided riparian/riverine resources. Prior to approval of the Final Design, a landscaping plan, using native vegetation, for areas adjacent to the Conservation Area shall be submitted to the City for review and approval. <br> - Barrier and Fencing Plan: A Barrier and Fencing plan that provides specific details designed to minimize unauthorized public access, domestic animal predation, illegal trespass, and dumping in the MSHCP Conservation Area. Prior to approval of the Final Design, a fencing plan shall be submitted to the City of Moreno Valley and the Western Riverside County Regional Conservation Authority for review and approval. The fencing plan shall include 8 -foot tall fencing made of secure and fire-proof materials (such as brick, stone, or metal) placed along the entire boundary adjacent to Conservation Area to prohibit movement of people and pets from the development area into the Conservation Area. The top of all walls and fences shall be designed to prevent animals from entering Conservation Areas using systems such as a roller bars, angled fence tops, or other effective fence designs to keep out pets, especially cats. To prevent bird strikes |  |  |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
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| and reduce bird mortality, no <br> section of the fence should <br> made clear panels or be transparent <br> materials such as glass or <br> plastic. The Fencing Plan <br> shall identify a maintenance <br> and monitoring plan for the <br> fence, including who is <br> responsible for fence <br> maintenance with sufficient <br> funding to maintain the |  |  |  |
| barrier. |  |  |  |

## Mitigation Monitoring and Reporting Program

Gateway Heights Project (PEN 21-0066)
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| determine whether the remains are those of a Native American. If the remains are determined to be Native American, the California Native American Heritage Commission shall be notified, and appropriate measures provided by State law shall be implemented to determine the most likely living descendant(s). Disposition of the remains shall be overseen by the most likely living descendants to determine the most appropriate means of treating the human remains and any associated grave artifacts. |  |  |  |
| MM CUL-1: Prior to the issuance of a demolition permit, the Developer shall submit the name and qualifications of a qualified archaeologist to the City of Moreno Valley Community Development Department for review and approval. Once approved, the qualified archaeologist shall be retained by the Developer. In the event that suspected cultural (archaeological) resources or tribal cultural resources are inadvertently unearthed during excavation activities, the contractor shall immediately cease all earth-disturbing activities within a 100 -foot radius of the area of discovery. The Project contractor or Developer shall contact the qualified archaeologist to request an evaluation of the significance of the find and determine an appropriate course of action. If avoidance of the resource(s) is not feasible, salvage operation requirements pursuant to Section 15064.5 of the State California Environmental Quality Act Guidelines shall be followed in consultation with the City. After the find has been appropriately avoided or mitigated, work in the area may resume. | Prior to the Issuance of a Grading Permit | Developer/Contractor/Qualified Professional Archeologist |  |
| MM CUL-2: Archaeological monitoring will be conducted by a qualified archaeologist for all ground disturbance activities that occur within 30 meters ( 100 feet) of Sites 33015937 and 33015938 , which are identified in greater detail within the Project's cultural reports (Appendix C). If any suspected cultural (archaeological) resources are | Ongoing During Construction | Developer/Contractor/ Qualified Professional Archeologist |  |

## Mitigation Monitoring and Reporting Program

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| detected, the procedures identified in MM CUL-1 will be implemented. |  |  |  |
| Energy |  |  |  |
| RR ENE-1: The Project must be designed in accordance with the applicable Title 24 Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations [CCR], Title 24, Part 6). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods. | Prior to Construction | Developer |  |
| RR ENE-2: The Project is subject to the California Green Building Standards Code (CALGreen) (CCR, Title 24, Part 11). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods. | Prior to Construction | Developer |  |
| RR ENE-3: The Project shall comply with applicable policies of the Moreno Valley Climate Action Plan by complying with meeting the following policies: <br> 1. Require new multi-family residential development to reduce the need for external trips by providing useful services/facilities on-site such as electric vehicle infrastructure. (Policy TR-9) <br> 2. incentives such as streamlined permitting or bonus density for new multi-family buildings and reroofing projects to install "cool" roofs consistent with the current California Green Building Code (CALGreen) standards for commercial and industrial buildings. (Policy R-1) <br> 3. Require new construction and major remodels to install interior real-time energy smart meters in line with current utility provider (e.g. MVU, SCE) efforts. (Policy R-2) <br> 4. Reduce emissions from heavyduty construction equipment by limiting idling based on South Coast Air Quality Management | Prior to Construction | Developer |  |

## Mitigation Monitoring and Reporting Program

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| District (SCAQMD) requirements and utilizing cleaner fuels, equipment, and vehicles. <br> a. Require provision of clear signage reminding construction workers to limit idling. <br> b. Require the Developer to limit GHG emissions through one or more of the following measures: <br> i. substitute electrified or hybrid equipment for diesel/gas powered equipment. <br> ii. Use alternative fueled equipment on site. <br> iii. Avoid use of on-site generators. (Policy OR-2). |  |  |  |
| Geology and Soils |  |  |  |
| MM GEO-1 : Prior to approval of final plans and specifications for the Project, the City shall review the Project plans to confirm that all recommendations in the Geotechnical Report (prepared by LGC GeoEnvironmental, Inc in 2018), the Slope Stability Report (prepared by Dynamic Geotechnical Solutions in 2021), and any future geotechnical reports have been fully and appropriately incorporated into all grading and construction drawings. | Prior to Approval of Final Plans | Developer/City's Development Services Department |  |
| MM GEO-2: Prior to the issuance of a grading permit, the Developer shall submit the name and qualifications of a qualified paleontologist to the City of Moreno Valley Community Development Department for review and approval. Once approved, the qualified paleontologist shall be retained by the Developer on an oncall basis to observe grading activities in the Young Alluvial Valley Deposits and Old Alluvial Fan Deposits on the Project Site and to salvage and catalogue fossils as necessary. At the Project's Pre-Grade Meeting, the paleontologist shall discuss the sensitivity of the sediment being | Prior to the Issuance of a Grading Permit | Developer/ City's Development Services Department/Qualified Paleontologist |  |

## Mitigation Monitoring and Reporting Program

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| graded and shall establish procedures for monitoring. Protocols must be developed and explained for temporarily halting or redirecting work to permit sampling, identification, and evaluation of any fossils discovered. If the fossils are deemed significant, the paleontologist shall determine appropriate actions, in cooperation with the City of Moreno Valley, to recover and treat the fossils and to prepare them to the point of identification. A final Paleontological Resources Monitoring Report shall include a catalogue and analysis of the fossils found; a summary of their significance; and the repository that would curate the fossils in perpetuity. |  |  |  |
| Hazards and Hazardous Materials |  |  |  |
| PDF HAZ-1: The Project's proposed basins would be designed and maintained to provide for a maximum 48 -hour detention period following the design storm, and to remain totally dry between rainfalls. | During Project Design | Developer/City's Development Services Department |  |
| PDF HAZ-2: Vegetation in and around the basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in Project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the basins shall not include trees or shrubs that produce seeds, fruits, or berries. Landscaping in the basins, if not rip rap, would be in accordance with the guidance provided in ALUC "Landscaping Near Airports" brochure, and the "Airports, Wildlife, and Stormwater Management" brochure available at RCALUC.org which lists acceptable plants from the Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist. | During Project Design | Developer/City's Development Services Department |  |

# Mitigation Monitoring and Reporting Program 

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| PDF HAZ-3: A notice shall be permanently affixed to the fencing surrounding the basins with the language similar to the following: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and to not attract birds. Proper maintenance is necessary to avoid bird strikes." This sign would also include the name, telephone number, or other contact information of the person or entity responsible for monitoring and maintain the basins. | During Project Operation | Developer/City's Development Services Department |  |
| PDF HAZ-4: Prior to close of escrow on the Project's future proposed homesites, the "Notice of Airport in Vicinity" that was attached to the ALUC's 2020 Airport Land Use Commission (ALUC) Development Review - Director's Determination letter shall be provided to all prospective purchasers and occupants of the Project. | During Project Operation | Developer/City's Development Services Department |  |
| Public Resources |  |  |  |
| RR PUB-1: The Developer shall comply with all applicable codes, ordinances, and regulations, including the most current edition of the California Fire Code and the City of Moreno Valley Municipal Code, regarding fire prevention and suppression measures; fire hydrants; fire access; water availability; and other, similar requirements. Prior to issuance of building permits, the City of Moreno Valley Community Development Department and the Moreno Valley Fire Department shall verify compliance with applicable codes and that appropriate fire safety measures are included in the Project design. All such codes and measures shall be implemented prior to occupancy. | During Project Construction | Developer/Contractor/ City's Development Services Department/Moreno Valley Fire Department |  |

## Mitigation Monitoring and Reporting Program

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| RR PUB-2: The Developer shall pay all applicable Development Impact Fees (DIFs) prior to the issuance of building permits, for parkland dedication, parkland improvements, public safety facilities, other governmental facilities, and outside agency fees including school district fees. | Prior to Issuance of a Building Permit | Developer/City's Development Services Department |  |
| Tribal Cultural Resources |  |  |  |
| MM TCR-1: Archaeological Monitoring. Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist, who meets the U.S. Secretary of the Interior Standards, to conduct monitoring of all mass grading and trenching activities. <br> The Project Archaeologist, in consultation with the Consulting Tribe(s) including Pechanga Band of Luiseño Indians, the contractor, and the City, shall develop a CRMP as defined in MM TCR-3. The Project archeologist shall attend the pregrading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The archaeological monitor shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. | Prior to Issuance of a Grading Permit | Developer/Qualified Professional Archeologist |  |
| MM TCR-2: Native American Monitoring. Prior to the issuance of a grading permit, the Developer shall secure agreements with the Pechanga Band of Luiseño Indians for tribal monitoring. The City is also required to provide a minimum of 30 days' advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. The Native American | Prior to Issuance of a Grading permit | Developer/Qualified Professional Archeologist/City's Development Services Department |  |

## Mitigation Monitoring and Reporting Program

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| Monitor(s) shall attend the pre-grading meeting with the Project Archaeologist, City, the construction manager and any contractors and will conduct the Tribal Perspective of the mandatory Cultural Resources Worker Sensitivity Training to those in attendance. |  |  |  |
| MM TCR-3A: In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries: <br> a. One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Department: <br> i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources. <br> ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to MM CUL-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in MM CUL-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City, and concurred to by the |  | Developer/Qualified Professional Archeologist/Contractor |  |

## Mitigation Monitoring and Reporting Program

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| Consulting Native American Tribal Governments prior to certification of the environmental document. |  |  |  |
| MM TCR-3B: Cultural Resource Monitoring Plan (CRMP). The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a CRMP in to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the Project Site. A consulting Tribe is defined as a Tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include: <br> a Project description and location; <br> b Project grading and development scheduling; <br> c Roles and responsibilities of individuals on the Project; <br> d The pre-grading meeting and Cultural Resources Worker Sensitivity Training details; <br> e The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation. <br> f The type of recordation needed for inadvertent finds and the stipulations of recordation of sacred items. <br> g Contact information of relevant individuals for the Project. | Prior to Construction | Developer/Qualified Professional Archeologist/City's Development Services Department/Contractor |  |

## Mitigation Monitoring and Reporting Program

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| MM TCR 4: The City shall verify that the following note is included on the Grading Plan: <br> "If any suspected archaeological resources are discovered during ground disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100 -foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find." | Prior to Construction | City's Development Services Department |  |
| MM TCR 5: Inadvertent Finds. If potential historic or cultural resources are uncovered during excavation or construction activities at the Project Site that were not assessed by the archaeological report(s) and/or environmental assessment conducted prior to Project approval, all ground disturbing activities in the affected area within 100 feet of the uncovered resource must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Further ground disturbance shall not resume within the area of the discovery until an agreement has been reached by all parties as to the appropriate mitigation. Work shall be allowed to continue outside of the buffer area and will be monitored by additional archeologist and Tribal Monitors, if needed. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in MM TCR-2 before | Ongoing During Construction | Developer/Qualified Professional Archeologist/City's Development Services Department/Contractor |  |

## Mitigation Monitoring and Reporting Program

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| any further work commences in the affected area. If the find is determined to be significant and avoidance of the site has not been achieved, a Phase III data recovery plan shall be prepared by the Project Archeologist, in consultation with the Tribe, and shall be submitted to the City for their review and approval prior to implementation of the said plan. |  |  |  |
| MM TCR 6: Human Remains. If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA). | Ongoing During Construction | Qualified Professional Archeologist/County Coroner/Contractor |  |
| MM TCR 7: Non-Disclosure of Reburial Locations. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or associated grave goods shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, pursuant to the specific exemption set forth in California Government Code 6254 (r)., parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code 6254 (r). | Ongoing During Construction | Qualified Professional Archeologist/County Coroner/Contractor |  |

# Mitigation Monitoring and Reporting Program 

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| MM TCR 8: Archeology Report Phase III and IV. Prior to final inspection, the developer/permit holder shall prompt the Project Archeologist to submit two (2) copies of the Phase III Data Recovery report (if required for the Project) and the Phase IV Cultural Resources Monitoring Report that complies with the Community Development Department's requirements for such reports. The Phase IV report shall include evidence of the required cultural/historical sensitivity training for the construction staff held during the pre-grade meeting. The Community Development Department shall review the reports to determine adequate mitigation compliance. Provided the reports are adequate, the Community Development Department shall clear this condition. Once the report(s) are determined to be adequate, two (2) copies shall be submitted to the Eastern Information Center (EIC) at the University of California Riverside (UCR) and one (1) copy shall be submitted to the Consulting Tribe(s) Cultural Resources Department(s). | Prior to Final Inspection | Developer/Qualified Professional Archeologist/City's Development Services Department |  |
| MM TCR 9: In accordance with consultations and determinations made by the developer and the Pechanga Tribe, all recorded features within CA-RIV-8274 will be avoided except for bedrock milling feature (1), which is on Lot 8 . The Pechanga Tribe shall work with the project archaeologist, the developer, and the grading contractor or appropriate personnel to determine a reasonable methodology for relocating these features. Attempts will be made to excavate and relocate these boulders to the open space preserve, should their size and depth permit. If the boulders cannot be moved intact due to feasibility constraints, an attempt will be made to transversally cut into them so as to free the exposed prehistoric features, allowing the slicks themselves to be relocated to the adjacent open space preserve. The current Department of Parks and Recreation (DPR) forms shall be | Ongoing During Construction | Developer/Qualified Professional Archeologist/City's Development Services Department/Contractor |  |

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| updated, detailing which features were relocated, the process taken, and updated maps provided documentation of the features' new location. The site record should clearly indicate that the features are not in their original location and why they were relocated. |  |  |  |
| MM TCR 10: Prior to any earthmoving activities, milling features 3 and 5 of CA-RIV-8274 will be fenced and identified as an Environmentally Sensitive Area (ESA). The Developer will ensure that appropriate temporary fencing is installed (i.e., orange fabric/barrier fencing) to prevent any unintentional disturbances to features 3 and 5 of CA-RIV-8274 during any earthmoving activities on the project site. The fencing will be installed before clearing and grubbing and will not be removed until all earthmoving activities have been completed. The project archaeologist and Pechanga Tribal Monitor will be on site to monitor the fence installation and removal and will conduct daily inspections of the fencing to make sure that it is intact and has not been breached. If the project archaeologist and/or Pechanga Tribal Monitor identify a breach of the fence, i.e., removal, cut, depressed, driven over or intentionally breached in any way, all work within a 25 -foot buffer shall cease and the Developer, City, project archaeologist and the Pechanga Tribe shall meet and confer as to the best method to repair the fencing. The person(s) responsible for the breach and the Construction Supervisor (or appropriate supervisory personnel) shall be required to retake the sensitivity training provided at the beginning of construction, in addition to any other remedies considered appropriate. | Prior to any Earthmoving Activities | Developer/Qualified Professional Archeologist/City's Development Services Department/Contractor |  |

## ORDINANCE NO. XXX


#### Abstract

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING CHANGE OF ZONE (PEN20-0096) TO AMEND THE CITY ZONING ATLAS FROM RESIDENTIAL 2 DISTRICT (R2) AND HILLSIDE RESIDENTIAL DISTRICT (HR) TO RESIDENTIAL 10 DISTRICT (R10) AND OPEN SPACE (OS) DISTRICT FOR THE PROPERTY LOCATED ON THE EAST SIDE OF MORTON ROAD, APPROXIMATELY 300 FEET NORTH OF JENNINGS COURT (APN 256-150-001).


WHEREAS, the City of Moreno Valley ("City") is a general law city and a municipal corporation of the State of California; and has the authority to approve amendments to the City's General Plan and City's Zoning Atlas; and

WHEREAS, HengHou Group ("Applicant") has submitted is seeking approval for the Gateway Heights Residential Project which includes approval of General Plan Amendment (PEN20-0095), Conditional Use Permit (PEN21-0066) and Tentative Tract Map 38459 (PEN22-0127) for the development of a 108 -unit detached townhouse condominium Planned Unit Development on 32.56 -acres, with associated amenities and public improvements ("Proposed Project") located on the east side of Morton Road, approximately 300 feet north of Jennings Court (APN 256-150-001) ("Project Site"); and

WHEREAS, on June 8, 2023, the public hearing to consider the Proposed Project was duly conducted by the Planning Commission at which time all interested persons were provided with an opportunity to testify and to present evidence; and

WHEREAS, on June 8, 2023, a public hearing was conducted by the Planning Commission to consider General Plan Amendment (PEN20-0095), after which the Planning Commission approved Planning Commission Resolution 2023-23, a recommendation that the City Council approve General Plan Amendment (PEN20-0095); and

WHEREAS, on June 8, 2023, a hearing was conducted by the Planning Commission whereby the Planning Commission approved Planning Commission Resolution No. 2023-22, recommending the City Council approve the Mitigated Negative Declaration/Initial Study, Mitigation Monitoring and Reporting Program, and Proposed Project; and

WHEREAS, pursuant to the provisions of Section 9.02.200 (Public Hearing and Notification Procedures) of the Municipal Code and Government Code section 65905, a public hearing was scheduled for September 5, 2023, before the City Council and notice thereof was duly published and posted, and mailed to all property owners of record with 600 feet of the Site; and

WHEREAS, on September 5, 2023, the City Council continued the consideration of the Proposed Project and public hearing to a date uncertain; and

WHEREAS, on December 5, 2023, the public hearing to consider the Proposed Project was duly conducted by the City Council at which time all interested persons were provided with an opportunity to testify and to present evidence; and

WHEREAS, on December 5, 2022, in accordance with the provisions of the California Environmental Quality Act (CEQA) and CEQA Guidelines, the City Council considered and approved Resolution 2023certifying the Proposed Project's Mitigated Negative Declaration, and adopting a Mitigation Monitoring and Reporting Program.

## THE CITY COUNCIL OF THE CITY OF MORENO VALLEY DOES ORDAIN AS FOLLOWS:

## Section 1. AMENDMENT OF THE OFFICIAL ZONING ATLAS

The City of Moreno Valley Official Zoning Atlas, as adopted by Ordinance No. 981, on August 3, 2021, of the City of Moreno Valley, and as amended thereafter from time to time by the City Council of the City of Moreno Valley, is further amended by placing in effect the zone or zone classification to page 96 of the Official Zoning Atlas as shown on the attached map marked "Exhibit A" and included herein by reference and on file in the office of the City Clerk.

## Section 2. EFFECT OF ENACTMENT

Except as specifically provided herein, nothing contained in this ordinance shall be deemed to modify or supersede any prior enactment of the City Council which addresses the same subject addressed herein.

## Section 3. NOTICE OF ADOPTION

Within fifteen days after the date of adoption hereof, the City Clerk shall certify to the adoption of this ordinance and cause it to be posted in three public places within the city.

## Section 4. EFFECTIVE DATE

This ordinance shall take effect thirty days after the date of its adoption.
[Remainder of Page Intentionally Left Blank]

## APPROVED AND ADOPTED this $5^{\text {th }}$ day of December, 2023.

CITY OF MORENO VALLEY CITY COUNCIL

Ulises Cabrera
Mayor of the City of Moreno Valley

## ATTEST:

Jane Halstead, City Clerk

APPROVED AS TO FORM:

Steven B. Quintanilla, Interim City Attorney

## ORDINANCE JURAT

STATE OF CALIFORNIA )
COUNTY OF RIVERSIDE ) ss.
CITY OF MORENO VALLEY )

I, Jane Halstead, City Clerk of the City of Moreno Valley, California, do hereby certify that Ordinance No. XXX was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the $5^{\text {th }}$ day of December, 2023, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:
(Council Members, Mayor Pro Tem and Mayor)

## CITY CLERK

## EXHIBIT A

## Existing and Proposed Zoning Map



## RESOLUTION NUMBER 2023-XX


#### Abstract

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING GENERAL PLAN AMENDMENT (PEN20-0095), TO AMEND THE GENERAL PLAN LAND USE MAP, CHANGING THE LAND USE DESIGNATION FROM RESIDENTIAL 2 (R2) AND HILLSIDE RESIDENTIAL (HR) TO RESIDENTIAL 10 (R10) AND PARKS/OPEN SPACE (OS), CONDITIONAL USE PERMIT (PEN21-0066) FOR A PLANNED UNIT DEVELOPMENT, AND TENTATIVE TRACT MAP NO. 38459 (PEN22-0127) FOR THE DEVELOPMENT OF A 108-UNIT TOWNHOUSE CONDOMINIUM


WHEREAS, the City of Moreno Valley ("City") is a general law city and a municipal corporation of the State of California; and has the authority to approve amendments to the City's General Plan and City's Zoning Atlas; and


#### Abstract

WHEREAS, HengHou Group ("Applicant") is seeking approval for the Gateway Heights Residential Project, which includes approval of General Plan Amendment (PEN20-0095), Conditional Use Permit (PEN21-0066) and Tentative Tract Map 38459 (PEN22-0127) for the development of a 108 -unit detached townhouse condominium Planned Unit Development on 32.56 -acres, with associated amenities and public improvements ("Proposed Project") located on the east side of Morton Road, approximately 300 feet north of Jennings Court (APN 256-150-001) ("Project Site"); and

WHEREAS, Section 9.02.060 (Conditional Use Permits) of the Municipal Code acknowledges that the purpose of a conditional use permit is to allow the establishment of uses that may have special impacts or uniqueness such that their effect on the surrounding environment cannot be determined in advance of the use being proposed for a particular location and that the conditional use permit application process involves the review of the location, design, and configuration of improvements related to the Proposed Project, and the potential impact of the Proposed Project on the surrounding area based on fixed and established standards; and

WHEREAS, Chapter 9.14 (Land Division) of the Moreno Valley Municipal Code imposes conditions of approval upon projects for which a Tentative Tract Map is required, which conditions may be imposed by the City to address on-site improvements, off-site improvements, the manner in which the Project Site is used, and any other conditions as may be deemed necessary to protect the public health, safety, and welfare and ensure that the Proposed Project will be developed in accordance with the purpose and intent of Title 9 (Planning and Zoning) of the Municipal Code; and


WHEREAS, the applications for the Proposed Project have been evaluated in accordance with Section 9.02.060 (Conditional Use Permits) and Chapter 9.14 (Land Divisions), respectively, of the Municipal Code with consideration given to the City's General Plan, Zoning Ordinance, and other applicable laws and regulations; and

WHEREAS, on June 8, 2023, a public hearing to consider the Proposed Project was duly conducted by the Planning Commission, at which time all interested persons
were provided with an opportunity to testify and present evidence; and
WHEREAS, on June 8, 2023, a public hearing was conducted by the Planning Commission to consider General Plan Amendment (PEN20-0095), after which the Planning Commission approved Planning Commission Resolution 2023-23, a recommendation that the City Council approve General Plan Amendment (PEN20-0095); and

WHEREAS, on June 8, 2023, a public hearing was conducted by the Planning Commission to consider Conditional Use Permit (PEN21-0066) and Tentative Tract Map 38459 (PEN22-0127), whereby the Planning Commission approved Planning Commission Resolution 2023-26, a recommendation that the City Council approve Conditional Use Permit (PEN21-0066) and Tentative Tract Map 38237 (PEN22-0127); and

WHEREAS, on June 8, 2023, a hearing was conducted by the Planning Commission whereby the Planning Commission approved Planning Commission Resolution No. 2023-22, recommending the City Council approve the Mitigated Negative Declaration/Initial Study, Mitigation Monitoring and Reporting Program, and Proposed Project; and

WHEREAS, pursuant to the provisions of Section 9.02.200 (Public Hearing and Notification Procedures) of the Municipal Code and Government Code section 65905, a public hearing was scheduled for September 5, 2023, before the City Council and notice thereof was duly published and posted, and mailed to all property owners of record with 600 feet of the Site; and

WHEREAS, on September 5, 2023, the public hearing to consider the Proposed Project was duly conducted by the City Council. At said hearing, the City Council continued the consideration of the Proposed Project to a future date; and

WHEREAS, on December 5, 2023, the public hearing to consider the Proposed Project was duly conducted by the City Council at which time all interested persons were provided with an opportunity to testify and to present evidence; and

WHEREAS, on December 5, 2022, in accordance with the provisions of the California Environmental Quality Act (CEQA) and CEQA Guidelines, the City Council considered and approved Resolution 2023- $\qquad$ certifying the Proposed Project's Mitigated Negative Declaration, and adopting a Mitigation Monitoring and Reporting Program.

## NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

## Section 1. Recitals and Exhibits

That the foregoing Recitals and attached Exhibits are true and correct and are hereby incorporated by this reference.

## Section 2. Notice

That pursuant to Government Code section 66020(d)(1), notice is hereby given that the Proposed Project is subject to certain fees, dedications, reservations and other exactions as provided herein, in the staff report and conditions of approval (collectively, "Conditions"); and these Conditions constitute written notice of a statement of the amount of such fees, and a description of the dedications, reservations, and other exactions, and interested parties have ninety-days from the approval of this Resolution to protest these fees, dedications, reservations, and other exactions, pursuant to Government Code Section 66020(a).

## Section 3. Evidence

That the City Council has considered all of the evidence submitted into the administrative record for the General Plan Amendment, including, but not limited to, the following:
(a) Moreno Valley General Plan and all relevant provisions contained therein;
(b) Title 9 (Planning and Zoning) of the Moreno Valley Municipal Code and all other relevant provisions referenced therein;
(c) The Moreno Valley General Plan amendment changing the land use designation from Residential 2 (R2) and Hillside Residential (HR) to Residential 10 (R10) and Parks/Open Space (OS) and all relevant provisions contained therein as shown on Exhibit A;
(d) Applications for the approval of a General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Tentative Tract Map 38459 (PEN22-0127), and Conditional Use Permit (PEN21-0066), and all documents, records and references contained therein;
(e) Testimony, comments, and correspondence from all persons that were provided at, or prior to, the June 8, 2023, Planning Commission public hearing;
(f) Planning Commission Resolution No. 2023-22, recommending that the City Council certify and approve the Initial Study/Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, and approve the Proposed Project;
(g) Staff Report prepared for the City Council's consideration and all documents, records, and references related thereto, and Staff's presentation at the September 5, 2023, public hearing; and
(h) Testimony, comments, and correspondence from all persons that were provided at, or prior to, the City Council September 5, 2023, and the December 5, 2023, public hearing.

## Section 4. Findings

That based on the foregoing Recitals and the Evidence contained in the Administrative Record as set forth above, the City Council makes the following findings:
(a) That the Proposed Project is consistent with the existing goals, objectives, policies, and programs of the General Plan;
(b) That the Proposed Project will not adversely affect the public health, safety, or general welfare;
(c) That the Proposed Project is consistent with the purposes and intent of Title 9;
(d) That the Proposed Project complies with all applicable zoning and other regulations;
(e) The location, design, and operation of the Proposed Project will be compatible with existing and planned land uses in the vicinity;
(f) That the design or improvement of the proposed subdivision is consistent with applicable general and specific plans
(g) That the Project Site is physically suitable for the type of development;
(h) That the Project Site of the proposed land division is physically suitable for the proposed density of the development;
(i) That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife and/or their habitat;
(j) That the design of the Proposed Project and the proposed improvements is not likely to cause serious public health problems;
(k) That the design of the subdivision or the type of improvements will not conflict with easements, acquired by the public at large, for access through or use of, property within the proposed subdivision;
(I) That the requirements of CEQA have been satisfied;
(m) That the proposed land division is not subject to the Williamson Act pursuant to the California Land Conservation Act of 1965;
(n) That the proposed land division and the associated design and improvements are consistent with applicable ordinances of the city;
(o) That the design of the land division provides, to the extent feasible, for future passive or natural heating and cooling opportunities in the subdivision; and
(p) That the effect of the Proposed Project on the housing needs of the region were considered and balanced against the public service needs of the residents of Moreno Valley and available fiscal and environmental resources

## Section 5. Approval

That based on the foregoing Recitals, Evidence, and Findings, the City Council hereby approves the Proposed Project, which includes General Plan Amendment (PEN200095) as depicted in Exhibit A, and the necessary and corresponding amendment to the City's Zoning Atlas, Conditional Use Permit (PEN21-0066) and Tentative Tract Map 38459 (PEN22-0127), attached hereto as Exhibit B.

## Section 6. Repeal of Conflicting Provisions

That all the provisions as heretofore adopted by the City Council that are in conflict with the provisions of this Resolution are hereby repealed.

## Section 7. <br> Severability

That the City Council declares that, should any provision, section, paragraph,
sentence or word of this Resolution be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this Resolution as hereby adopted shall remain in full force and effect.

## Section 8. Effective Date

That this Resolution shall take effect immediately upon the date of adoption.

## Section 9. Certification

That the City Clerk shall certify to the passage of this Resolution.
PASSED AND ADOPTED THIS 5 ${ }^{\text {th }}$ day of December 2023.

Ulises Cabrera, Mayor

## ATTEST:

Jane Halstead, City Clerk
APPROVED AS TO FORM:

Steven B. Quintanilla, Interim City Attorney

Exhibits:
Exhibit A: General Plan Amendment Land Use Exhibit
Exhibit B: Conditional Use Permit (PEN21-0066) and Tentative Tract Map 38459 (PEN22-0127) Conditions of Approval

## Exhibit A

## General Plan Amendment



## Exhibit B

Conditional Use Permit (PEN21-0066) and Tentative Tract Map 38459 (PEN22-0127) Conditions of Approval

CONDITIONS OF APPROVAL
Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
Page 1

CITY OF MORENO VALLEY CONDITIONS OF APPROVAL<br>Conditional Use Permit (PEN21-0066)<br>Tentative Tract Map No. 38459 (PEN22-0127)

## EFFECTIVE DATE: <br> EXPIRATION DATE:

## COMMUNITY DEVELOPMENT DEPARTMENT

## Planning Division

1. This approval is for Conditional Use Permit (PEN22-0066) for a Planned Unit Development to address development standards for Tentative Tract Map 38459 (PEN22-0127), a subdivision of approximately 32.56 acres of vacant land into an approximate 16.59-acre common-area lot with 108 air space parcels for condominium purposes with a public park, and an approximate 15.97-acre remainder open-space lot, including development standards and design criteria for the construction of new homes and public amenities. A change or modification to the land use or the approved site plans may require a separate approval. Prior to any change or modification, the property owner shall contact the City of Moreno Valley Community Development Department to determine if a separate approval is required.
2. The Homeowners Association, developer, or the developer's successor-in-interest shall be responsible for maintaining any undeveloped portion of the site in a manner that provides for the control of weeds, erosion and dust.
3. This approval shall expire three years after the approval date of this project unless used or extended as provided for by the City of Moreno Valley Municipal Code; otherwise it shall become null and void and of no effect whatsoever. Use means the beginning of substantial construction contemplated by this approval within the three-year period, which is thereafter pursued to completion.
4. The Developer shall defend, indemnify and hold harmless the City, city council, commissions, boards, subcommittees and the City's elected and appointed officials, commissioners, board members, officers, agents, consultants and employees ("City Parties") from and against any and all liabilities, demands, claims, actions or proceedings and costs and expenses incidental thereto (including costs of defense, settlement and reasonable attorneys' fees), which any or all of them may suffer, incur, be responsible for or pay out as a result of or in connection with any challenge to the legality, validity or adequacy of any of the following items: (i) any prior or current agreements by and among the City and the Developer; (ii) the current, concurrent and subsequent permits, licenses and entitlements approved by the City; (iii) any environmental determination made by the City in connection with

## CONDITIONS OF APPROVAL

Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
Page 2
the Project Site and the Project; and (iv) any proceedings or other actions undertaken by the City in connection with the adoption or approval of any of the above. In the event of any administrative, legal, equitable action or other proceeding instituted by any third party (including without limitation a governmental entity or official) challenging the legality, validity or adequacy of any of the above items or any portion thereof, the Parties shall mutually cooperate with each other in defense of said action or proceeding. Notwithstanding the above, the City, at its sole option, may tender the complete defense of any third party challenge as described herein. In the event the City elects to contract with special counsel to provide for such a defense, the City shall meet and confer with the Developer regarding the selection of counsel, and the Developer shall pay all costs related to retention of such counsel by the City.
5. All landscaped areas shall be maintained in a healthy and thriving condition, free from weeds, trash and debris.
6. The site shall be developed in accordance with the approved plans on file in the Community Development Department - Planning Division, the Municipal Code regulations, General Plan, Gateway Heights PUD, and the conditions contained herein. Prior to any use of the project site or business activity being commenced thereon, all Conditions of Approval shall be completed to the satisfaction of the Planning Official.
7. Any signs indicated on the submitted plans are not included with this approval. Any signs, whether permanent (e.g. wall, monument) or temporary (e.g. banner, flag), require separate application and approval by the Planning Division.
8. All site plans, grading plans, landscape and irrigation plans, fence/wall plans, lighting plans and street improvement plans shall be coordinated for consistency with this approval.

## Special Conditions

9. Prior to grading permits, the developer or successor in interest shall submit a wall and fence plan showing basin fencing, to include wrought iron fencing with pilasters.
10. Prior to approval of the first certificate of occupancy for a townhouse unit, a basin maintained by an HOA or other private entity, landscape (trees, shrubs and groundcover) and irrigation shall be installed, and maintained by the HOA or other private entity with documentation provided to the Planning Division.
11. Prior to issuance of grading permits, colors and materials for exterior building materials including roofing, fences/walls, etc., shall be submitted to and approved by the Planning Division as this project is adjacent to a Hillside Residential land use

## CONDITIONS OF APPROVAL

Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
Page 3
designation. All exterior colors and building materials shall be consistent with the Gateway Heights PUD and shall blend with the surrounding natural environment.
12. The grading plans shall show the open space lot to be preserved, and any conservation easement lots.
13. A drought tolerant landscape palette shall be utilized throughout the tract in compliance with the City's Landscape Requirements, the Gateway Heights PUD document, and the Preliminary and Final Fuel Modification / Vegetation Control Plan.
14. Prior to any site disturbance and/or grading plan submittal, or prior to the recordation of a final map, a mitigation monitoring fee, as provided by City ordinance, shall be paid by the applicant/owner. No City permit or approval shall be issued until such fee is paid. (CEQA)
15. Prior to recordation of the final subdivision map, the following documents shall be submitted to and approved by the Planning Division which shall demonstrate that the project will be developed and maintained in accordance with the intent and purpose of the approval:

## 1. The document to convey title

2. Deed restrictions, easements, or Covenants, Conditions and Restrictions to be recorded

The approved documents shall be recorded at the same time that the subdivision map is recorded. The documents shall contain provisions for general maintenance of the site, joint access to proposed parcels, open space use restrictions, conservation easements, guest parking, feeder trails, water quality basins, lighting, landscaping and common area use items such as general building maintenance (condominium townhomes) public park amenities and other recreation facilities. The approved documents shall also contain a provision, which provides that they may not be terminated and/or substantially amended without the consent of the City and the developer's successor-in-interest.

In addition, the following deed restrictions and disclosures shall be included within the document and grant deed of the properties:
a. The developer and homeowners association shall promote the use of native plants and trees and drought tolerant species.
b. All lots designated for open space and or detention basins, shall be included as an easement to, and maintained by a Homeowners Association (HOA) or other

## CONDITIONS OF APPROVAL

Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
Page 4
public or private maintenance entity. Language to this effect shall be included and reviewed within the required Covenant Conditions and Restrictions (CC\&Rs) prior to the approval of the final map.
c. Maintenance of any and all common facilities.
d. A conservation easement for lettered lots shall be recorded on the deed of the property and shown on the final map.
16. Prior to the issuance of building permits, the developer shall provide documentation that contact was made to the U.S. Postal Service to determine the appropriate type and location of mailboxes.
17. Prior to grading plan approval, wall and fence plans shall be submitted to and approved by the Planning Division subject to the City's Municipal Code including the following:
a. Perimeter fencing shall be constructed of decorative masonry with pilasters and wrought iron.
b. Galvanized steel rock garden walls may be used for private patio spaces at each townhome.
c. Non-combustible fencing is required for all lots adjacent to all fuel modification zones, subject to the approval of the Fire Department.
18. Prior to the issuance of any grading permits, the owner/developer or successor in interest shall record a deed restriction on the subject site, affecting all riverine features and buffer areas of the site stating that no fuel modification activities will be allowed within any riverine features. The deed restriction shall further state that fuel modification maintenance activities that occur in the buffer areas around, but not overlapping, the riverine features, may be done using only hand tools and no native plant species may be removed. The owner/developer shall acknowledge that the intention of this deed restriction / restrictive covenant shall be binding upon all future owners, successors and heirs to the subject property. A public disclosure notice/ statement describing the above deed restriction shall be recorded on the title of all subsequently-subdivided land parcels and air parcels created for the development of a detached townhouse condominium development.
19. In accordance with Developer's obligation to defend, indemnify and hold harmless the City, including but not limited to as set forth in more detail in the Project's Conditions of Approval, Moreno Valley Municipal Code Section 9.02.310 (Indemnification of City for Discretionary Approvals), and the Project application, Developer shall enter into an Advanced Funding Agreement with the City no later

## CONDITIONS OF APPROVAL

Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
Page 5
than ten (10) calendar days from Planning Commission's approval of the Project. A copy of said Agreement is on file with the Community Development Director.

## Prior to Grading Permit

20. Prior to the issuance of grading permits, the site plan and grading plans shall show decorative hardscape (e.g. colored concrete, stamped concrete, pavers or as approved by the Planning Official) consistent and compatible with the design, color and materials of the proposed development for all driveway ingress/egress locations of the project.
21. Prior to issuance of any grading permit, all Conditions of Approval, Mitigation Measures and Airport Land Use Commission Conditions of Approval shall be printed on the grading plans.
22. Prior to issuance of any grading permits, mitigation measures contained in the Mitigation Monitoring Program approved with this project shall be implemented as provided therein. A mitigation monitoring fee, as provided by City ordinance, shall be paid by the applicant within 30 days of project approval. No City permit or approval shall be issued until such fee is paid. (CEQA)
23. Prior to issuance of any grading permit, all Conditions of Approval, Mitigation Measures and Airport Land Use Commission Conditions of Approval shall be printed on the building plans.
24. Prior to issuance of any building permits, final Landscaping and Irrigation Plans, and Final Fuel Modification/ Vegetation Control Plans, shall be submitted for review and approval by the Planning Division and Fire Department. After the third plan check review for landscape plans, an additional plan check fee shall apply. The plans shall be prepared in accordance with the City's Landscape Requirements and shall include:
a. Drought tolerant landscape shall be used. Sod shall be limited to common open space gathering areas.
b. Street trees shall be provided every 40 feet on center in the right of way, subject to approval by the Fire Department.
c. Enhanced landscaping shall be provided at all driveway entries and street corner locations The review of all utility boxes, transformers etc. shall be coordinated to provide adequate screening from public view.
d. All site perimeter landscape and irrigation shall be installed prior to the release of certificate of any occupancy permits for the townhouse cluster pad in

## CONDITIONS OF APPROVAL

Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
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question.

## Building Division

25. Prior to submittal, all new development, including residential second units, are required to obtain a valid property address prior to permit application. Addresses can be obtained by contacting the Building Safety Division at 951.413.3350.
26. Contact the Building Safety Division for permit application submittal requirements.
27. Any construction within the city shall only be as follows: Monday through Friday seven a.m. to seven p.m(except for holidays which occur on weekdays), eight a.m. to four p.m.; weekends and holidays (as observed by the city and described in the Moreno Valley Municipal Code Chapter 2.55), unless written approval is first obtained from the Building Official or City Engineer.
28. Building plans submitted shall be signed and sealed by a California licensed design professional as required by the State Business and Professions Code.
29. The proposed development shall be subject to the payment of required development fees as required by the City's current Fee Ordinance at the time a building application is submitted or prior to the issuance of permits as determined by the City.
30. The proposed project will be subject to approval by the Eastern Municipal Water District and all applicable fees and charges shall be paid prior to permit issuance. Contact the water district at 951.928.3777 for specific details.
31. All new structures shall be designed in conformance to the latest design standards adopted by the State of California in the California Building Code, (CBC) Part 2, Title 24, California Code of Regulations including requirements for allowable area, occupancy separations, fire suppression systems, accessibility, etc.
32. The proposed project's occupancy shall be classified by the Building Official and must comply with exiting, occupancy separation(s) and minimum plumbing fixture requirements. Minimum plumbing fixtures shall be provided per the California Plumbing Code, Table 422.1. The occupant load and occupancy classification shall be determined in accordance with the California Building Code.
33. The proposed residential project shall comply with the California Green Building Standards Code, Section 4.106.4, mandatory requirements for Electric Vehicle Charging Station (EVCS).
34. Prior to permit issuance, every applicant shall submit a properly completed Waste

## CONDITIONS OF APPROVAL

Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
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Management Plan (WMP), as a portion of the building or demolition permit process. (MC 8.80.030)

## FIRE DEPARTMENT

## Fire Prevention Bureau

35. All Fire Department access roads or driveways shall not exceed 12 percent grade. (CFC 503.2.7 and MVMC 8.36.060[G])
36. The Fire Department emergency vehicular access road shall be (all weather surface) capable of sustaining an imposed load of $80,000 \mathrm{lbs}$. GVW, based on street standards approved by the Public Works Director and the Fire Prevention Bureau. The approved fire access road shall be in place during the time of construction. Temporary fire access roads shall be approved by the Fire Prevention Bureau. (CFC 501.4, and MV City Standard Engineering Plan 108d)
37. The angle of approach and departure for any means of Fire Department access shall not exceed 1 ft drop in 20 ft ( 0.3 m drop in 6 m ), and the design limitations of the fire apparatus of the Fire Department shall be subject to approval by the AHJ. (CFC 503 and MVMC 8.36.060)
38. Prior to construction, all locations where structures are to be built shall have an approved Fire Department access based on street standards approved by the Public Works Director and the Fire Prevention Bureau. (CFC 501.4)
39. Prior to issuance of Building Permits, the applicant/developer shall provide the Fire Prevention Bureau with an approved site plan for Fire Lanes and signage. (CFC 501.3)
40. Prior to issuance of Certificate of Occupancy or Building Final, "Blue Reflective Markers" shall be installed to identify fire hydrant locations in accordance with City specifications. (CFC 509.1 and MVLT 440A-0 through MVLT 440C-0)
41. Prior to issuance of building permits, plans specifying the required structural materials for building construction in high fire hazard severity zones shall be submitted to the Fire Prevention Bureau for approval. (CFC, 4905)
42. Prior to issuance of Certificate of Occupancy or Building Final, all buildings shall display street numbers in a prominent location on the street side and rear access locations. The numerals shall be a minimum of twelve inches in height. (CFC 505.1, MVMC 8.36.060[I])
43. Existing fire hydrants on public streets are allowed to be considered available.

## CONDITIONS OF APPROVAL

Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
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Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads. (CFC 507, 501.3) a - After the local water company signs the plans, the originals shall be presented to the Fire Prevention Bureau for signatures. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.
44. Final fire and life safety conditions will be addressed when the Fire Prevention Bureau reviews building plans. These conditions will be based on occupancy, use, California Building Code (CBC), California Fire Code (CFC), and related codes, which are in effect at the time of building plan submittal.
45. The Fire Code Official is authorized to enforce the fire safety during construction requirements of Chapter 33. (CFC Chapter 33 \& CBC Chapter 33)
46. Prior to issuance of Building Permits, the applicant/developer shall participate in the Fire Impact Mitigation Program. (Fee Resolution as adopted by City Council)
47. Fire lanes and fire apparatus access roads shall have an unobstructed width of not less than twenty-four (24) feet and an unobstructed vertical clearance of not less the thirteen (13) feet six (6) inches. (CFC 503.2.1 and MVMC 8.36.060[E])
48. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire sprinkler system based on square footage and type of construction, occupancy or use. Fire sprinkler plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9, MVMC 8.36.100[D])
49. Prior to issuance of the building permit for development, independent paved access to the nearest paved road, maintained by the City shall be designed and constructed by the developer within the public right of way in accordance with City Standards. (MVMC 8.36.060, CFC 501.4)
50. Prior to issuance of a Certificate of Occupancy or Building Final, a "Knox Box Rapid Entry System" shall be provided. The Knox-Box shall be installed in an accessible location approved by the Fire Code Official. All exterior security emergency access gates shall be electronically operated and be provided with Knox key switches for access by emergency personnel. (CFC 506.1)
51. The minimum number of fire hydrants required, as well as the location and spacing of fire hydrants, shall comply with the C.F.C., MVMC, and NFPA 24. Fire hydrants shall be located no closer than 40 feet to a building. A fire hydrant shall be located within 50 feet of the fire department connection for buildings protected with a fire

## CONDITIONS OF APPROVAL

Conditional Use Permit (PEN21-0066)
Tentative Tract Map No. 38459 (PEN22-0127)
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sprinkler system. The size and number of outlets required for the approved fire hydrants are ( $6 " \times 4 " \times 21 / 2^{\prime \prime} \times 21 / 2 "$ ) (CFC 507.5.1, 507.5.7, Appendix C, NFPA 24-7.2.3, MVMC 912.2.1)
52. Fire Department access driveways over 150 feet in length shall have a turn-around as determined by the Fire Prevention Bureau capable of accommodating fire apparatus. (CFC 503 and MVMC 8.36.060, CFC 501.4)
53. During phased construction, dead end roadways and streets which have not been completed shall have a turn-around capable of accommodating fire apparatus. (CFC 503.1 and 503.2.5)
54. If construction is phased, each phase shall provide an approved emergency vehicular access way for fire protection prior to any building construction. (CFC 501.4)
55. Preliminary fuel modification plans shall be reviewed and approved by the fire code official concurrent with the submittal for approval of any tentative map. Final fuel modification plans shall be submitted to and approved by the fire code official prior to the issuance of a grading permit.
56. Prior to issuance of Building Permits, plans for structural protection from vegetation fires shall be submitted to the Fire Prevention Bureau for review and approval. Measures shall include, but are not limited to: noncombustible barriers (cement or block walls), fuel modification zones, etc. (CFC Chapter 49)
57. Plans for private water mains supplying fire sprinkler systems and/or private fire hydrants shall be submitted to the Fire Prevention Bureau for approval. (CFC 105 and CFC 3312.1)
58. The Fire Prevention Bureau is required to set a minimum fire flow for the remodel or construction of all buildings per CFC Appendix B and Table B105.1. The applicant/developer shall provide documentation to show there exists a water system capable of delivering said waterflow for 2 hour(s) duration at $20-\mathrm{PSI}$ residual operating pressure. The required fire flow may be adjusted during the approval process to reflect changes in design, construction type, or automatic fire protection measures as approved by the Fire Prevention Bureau. Specific requirements for the project will be determined at time of submittal. (CFC 507.3, Appendix B)
59. Prior to issuance of Certificate of Occupancy or Building Final, all residential dwellings shall display street numbers in a prominent location on the street side of the residence in such a position that the numbers are easily visible to approaching emergency vehicles. The numbers shall be located consistently on each dwelling throughout the development. The numerals shall be no less than four (4) inches in height and shall be low voltage lighted fixtures. (CFC 505.1, MVMC 8.36.060[I])

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60. Single Family Dwellings. Schedule "A" fire prevention approved standard fire hydrants ( 6 " $\times 4 " \times 21 / 2^{\prime \prime}$ ) shall be located at each intersection of all residential streets. Hydrants shall be spaced no more than 500 feet apart in any direction so that no point on the street is more than 250 feet from a hydrant. Minimum fire flow shall be 1000 GPM for 1 hour duration of 20 PSI. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, serving one and two-family residential developments, standard fire hydrants shall be provided at spacing not to exceed 1000 feet along the tract boundary for transportation hazards. (CFC 507.3, Appendix B, MVMC 8.36.060).
61. Final Fire Protection Fuel Modification Plan shall be submitted, reviewed, and approved before the submittal of Building Plans to the City of Moreno Valley's Planning and Fire Departments. Fuel Modification Plan's implementation and installation shall be in place before occupancy is granted for first dwelling unit.
62. Fuel Modification Maintenance shall be delineated by providing legal binding statement in community's CC\&Rs specifying the community's responsibility, covenants, and conditions for maintenance of fuel modification zones and vegetation. Such document(s) shall be provided for review to the Fire Prevention Bureau and Land Development before the recordation of the final tract map.
63. Dead-end streets and/or fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround for fire apparatus.
64. Prior to building construction, dead end roadways and streets which have not been completed shall have a turnaround capable of accommodating fire apparatus. (CFC 503.2.5)
65. Prior to issuance of Building Permits, the applicant/developer shall furnish one copy of the water system plans to the Fire Prevention Bureau for review. Plans shall: a. Be signed by a registered civil engineer or a certified fire protection engineer; b. Contain a Fire Prevention Bureau approval signature block; and c. Conform to hydrant type, location, spacing of new and existing hydrants and minimum fire flow required as determined by the Fire Prevention Bureau. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.

## FINANCIAL \& MANAGEMENT SERVICES DEPARTMENT

Moreno Valley Utility

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66. This project shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to Moreno Valley Utility electric streetlight improvements consisting of streetlight poles, mast-arms, fixtures conduit, wiring, terminations and pull boxes to serve the identified development and other adjoining, abutting, or benefiting projects as determined by the Land Development Department along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "street light services" to and within the project.
67. This project shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to Moreno Valley Utility fiber optic cable improvements consisting of conduit, and pull boxes to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "fiber optic services" to and within the project.

## PUBLIC WORKS DEPARTMENT

## Land Development

68. Aggregate slurry, as defined in Section 203-5 of Standard Specifications for Public Works Construction, shall be required prior to $90 \%$ security reduction or the end of the one-year warranty period of the public streets as approved by the City Engineer. If slurry is required, a slurry mix design shall be submitted for review and approved by the City Engineer. The latex additive shall be Ultra Pave 70 (for anionic) or Ultra Pave 65 K (for cationic) or an approved equal per the geotechnical report. The latex shall be added at the emulsion plant after weighing the asphalt and before the addition of mixing water. The latex shall be added at a rate of two to two-and-one-half ( 2 to $21 / 2$ ) parts to one-hundred (100) parts of emulsion by volume. Any existing striping shall be removed prior to slurry application and replaced per City standards.
69. The developer shall comply with all applicable City ordinances and resolutions including the City's Municipal Code (MC) and if subdividing land, the Government Code (GC) of the State of California, specifically Sections 66410 through 66499.58, said sections also referred to as the Subdivision Map Act (SMA). [MC 9.14.010]
70. The final approved conditions of approval (COAs) issued and any applicable Mitigation Measures by the Planning Division shall be photographically or electronically placed on mylar sheets and included in the Grading and Street Improvement plans.
71. The developer shall monitor, supervise and control all construction related activities,

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so as to prevent these activities from causing a public nuisance, including but not limited to, insuring strict adherence to the following:
(a) Removal of dirt, debris, or other construction material deposited on any public street no later than the end of each working day.
(b) Observance of working hours as stipulated on permits issued by the Land Development Division.
(c) The construction site shall accommodate the parking of all motor vehicles used by persons working at or providing deliveries to the site.
(d) All dust control measures per South Coast Air Quality Management District (SCAQMD) requirements during the grading operations.
Violation of any condition, restriction or prohibition set forth in these conditions shall subject the owner, applicant, developer or contractor(s) to remedy as noted in City Municipal Code 8.14.090. In addition, the City Engineer or Building Official may suspend all construction related activities for violation of any condition, restriction or prohibition set forth in these conditions until such time as it has been determined that all operations and activities are in conformance with these conditions.
72. Drainage facilities (e.g., catch basins, water quality basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.
73. In the event right-of-way or offsite easements are required to construct offsite improvements necessary for the orderly development of the surrounding area to meet the public health and safety needs, the developer shall make a good faith effort to acquire the needed right-of-way in accordance with the Land Development Division's administrative policy. If unsuccessful, the Developer shall enter into an agreement with the City to acquire the necessary right-of-way or offsite easements and complete the improvements at such time the City acquires the right-of-way or offsite easements which will permit the improvements to be made. The developer shall be responsible for all costs associated with the right-of-way or easement acquisition. [GC 66462.5]
74. If improvements associated with this project are not initiated within two (2) years of the date of approval of the Public Improvement Agreement (PIA), the City Engineer may require that the engineer's estimate for improvements associated with the project be modified to reflect current City construction costs in effect at the time of request for an extension of time for the PIA or issuance of a permit. [MC 9.14.210(B)(C)]
75. The developer shall protect downstream properties from damage caused by alteration of drainage patterns (i.e. concentration or diversion of flow, etc). Protection shall be provided by constructing adequate drainage facilities, including, but not limited to, modifying existing facilities or by securing a drainage easement. [MC 9.14.110]

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76. The maintenance responsibility of the proposed storm drain line shall be clearly identified. Storm drain lines within private property will be privately maintained and those within public streets will be publicly maintained.
77. The proposed private storm drain system shall connect to the proposed West End Moreno Valley Master Drainage Plan (MDP) Line B, which is preliminarily designed to be two 3' X 6' RCB culverts. A storm drain manhole shall be placed at the right-of-way line to mark the beginning of the publicly maintained portion of this storm drain.
78. This project shall submit civil engineering design plans, reports and/or documents (prepared by a registered/licensed civil engineer) for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer. The submittal consists of, but is not limited to, the following:
a. Tract Map (recordation prior to building permit issuance);
b. Rough grading w/ erosion control plan (prior to grading permit issuance);
c. Precise grading w/ erosion control plan (prior to grading permit issuance);
d. Public Improvement plan (e.g., street / storm drain with striping, RCFC storm drain, sewer / water, etc.) (prior to encroachment permit issuance);
e. Final drainage study (prior to grading plan approval);
f. Final WQMP (prior to grading plan approval);
g. Easements, dedications, vacations, etc. (prior to map approval);
h. As-Built revision for all plans (prior to Occupancy release).
79. Water quality best management practices (BMPs) designed to meet Water Quality Management Plan (WQMP) requirements for development shall not be used as a construction BMP. Water quality BMPs shall be maintained for the entire duration of the project construction and be used to treat runoff from those developed portions of the project. Water quality BMPs shall be protected from upstream construction related runoff by having proper best management practices in place and maintained. Water quality BMPs shall be graded per the approved design plans and once landscaping and irrigation has been installed. If residential, it and its maintenance shall be turned over to an established Homeowner's Association (HOA).

## Prior to Grading Plan Approval

80. Resolution of all drainage issues shall be as approved by the City Engineer.
81. A final detailed drainage study (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer. The study shall include, but not be limited to: existing and proposed hydrologic conditions as well as

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hydraulic calculations for all drainage control devices and storm drain lines. The study shall analyze 1, 3, 6 and 24 -hour duration events for the $2,5,10$ and 100-year storm events [MC 9.14.110(A.1)]. A digital (pdf) copy of the approved drainage study shall be submitted to the Land Development Division.
82. Emergency overflow areas shall be shown at all applicable drainage improvement locations in the event that the drainage improvement fails or exceeds full capacity.
83. A final project-specific Water Quality Management Plan (WQMP) shall be submitted for review and approved by the City Engineer, which:
a. Addresses Site Design Best Management Practices (BMPs) such as minimizing impervious areas, maximizing permeability, minimizes directly connected impervious areas to the City's street and storm drain systems, and conserves natural areas;
b. Incorporates Source Control BMPs and provides a detailed description of their implementation;
c. Describes the long-term operation and maintenance requirements for BMPs requiring maintenance; and
d. Describes the mechanism for funding the long-term operation and maintenance of the BMPs.
A copy of the final WQMP template can be obtained on the City's Website or by contacting the Land Development Division. A digital (pdf) copy of the approved final project-specific Water Quality Management Plan (WQMP) shall be submitted to the Land Development Division.
84. The final project-specific Water Quality Management Plan (WQMP) shall be consistent with the approved P-WQMP, as well as in full conformance with the document: "Water Quality Management Plan - A Guidance Document for the Santa Ana Region of Riverside County" dated October 22, 2012. The F-WQMP shall be submitted and approved prior to application for and issuance of grading permits. At a minimum, the F-WQMP shall include the following: Site Design BMPs; Source Control BMPs, Treatment Control BMPs, Operation and Maintenance requirements for BMPs and sources of funding for BMP implementation.
a. The Applicant has proposed to incorporate the use of bioretention. Final design and sizing details of all BMPs must be provided in the first submittal of the F-WQMP. The Applicant acknowledges that more area than currently shown on the plans may be required to treat site runoff as required by the WQMP guidance document.
b. The Applicant shall substantiate the applicable Hydrologic Condition of Concerns (HCOC) in Section F of the F-WQMP.
c. All proposed LID BMP's shall be designed in accordance with the RCFC\&WCD's Design Handbook for Low Impact Development Best Management Practices, dated September 2011.
d. The proposed LID BMP's as identified in the project-specific P-WQMP shall

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be incorporated into the Final WQMP.
e. The NPDES notes per City Standard Drawing No. MVFE-350-0 shall be included in the grading plans.
f. Post-construction treatment control BMPs, once placed into operation for post-construction water quality control, shall not be used to treat runoff from construction sites or unstabilized areas of the site.
85. The developer shall ensure compliance with the City Grading ordinance, these Conditions of Approval and the following criteria:
a. The project street and lot grading shall be designed in a manner that perpetuates the existing natural drainage patterns with respect to tributary drainage area and outlet points. Unless otherwise approved by the City Engineer, lot lines shall be located at the top of slopes.
b. Any grading that creates cut or fill slopes adjacent to the street shall provide erosion control, sight distance control, and slope easements as approved by the City Engineer.
c. All improvement plans are substantially complete and appropriate clearance letters are provided to the City.
d. A soils/geotechnical report (addressing the soil's stability and geological conditions of the site) shall be submitted to the Land Development Division for review. A digital (pdf) copy of the soils/geotechnical report shall be submitted to the Land Development Division.
86. Grading plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
87. The developer shall select Low Impact Development (LID) Best Management Practices (BMPs) designed per the latest version of the Water Quality Management Plan (WQMP) - a guidance document for the Santa Ana region of Riverside County.
88. The developer shall submit recorded slope easements from adjacent property owners in all areas where grading resulting in slopes is proposed to take place outside of the project boundaries. For all other offsite grading, written permission from adjacent property owners shall be submitted.
89. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared in conformance with the State's current Construction Activities Storm Water General Permit. A copy of the current SWPPP shall be kept at the project site and be available for review upon request.
90. For projects that will result in discharges of storm water associated with construction with a soil disturbance of one or more acres of land, the developer shall submit a Notice of Intent (NOI) and obtain a Waste Discharger's Identification number (WDID\#) from the State Water Quality Control Board (SWQCB) which shall be

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noted on the grading plans.

## Prior to Grading Permit

91. A receipt showing payment of the Area Drainage Plan (ADP) fee to Riverside County Flood Control and Water Conservation District shall be submitted. [MC 9.14.100(O)]
92. If the developer chooses to construct the project in phases, a Construction Phasing Plan for the construction of on-site public or private improvements shall be submitted for review and approved by the City Engineer.
93. Security, in the form of a cash deposit (preferable), bond or letter of credit shall be submitted as a guarantee of the implementation and maintenance of erosion control measures. At least twenty-five (25) percent of the required security shall be in the form of a cash deposit with the City. [MC 8.21.160(H)]
94. Security, in the form of a cash deposit (preferable), bond or letter of credit shall be submitted as a guarantee of the completion of the grading operations for the project. [MC 8.21.070]
95. A digital (pdf) copy of all approved grading plans shall be submitted to the Land Development Division.

## Prior to Map Approval

96. All proposed street names shall be submitted for review and approved by the City Engineer, if applicable. [MC 9.14.090(E.2.k)]
97. A copy of the Covenants, Conditions and Restrictions (CC\&R's) shall be submitted for review and approved by the City Engineer. The CC\&R's shall include, but not be limited to, access easements, reciprocal access, private and/or public utility easements as may be relevant to the project. In addition, for single-family residential development, bylaws and articles of incorporation shall also be included as part of the maintenance agreement for any water quality BMPs.
98. After recordation, a digital (pdf) copy of the recorded map shall be submitted to the Land Development Division.
99. Resolution of all drainage issues shall be as approved by the City Engineer.
100. If the project involves the subdivision of land, maps may be developed in phases with the approval of the City Engineer. Financial security shall be provided for all public improvements associated with each phase of the map. The boundaries of

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any multiple map increment shall be subject to the approval of the City Engineer. If the project does not involve the subdivision of land and it is necessary to dedicate right-of-way/easements, the developer shall make the appropriate offer of dedication by separate instrument. In either case, the City Engineer may require the dedication and construction of necessary utility, street or other improvements beyond the project boundary, if the improvements are needed for circulation, parking, access, or for the welfare or safety of the public. This approval must be obtained prior to the Developer submitting a Phasing Plan to the California Bureau of Real Estate. [MC 9.14.080(B)(C), GC 66412 \& 66462.5]
101. Maps (prepared by a registered civil engineer and/or licensed surveyor) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
102. Under the current permit for storm water activities required as part of the National Pollutant Discharge Elimination System (NPDES) as mandated by the Federal Clean Water Act, this project shall establish a Home Owners Association (HOA) to finance the maintenance of the "Water Quality BMPs". Any lots which are identified as "Water Quality BMPs" shall be owned in fee by the HOA.
103. The developer shall guarantee the completion of all related improvements required for this project by executing a Public Improvement Agreement (PIA) with the City and posting the required security. [MC 9.14.220]
104. All public improvement plans required for this project shall be approved by the City Engineer in order to execute the Public Improvement Agreement (PIA).
105. All street dedications shall be free of all encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.

## Prior to Improvement Plan Approval

106. The developer is required to bring any existing access ramps adjacent to and fronting the project to current ADA (Americans with Disabilities Act) requirements. However, when work is required in an intersection that involves or impacts existing access ramps, all access ramps in that intersection shall be retrofitted to comply with current ADA requirements, unless otherwise approved by the City Engineer.
107. The developer shall submit clearances from all applicable agencies, and pay all applicable plan check fees.
108. The street improvement plans shall comply with current City policies, plans and applicable City standards (i.e. MVSI-160 series, etc.) throughout this project.

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109. The design plan and profile shall be based upon a centerline, extending beyond the project boundaries a minimum distance of 300 feet at a grade and alignment approved by the City Engineer.
110. Drainage facilities (i.e. catch basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.
111. The hydrology study shall be designed to accept and properly convey all off-site drainage flowing onto or through the site. In the event that the City Engineer permits the use of streets for drainage purposes, the provisions of current City standards shall apply. Should the quantities exceed the street capacity or the use of streets be prohibited for drainage purposes, as in the case where one travel lane in each direction shall not be used for drainage conveyance for emergency vehicle access on streets classified as minor arterials and greater, the developer shall provide adequate facilities as approved by the City Engineer. [MC 9.14.110 A.2]
112. All public improvement plans (prepared by a licensed/registered civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
113. Any missing or deficient existing improvements along the project frontage shall be constructed or secured for construction. The City Engineer may require the ultimate structural section for pavement to half-street width plus 18 feet or provide core test results confirming that existing pavement section is per current City Standards; additional signing \& striping to accommodate increased traffic imposed by the development, etc.
114. The plans shall indicate any restrictions on trench repair pavement cuts to reflect the City's moratorium on disturbing newly-constructed pavement less than three (3) years old and recently slurry sealed streets less than one (1) year old. Pavement cuts may be allowed for emergency repairs or as specifically approved in writing by the City Engineer. Special requirements shall be imposed for repaving, limits to be determined by the City Engineer.
115. All dry and wet utilities shall be shown on the plans and any crossings shall be potholed to determine actual location and elevation. Any conflicts shall be identified and addressed on the plans. The pothole survey data shall be submitted to Land Development with the public improvement plans for reference purposes only. The developer is responsible to coordinate with all affected utility companies and bear all costs of any utility relocation.
116. Prior to improvement plan approval, pavement core samples of existing pavement shall be taken and findings submitted to the City for review and consideration of

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pavement improvements. The City will determine the adequacy of the existing pavement structural section. If the existing pavement structural section is found to be adequate, the developer may still be required to perform a 2 inch grind and overlay or slurry seal, depending on the severity of existing pavement cracking, as required by the City Engineer. If the existing pavement section is found to be inadequate, the Developer shall replace the pavement to meet or exceed the City's pavement structural section standard.

## Prior to Encroachment Permit

117. A digital (pdf) copy of all approved improvement plans shall be submitted to the Land Development Division.
118. The plans shall indicate any restrictions on trench repair pavement cuts to reflect the City's moratorium on disturbing newly-constructed pavement less than three (3) years old and recently slurry sealed streets less than one (1) year old. Pavement cuts may be allowed for emergency repairs or as specifically approved in writing by the City Engineer. Special requirements shall be imposed for repaving, limits to be determined by the City Engineer.
119. Any work performed within public right-of-way requires an encroachment permit.

## Prior to Building Permit

120. An engineered-fill certification, rough grade certification and compaction report shall be submitted for review and approved by the City Engineer. A digital (pdf) copy of the approved compaction report shall be submitted to the Land Development Division. All pads shall meet pad elevations per approved grading plans as noted by the setting of "blue-top" markers installed by a registered land surveyor or licensed civil engineer.
121. For all subdivision projects, the map shall be recorded (excluding model homes). [MC 9.14.190]
122. A walk through with a Land Development Inspector shall be scheduled to inspect existing improvements within public right of way along project frontage. Any missing, damaged or substandard improvements including ADA access ramps that do not meet current City standards shall be required to be installed, replaced and/or repaired. The applicant shall post security to cover the cost of the repairs and complete the repairs within the time allowed in the public improvement agreement used to secure the improvements.
123. Certification to the line, grade, flow test and system invert elevations for the water

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quality control BMPs shall be submitted for review and approved by the City Engineer (excluding models homes).
124. Prior to building permit issuance, the developer shall dedicate the following right of way to accommodate the required improvements:
(a) The necessary street right of way dedication on the east side of Morton Road (60’ R/W / 36' CC: Local Street, City Standard No. MVSI-107A-0 (Modified)) along the project frontage.
(b) The necessary street right of way dedication on the west side of Morton Road (60’ R/W / 36' CC: Local Street, City Standard No. MVSI-107A-0 (Modified)) for transition, alignment, and/or drainage purposes.
(c) A 4 foot minimum pedestrian right of way dedication behind any driveway approach per City Standard No. MVSI-112C-0 on Morton Road, as applicable.
(d) Corner cutback right of way dedication per City Standard No. MVSI-165-0 on all intersecting public streets, as directed by the City Engineer.

## Prior to Occupancy

125. All required as-built plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
126. The final/precise grade certification shall be submitted for review and approved by the City Engineer.
127. The developer shall complete all public improvements in conformance with current City standards, except as noted in the Special Conditions, including but not limited to the following:
a. Street improvements including, but not limited to: pavement, base, curb and/or gutter, cross gutters, spandrel, sidewalks, drive approaches, pedestrian ramps, street lights (SCE: LS-2), signing, striping, under sidewalk drains, landscaping and irrigation, medians, pavement tapers/transitions and traffic control devices as appropriate.
b. Storm drain facilities including, but not limited to: storm drain pipe, storm drain laterals, open channels, catch basins and local depressions.
c. City-owned utilities.
d. Sewer and water systems including, but not limited to: sanitary sewer, potable water and recycled water.
128. A "Stormwater Treatment Device and Control Measure Access and Maintenance Covenant", "Maintenance Agreement for Water Quality Improvements located in the public right-of-way" and a "Declaration of Restrictive Covenants (encroachment on City easement)" shall be recorded to provide public notice of the maintenance requirements to be implemented per the approved final project-specific WQMP. A

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boilerplate copy of the covenants and agreements can be obtained by contacting the Land Development Division.
129. The applicant shall ensure the following, pursuant to Section XII. I. of the 2010 NPDES Permit:
a. Field verification that structural Site Design, Source Control and Treatment Control BMPs are designed, constructed and functional in accordance with the approved Final Water Quality Management Plan (WQMP).
b. Certification of best management practices (BMPs) from a state licensed civil engineer. An original WQMP BMP Certification shall be submitted for review and approved by the City Engineer.
130. The Developer shall comply with the following water quality related items:
a. Notify the Land Development Division prior to construction and installation of all structural BMPs so that an inspection can be performed.
b. Demonstrate that all structural BMPs described in the approved final project-specific WQMP have been constructed and installed in conformance with the approved plans and specifications;
c. Demonstrate that Developer is prepared to implement all non-structural BMPs described in the approved final project-specific WQMP; and
d. Demonstrate that an adequate number of copies of the approved final project-specific WQMP are available for future owners/occupants.
e. Clean and repair the water quality BMP's, including re-grading to approved civil drawing if necessary.
f. Obtain approval and complete installation of the irrigation and landscaping.
131. Prior to occupancy, the following improvements shall be completed:

Morton Road (60' R/W / 36' CC: Local Street, City Standard No. MVSI-107A-0 (Modified)) shall be constructed to achieve a half-width of 18' plus 12' beyond centerline, along the entire project's west frontage. Morton Road shall transition to the existing street to the north, and shall transition to the existing street to south, using existing and proposed curvature data. Improvements on the west side may be required for transition, alignment, and/or drainage purposes, as directed by the City Engineer. Improvements shall consist of, but not be limited to, pavement, base, curb, gutter, sidewalk, driveway approaches, drainage structures, any necessary offsite improvement transition /joins to existing, street lights, pedestrian ramps, and dry and wet utilities.
Prior to improvement plan approval, the developer shall provide to the City Engineer the results of coring tests confirming that said existing pavement section has been constructed per City Standard No. MVSI-107A-0. Any missing or deficient improvements along the project's west frontage shall be constructed prior to issuance of a certificate of occupancy.

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## Special Districts Division

132. Street Light Coordination/Advanced Energy Fees. Prior to the issuance of the 1st Building Permit for this project, the Developer shall pay New Street Light Installation Fees for all street lights required to be installed for this development. Payment will be collected by the Land Development Division. Fees are based on the street light administration/coordination and advanced energy fees as set forth in the City Fees, Charges, and Rates as adopted by City Council and effective at the time of payment. Any change in the project which increases the number of street lights to be installed requires payment of the fees at the then current fee. Questions may be directed to the Special Districts Administration at 951.413.3470 or SDAdmin@moval.org.
133. Major Infrastructure SFD Major Infrastructure Financing District. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for the construction and maintenance of major infrastructure improvements, which may include but is not limited to thoroughfares, bridges, and certain flood control improvements. This condition will be applicable provided said district is under development at the time this project applies for the 1st Building Permit. This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings. An alternative to satisfying this condition will be identified at such time as a special financing district has been established. At the time of development, the developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to determine if this condition is applicable.
134. Maintenance Services Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the

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annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for the operation and maintenance of public improvements and/or services associated with impacts of the development. This condition will only be applicable provided said district is under development at the time this project applies for the 1st Building Permit.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

An alternative to satisfying this funding source will be identified at such time as a special financing district has been established. At the time of development, the developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to determine if this condition is applicable.
135. Public Safety Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for Public Safety services, which may include but is not limited to Police, Fire Protection, Paramedic Services, Park Rangers, and Animal Control services. This condition will only be applicable provided said district is under development at the time this project applies for the 1st Building Permit.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is

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not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

An alternative to satisfying this condition will be identified at such time as a special financing district has been established. At the time of development, the developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to determine if this condition is applicable.
136. CFD 2014-01. Prior to City Council action authorizing the recordation of the map, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee, form an association to fund the services or fund an endowment) to provide an ongoing funding source for a) Street Lighting Services for capital improvements, energy charges, and maintenance and b) street and storm drain maintenance.

This condition must be fully satisfied prior to issuance of the 1st Building Permit. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

Alternatively, the condition can be satisfied by the Developer forming a property owner association that will be responsible for the improvements and any and all operation and maintenance costs for the improvements or by funding an endowment in an amount sufficient to yield an annual revenue stream that meets the annual obligation, as calculated by Special Districts Admin staff. The Developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to satisfy this condition.
137. NPDES Funding. Prior to City Council action authorizing recordation of the final

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map for the development and if the Land Development Division requires this project to provide a funding source for the City's National Pollutant Discharge Elimination System (NPDES) program, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the balloting/annexation fee or fund an endowment) to provide an ongoing funding source for the NPDES program. This condition must be fully satisfied prior to issuance of the 1st Building Permit. This condition will be satisfied with the successful special election process into the NPDES program, or other special financing district, and payment of all costs associated with the special election process. Participation in the NPDES program requires an annual payment of the annual special tax, assessment, rate or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the City Council action to consider the ballot/annexation into or formation of the district, the qualified elector(s) will not protest the ballot/annexation or formation, but will retain the right to object to any eventual tax/assessment/rate/fee that is not equitable should the financial burden of the tax/assessment/rate/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings. (City of Moreno Valley Municipal Code Title 3, Section 3.50.050). Alternatively, the condition can be satisfied by the Developer funding an endowment in an amount sufficient to yield an annual revenue stream that meets the annual obligation, as calculated by Special Districts Admin staff. The Developer must contact Special Districts Administration at 951.413 .3470 or at SDAdmin@moval.org to satisfy this condition.
138. Park Maintenance Funding. Prior to City Council action authorizing the recordation of the map, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or fund an endowment) to provide an ongoing funding source for the continued maintenance, enhancement, and/or retrofit of parks, open spaces, linear parks, and/or trails systems.

This condition must be fully satisfied prior to issuance of the 1st Building Permit. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special

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election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

Alternatively, the condition can be satisfied by the Developer funding an endowment in an amount sufficient to yield an annual revenue stream that meets the annual obligation, as calculated by Special Districts Admin staff. The Developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to satisfy this condition.
139. The ongoing maintenance of any water quality BMP (e.g. Bioswale) constructed in the public right of way shall be the responsibility of a property owner association or the property owner.
140. Maintenance Responsibility. The ongoing maintenance of any landscaping required to be installed behind the curb shall be the responsibility of the property owner.
141. Zones $A$ and $C$. The parcel(s) associated with this project is included in Moreno Valley Community Services District Zone A (Parks \& Community Services) and Zone C (Arterial Street Lighting). Zone A is levied on the property tax bill on a per parcel or dwelling unit basis. Zone $C$ is levied on the property tax bill on a per parcel basis. Zone $A$ and Zone $C$ are levied against all assessable parcels, and any subdivision thereof.

## Transportation Engineering Division

142. All project driveways shall conform to City of Moreno Valley Standard Plans No. MVSI-111A-0 for residential driveway approaches.
143. Box Springs Road is designated as a Minor Arterial (88'RW/64'CC). Any modifications or improvements undertaken by this project shall be consistent with City Standards or as approved by the City Engineer.
144. Street "A" shall be improved as a modified Local Street ( 56 'RW/36'CC) per City Standard Plan No. MVSI-107A-0. Any improvements undertaken by this project shall be consistent with City Standards or as approved by the City Engineer. A landscaped, raised median shall be installed on Street "A" such that sight distance is not obstructed. Appropriate signage shall be installed to clearly indicate the direction of travel.
145. Street "B" and Street "C" shall be improved as Local Streets ( 56 'RW/36'CC) per City Standard Plan No. MVSI-107A-O. Any improvements undertaken by this project shall be consistent with City Standard.

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146. Conditions of approval may be modified or added if a phasing plan is submitted for this development.
147. Prior to final approval of any landscaping or monument sign plans, the project plans shall demonstrate that sight distance at the project driveways conforms to City Standard Plan No. MVSI-164A, B, C-0.
148. Prior to the final approval of the street improvement plans, a signing and striping plan shall be prepared per California Manual on Uniform Traffic Control Devices (CAMUTCD) and City of Moreno Valley Standard Plans - Section 4 for all streets within the project area. The signing and striping plan shall include a pedestrian crossing to the satisfaction of the City Traffic Engineer for Street "B:, between Street "A" and Street " C ", as shown on the approved exhibits.
149. Prior to issuance of an encroachment permit for works within the public right-of-way, construction traffic control plans prepared by a qualified, registered Civil or Traffic engineer shall be required for plan approval by the City Traffic Engineer.
150. Prior to issuance of the first building permit, the Developer shall coordinate with the City of Riverside Public Works Department and purchase the necessary traffic signal appurtenance equipment for the improvement, as identified in the Gateway Heights Traffic Study, dated February 12, 2021, at the intersection of Sycamore Canyon Road and Fair Isle Drive.
151. Prior to acceptance of streets into the City-maintained road system, all approved signing and striping shall be installed per current City Standards and the approved plans.

## PARKS \& COMMUNITY SERVICES DEPARTMENT

152. This project is subject to current Development Impact Fees.

## UNITED ENGINEERING GROUP

## Gateway Heights

Planned Unit Development
Moreno Valley, California

Prepared for:

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177 E. Colorado Blvd.
Suite 200
Pasadena, CA 91105

## PLANNED UNIT DEVELOPMENT

FOR

## Gateway Heights

December 2022
Submitted to


City of Moreno Valley
14177 Fredrick Street
Moreno Valley, CA 92552
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## EXHIBITS

A. Vicinity Map
B. Development Area
C. USGS Topographic Map
D. FEMA FIRM Map
E. General Plan Map
F. Zoning Map
G. Area Circulation Map
H. Gateway Specific Plan
I. Surrounding Jurisdictions
J. Open Space/Park Plan
K. Cluster Detail
L. Street Sections
M. Conceptual Wall \& Fence Plan

## ARCHITECTURE

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A-1.3 - Plan 1 Elevation A
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A-3.1 - Plan 3 Floor Plan A
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## SITE PLAN

Sheet 1 - Preliminary Site Plan
Sheet 2 - Preliminary Grading \& Drainage Plan

## APPENDIX 1

Preliminary Fire Protection Technical Report/Plan

### 1.0 PURPOSE

The purpose of this Planned Unit Development (PUD) is to describe the overall design concept for the Gateway Heights project and outline the design details that will be incorporated into the final design decisions. The Gateway Heights project presents innovative housing options within the City of Moreno Valley, while delivering a vast amount of recreational open space to the surrounding communities. This manual includes both design standards and guidelines. The guidelines in this document will lay out both functional and aesthetic design concepts as an overall strategy to be followed at the time of development. The primary objective is to establish a consistent theme throughout the project. This document will establish design standards, overall theme, wall and fence concepts, and pedestrian connectivity to be used in the future build out of this project. This Planned Unit Development (PUD) is being processed in conformance with City of Moreno Valley Municipal Code, Chapter 9.03.060.

### 2.0 PROJECT BACKGROUND \& DESCRIPTION

Gateway Heights is located north of Jennings Court and east of Morton Road in the City of Moreno Valley (Refer to Exhibit A - Vicinity Map). The property contains 32.70 acres in the foothill of the Box Springs Mountain Reserve Park. The project proposes to develop approx. 16.59 acres of 32.56 acres into 108 detached condominium units with the dwelling units in an 8-unit "cluster" concept. (See Exhibit B Development Area) The remaining 15.97 acres will be rezoned to Open Space (OS). It is anticipated that the open space area will be incorporated into the local trail system of hiking, trail running, and mountain biking trails, and the open space area will be available for recreational use by residents of Gateway Heights and the City of Moreno Valley. The project will also contain 3.1 acres of open space, trails and park area within the community providing residents with space to enjoy. The project proposal is consistent with the City of Moreno Valley's Residential 10 (R10) District which allows for a maximum density of 10 dwelling units per net acre. In order to ensure the quality and cohesiveness of PUD projects, the City of Moreno Valley requires additional design details during planning stages. The requirement for these design standards and details helps ensure that City design objectives are met. By implementing the following design points, this project meets these City design objectives for PUDs:

- Provides innovation and diversity in housing choices that would not otherwise be possible according to the strict application of the site development regulations in this title because the detached condominium concept provides its residents with the benefits of single-family homeownership while also conferring on them the benefits of shared community living.
- Provides access to adjacent natural resources, open space, onsite recreational facilities through the dedication of nearly one-half of the property to open space that will interconnect with a regional trail system.
- Installation of storm water pollution control systems pursuant to the municipal storm water permit issued by the Regional Water Quality Control Board (RWQCB).


### 3.0 EXISTING CONDITIONS

The property is currently unimproved land bordered to the south by an existing single family residential development. The site lies just to the east of Interstate 215 and to the north of the US 60/I-215 interchange. The site had previously been entitled for a single-family residential development (Tract 33626) in 2007 but those entitlements expired.

The topography of this site has two naturally defined areas. The lower lying area, which generally contains slopes under $15 \%$ and the mountainous area which consists of slopes greater than $25 \%$. The site generally slopes from northeast to southwest (See Exhibit C - USGS Topographic Map). The property is located within Flood Zone ' $X$ ' (areas determined to be outside of the 100-year and 500-year floodplain) Refer to Exhibit D - FIRM Map (Map No. 06065C0733G, dated August 28, 2008).

Per the General Plan, the property currently has land use designations of Residential Max 2DU/AC (R2) and Hillside Residential (HR). (Refer to Exhibit E-General Plan Map and Exhibit F - Zoning Map)

Transportation corridors and area circulation will be developed in conformance with the City of Moreno Valley's General Plan. Refer to Exhibit G - Area Circulation Map for a representation of the major roadways in the areas of the subject site.

### 4.0 RELATIONSHIP TO SURROUNDING PROPERTIES

The surrounding properties in the area include vacant land, existing single-family homes, and hillside. A majority of the vacant land adjacent to this project are contained within the Gateway Center Specific Plan, in the unincorporated area of Riverside County, to the west of the project. This Specific Plan contains densities from 5 du /acre to 16 du /acre as well as a school site bordering Morton Road to the west. (See Exhibit H - Gateway Specific Plan) To the north and east are areas zoned as Hillside Residential in the City of Moreno Valley and Conservation in the County of Riverside, to the east and south of the project there are eight existing single-family homes. (See Exhibit I - Surrounding Jurisdictions)

The surrounding General Plan land use designations are as follows:
North: Hillside Residential (HR) \& Conservation (County of Riverside)
South: Residential Max. 5du/acre (R5)
East: Hillside Residential (HR)
West: Gateway Center Specific Plan (County of Riverside)
The surrounding existing land uses are as follows:
North: Vacant
South: Single Family Residences
East: Vacant
West: Vacant

### 5.0 PRELIMINARY DEVELOPMENT PLAN

The Gateway Heights development is intended as a planned residential community offering innovative cluster housing options in the lower lying portion of the site and open space on the remainder of the site. The development will include a community park, open space and a common community design identity. This development plan coupled with the unique location of this property will provide multiple housing alternatives for both entry-level buyers, young families, and retirees, as well as student and faculty for the University of California-Riverside.

As mentioned above, the R10 designated area of Gateway Heights will be clustered on 16.59 acres of the property and will contain 108 units located near the center of the development area. This gives the property a density of 3.37 units per acre with a clustered density of 6.51 units per acre. This density is well within allowances of the proposed General Plan designation of R10 (10 units per net acre). The remaining 15.97 acres will be changed to Open Space (OS) and designated for conservation. In addition to the open space, the project will also provide a 0.89 acre community park located in the center of the development. (Refer to Exhibit J - Open Space/Park Plan)

The residential uses within the Gateway Heights development will consist of cluster units in varying sizes ranging from 4 -unit to 10 -unit clusters. This development will be subject to the requirements in Chapter 9.03.040 (Residential Site Development Standards) and 9.03.060 (Planned Unit Developments) of the City of Moreno Valley's municipal code.

### 5.1 Cluster Design

These units will contain 4-unit to 10 -unit auto court product on pad sizes ranging from 7,674SF to 16,254 SF. (Refer to Exhibit K - Cluster Detail) These cluster units are arranged with garages facing a common driveway as to enhance the aesthetic views of the project from the street and perimeter. The purpose of this design concept is to ensure architectural continuity and compatibility throughout the project utilizing the following design criteria:
> Provide front door access to open space/courtyard for inside units and street access for outside units.
> Provide garage access at common private street
> Use enhanced elevations for homes facing the public street.
> Provide patios or balconies to enhance architectural styles and increase private open space.
> Consider additional building articulation through recessed garage doors, recessing or cantilevering second stories and varying roof pitches.

## (Refer to A-1.3 thru A-3.4 - Conceptual Floor Plans/Elevations)

### 5.2 Alternative Design Standards

This planned unit development for the Gateway Heights project contains various design alternatives that differ from the standard R10 design standards in order to promote the objectives stated above in Section 2. As allowed in the City of Moreno Valley's Municipal Code Section 9.03.060.G, planned unit developments may deviate from the site development standards set forth in the applicable zoning district regarding lot area, lot dimensions, lot coverage, setbacks and building height.

### 5.2.1 Lot Coverage

The Gateway Heights project contains 13 development pad areas varying in size from 7,674 to 16,254 square feet. The cluster development will be exclusively contained within these development pads and the pads will have a maximum building coverage of $65 \%$. The remaining pad area shall contain driveways, sidewalks and landscaping.

### 5.2.2 Building Setbacks

Front/Street Side setback = 5' to ROW
Minimum building separation $=6^{\prime}$
Side setback to toe/top of slope $=5^{\prime}$ Min*
Rear setback to toe/top of slope $=5^{\prime} \mathrm{Min} *$
*-For buildings located at the top or toe of slope, the minimum building setback shall be determined by the California Building Code Section 1808.7 which states that buildings at the toe of slope shall be at least the smaller of $\mathrm{H} / 2$ or $15^{\prime}$ from the toe of slope. Buildings at the top of slope shall be at least the smaller of $\mathrm{H} / 3$ or $40^{\prime}$ from the top of slope.

Example: 20' Slope Height = 10' setback at toe of slope (20/2)
$20^{\prime}$ Slope Height $=7$ ' setback at top of slope $(20 / 3)$


For SI: 1 foot $=304.8 \mathrm{~mm}$.
FOUNDATION CLEARANCES FROM SLOPES

### 5.2.3 Building Height

Building heights for the two story units will not exceed $30^{\prime}$ in height.

### 5.2.4 Street Sections

The streets within the Gateway Heights PUD will be private streets maintained by the project's Homeowner Association. These streets will be constructed based on the City of Moreno Valley's Local Street section MVSI-107A-0. Street A and Street C will be constructed using a modified section which eliminates the sidewalk and landscape area along the project perimeter. The purpose for these modified sections is to preserve the natural landscape along the perimeter of the project. With the elimination of these sidewalks, a pedestrian crossing has been located at approximately mid-block of Street B to provide ADA access to the units on the north side of Street B. (Refer to Exhibit L Street Section Details)

TABLE 1

| GATEWAY HEIGHTS DEVELOPMENT STANDARDS |  |
| :---: | :---: |
| Max Building Height | $30^{\prime}$ |
| Min Front/Street Setback | $5^{\prime}$ |
| Min Bldg seperation | $6^{\prime}$ |
| Min. Side setbacks | $5^{\prime *}$ |
| Min. Rear setbacks | $5^{\prime *}$ |
| Max Development Pad Coverage | $65 \%$ |

### 5.3 Fire Protection Plan

The Gateway Heights project has developed a Fire Protection Plan in conjunction with the development to increase safety measures and mitigate any fire hazards for the project. The mitigations include providing two $36^{\prime}+$ wide roadways at the entrance to minimize any potential traffic congestion during an emergency setting. One roadway would be used for ingress and the other for egress. The site also includes an internal looped road system allowing traffic circulation in either direction. Direct access shall be provided to all structures and no dead-end fire apparatus access roads are contained onsite. The project has also developed a Preliminary Fuel Modification and Vegetation Management plan for the site which includes requirements for landscape materials to reduce non-fire-resistant vegetation. (Refer to Appendix 1) A Final Fuel Modification Plan will be required as part of the Final Design submittals for approval prior to obtaining a Grading Permit.

### 5.4 Community Park \& Landscape Buffers

This project will contain a community park space area, approximately 0.89 acres in size and with various elements for recreation. This community park will be located near the center to the subdivision allowing easy access to all residents. This park space may contain amenities such as BBQ and picnic areas, ramadas, tot lot, dog park and turf areas for additional gathering and activities. The park will be owned and maintained by the project's Homeowners Association. In addition to the community park, this project will also incorporate landscaped buffer areas throughout the project and along the project's perimeter. These landscape areas will also be maintained by the Homeowners Association and subject to the requirements of the Fire Protection Plan.

### 5.4.1 General Guidelines

$>$ All landscape shall conform to Ordinance No. 859.2 and County of Riverside Guide to California Friendly Landscaping.
> All planting areas shall be irrigated with an automatic irrigation system and an ET based controller, per Ordinance 859.2.
> All planting areas shall receive three inches ( $3^{\prime \prime}$ ) of shredded bark mulch and one and a half inches ( $1-1 / 2^{\prime \prime}$ ) on ground cover from flats.
$>$ All trees within six feet $\left(6^{\prime}\right)$ of any hardscape shall receive thirty-six inch ( $36^{\prime \prime}$ ) deep, by twenty inch (20") long linear root barrier.
$>$ All slopes three feet ( $3^{\prime}$ ) in vertical height or greater shall be planted with shrubs and trees and irrigated per the Riverside County requirements for slope erosion control landscaping. Slopes to meet building and safety requirements.
$>$ Landscaping shall consist of a combination of trees, shrubs and groundcover as listed in the California Friendly Plant List provided by the County.

### 5.5 Entry Monuments, Walls \& Project Theme

The primary entry for the community will be located at the intersection of "Street A" and Morton Road. The elevated topography of the Gateway Heights project will make it a predominant development near the I-215 freeway. As such, it is important to minimize the walls and fences that could impact the views from the street or surrounding areas. The Gateway Heights project will contain no walls on the interior of the project. The perimeter of the project will consist of decorative view walls and/ or tubular steel fencing. Perimeter wall and fence materials, designs, and colors will carry on the project's theme established by the project's monument signage and landscaping. Wall and fence heights will be limited to a maximum height of six (6) feet, except where necessary for noise attenuation or additional retaining wall. Decorative pillars and pedestals may extend up to an additional fourteen (14) inches above the maximum wall or fence heights. (Refer to Exhibit M - Conceptual Wall \& Fence Plan) Materials, colors, and construction methods for theme, view and accent walls are
subject to some variation, so long as the proposed character and theme of the walls is preserved and per the approval of the Planning Department.
While in some areas of the development, units may have retaining walls the majority of the development will not be separated by neighborhood walls at the rear or side yards.

### 5.5.1 General Guidelines

$>$ All walls and fences should maintain a six foot ( $6^{\prime}$ ) maximum height limit, except where larger walls are necessary for noise attenuation or retaining purposes.
$>$ If walls or fences end in a pilaster, the design of the pilaster should reflect the shape of the supports used in the entry monuments and use similar materials.
$>$ When changes in pad elevation occur, the wall or fence should be stepped in equal vertical intervals.
$>$ Where gates are required, they shall be constructed of wrought iron, vinyl or tubular steel. Chain link fencing is not permitted. All construction must be of good quality and sufficient durability. (Applicants shall provide specifications which shall be approved by the Planning Department)
$>$ All wall and fence plans and materials must conform to City of Moreno Valley guidelines.

### 5.6 Perimeter Yard Landscaping

Perimeter yard landscaping is required around all cluster pads and unless approved by the Planning Department, will be provided by the developer/home builder. Perimeter yard landscaping provided by the developer/builder or their representative must be installed within one month of closing of the first unit. A variety of perimeter yard landscape packages with automatic irrigation systems shall be provided; landscaping designs with berming, river run features, courtyards, lighting, or other creative features shall be offered for standard landscape design.

### 5.7 Private Open Space

Private Open Space may include land within each residential unit that is available for private use. This private open space is typically considered yard, patio or balcony area that is available for private recreation. It is recognized that while the community park provides an easily accessible active recreational opportunity for all residents of the development, each residence must have adequate private outdoor space that can be an effective extension of the indoor living space and be used for passive outdoor activities such as gardening, reading, eating and barbequing. Per Moreno Valley Municipal Code Section 9.03.040.G.8, each unit shall have at least one


Figure 1 - Galvanized steel rock garden wall hundred and fifty (150) square feet of private open space. This open space may be achieved through the use of patio or balcony spaces. First floor patio space shall have a minimum dimension of $8^{\prime}$ and upstairs balconies must have a minimum dimension of 5'. Patio designs may include alternatives to traditional fencing, such as garden walls, small retaining walls or landscaping which delineates the space between units.

EXHIBITS




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The flood hazard information is dervived directily from the
authoritative NFHL web services provided by FEMA. This map authoritative NFHL web services provided by FEMA. This map
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elements do not appear: basemap imagery, flood zone labels. legend, scale bar, map creation date, community identifiers, IRM panel number, and FIRM effective date. Map images to mapped and unmodernized areas cannot be used for regulatory purposes.

EXISTING GENERAL PLAN


PROPOSED GENERAL PLAN
CONSERVATION
COUNTY OF RIVERSIDE

EXISTING ZONING
COUNTY OF RIVERSIDE
PROPOSED ZONING





GATEWAY HEIGHTS



## TYPICAL CLUSTER DETAIL


 EXHIBHIL



VIEW FENCE DETAIL


ENTRY FEATURE DETAIL

## FLOOR PLANS/ELEVATIONS


(1) PLAN 1A SECOND FLOOR 785 sq ft

(1) $\frac{\text { PLAN } 1 \mathrm{~A}}{\text { EEDROOM, } 2.5 \text { BATHS }}$


Packet Pg. 2417

(1) PLAN 1B SECOND FLOOR 785 sq ft

(1) $\frac{\text { PLAN } 1 \mathrm{BIRST} \text { FLOOR } 615 \mathrm{sq} \mathrm{ft}}{2 \text { BEDROOM, } 2.5 \text { BATHS }}$


Packet Pg. 2418

(1) PLAN IA RIGHT ELEVATION


1) ROOF PLAN 1 A

(1) PLAN 1a left elevation

(1) PLAN 1A FRONT ELEVATION

Attachment: Gateway Heights PUD - 2 of 3 (6434: Gateway Heights Tract 38459)


Packet Pg. 2419

(1) PLAN 1B RIGHT ELEVATION

(1) ROOF PLAN 1B
(1) PLAN IB LEFT ELEVATION
(1) PLAN $1 B$ LEFT ELEVATION


(1) PLAN IB REAR ELEVATION

(1) $\square$ (1)



(2) PLAN 2A SECOND FLOOR 885 sq ft

(2) PLAN 2A FIRST FLOOR 615 sq ft
 OOR PLAN 2A

A-2.1

(2) PLAN 2B SECOND FLOOR 885 sq ft


FIRST FLOOR 615 sq ft
(1) $\frac{\text { PLAN } 2 \mathrm{~B}}{{ }^{\text {B BEDROOM, } 2.5 \text { BATHS }}}$


(2) PLAN 2A RIGHT ELEVATION $\qquad$

(2) PLAN 2A LEFT ELEVATION $\qquad$

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(2) PLAN 2A FRONT ELEVATION $\qquad$

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Attachment: Gateway Heights PUD - 2 of 3 (6434: Gateway Heights Tract $\qquad$

PLAN 2 EXTERIOR iTA BARBARA

A-2. 3


Packet Pg. 2424

(3) PLAN 3A SECOND FLOOR 987 sq ft

(3) $\frac{\text { PLAN 3A }}{\text { 3 BEDROOM, 2.5 BATHS }}$


Packet Pg. 2425

(3) PLAN 3B SECOND FLOOR 987 sq ft


Attachment: Gateway Heights PUD - 2 of 3 (6434: Gateway Heights Tract 38459)


A-3.02

(3) ROOF PLAN 3A
(3) PLAN 3A RIGHT ELEVATION

(3) PLAN 3A REAR ELEVATION
(3) $\qquad$



Packet Pg. 2427

(3) ROOF PLAN 3B

(3) PLAN 3B LeFt elevation $\qquad$

(3) PLAN 3B REAR ELEVATION $\qquad$

(3) PLAN 3B FRONT ELEVATION

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Attachment: Gateway Heights PUD - 2 of 3 (6434: Gateway Heights Tract 38459)
 ERN FARMHOUSE

A-3.04

## SITE PLAN

SITE PLAN (PEN21-0066)

LEGAL DESCRIPTION







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being a portion of section 34, township a south, range 4 WESt, san bernardino meridian
UNITED ENGINEERING GROUP CA., INC DECEMBER 2022
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GENERAL NOTES
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为
SITE DATA







ENGINEER/PLAN PREPARER

 $\square$
$\square$
PRELIMINARY GRADING PLAN (PEN21-0066)


BEING A PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN
UNITED ENGINEERING GROUP CA., INC DECEMBER 2022


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GENERAL NOTES:
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### 6.0 ARCHITECTURE

The architectural guidelines in this manual have been developed to ensure architectural continuity and compatibility throughout the project; to promote a distinctive architectural theme; and to avoid a mundane repetition of too similar architectural design elements. These guidelines will provide a set of basic concepts for development but are not meant to limit future creativity in design.

These styles and concepts should be incorporated to provide a variety of quality housing types.

### 6.1 General Guidelines

The following general guidelines should be considered in the designing and layout of the project:
> A common set of design style and design elements should be included throughout the project.
> Long unarticulated building facades should be avoided
> Natural building materials should be varied throughout the project, avoiding long stretches of similar street scene
> Offset roof planes, columns, vertical and horizontal articulation or other projecting architectural features shall occur on those facades of the residence that are visible from the street or open space
> The visual impact of garages shall be reduced to the maximum extent practicable

### 6.2 Architectural styles

Two architectural styles have been set forth as examples in this document to begin to identify and illustrate the intent and objective of these design guidelines in terms of architectural style and variety. Santa Barbara and Modern Farmhouse architectural styles are discussed in the following pages and depicted in Figures $\mathbf{1} \& 2$ to establish the types and level of architectural detail which will assist in achieving the project design objectives. Discussions of each of these styles as well as illustrations of typical elevations and features are located on the following pages.

### 6.2.1 Santa Barbara

Santa Barbara style is an architectural and interior design style derived from Mediterranean and Spanish-revival architecture, often characterized by deep red tones and polished wood textures that contrast with stark white walls.
Santa Barbara style architecture and interior design are characterized by white stucco walls, exposed beam ceilings, red-tile roofs and floors, arcades, and courtyards.

Figure 1 - Santa Barbara


Features typical of the Santa Barbara style include:
o White stucco walls
o Exposed beam ceilings
o Tile roofs
0 Shutters
o Decorative Vents

### 6.2.2 Modern Farmhouse

The Modern farmhouse style combines practical elements (simple floor plan, white walls) with rustic materials (wood floors, hand-hewn beams, and wrought-iron hardware). And you'll see this style throughout the U.S., with regional variations. For example, you might spot a Dutch door or two in a New England farmhouse, or wraparound porches on homes in the Deep South

Features typical of the Modern Farmhouse style include:
o Reclaimed wood
o Barnboard details
o Wrought iron accents
o Wide plank floors
o Rafter Tails
o Stone Veneers

Figure 2 - Modern Farmhouse


### 7.0 UTILITIES

Currently the site is undeveloped and the site does contain some existing overhead electrical lines as well as water and sewer lines located in Morton Rd. All existing and new onsite utilities that will serve the subject site will be placed underground except as approved by Public Works. Operation and maintenance of all utilities and facilities will be managed by the appropriate operating entity upon approval and completion of construction. Sewer facilities, water facilities, streetlights, and fire hydrants will be provided according to the appropriate agency's guidelines, per the recommendations of Public Works and City of Moreno Valley Fire Departments and other governmental regulations applicable to the construction of various facilities.

### 8.0 COVENANTS, CONDITIONS AND RESTRICTIONS (CC\&R’S)

Table 8-1 below details the maintenance responsibilities for the various utilities and common areas within Gateway Heights. A majority of the common areas will be maintained by a Home Owners Association (HOA). The HOA will be established in conjunction with development of the project. CC\&R's for Gateway Heights that include language for the establishment of a HOA and provisions for creation of liens in conjunction with the HOA, for maintenance funding, will be provided prior to recordation of the final map.

| MAINTENANCE RESPONSIBILITY |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Table 8-1 |  |  |  |  |  |

## APPENDIX 1

## FIRE PROTECTION TECHNICAL REPORT

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 800.450.1818 F 760.632.0164

## TECHNICAL FIRE PROTECTION MEMORANDUM

| To: | Douglas Bloom, Fire Marshal, Moreno Valley Fire Department |
| :--- | :--- |
| From: | Dudek Fire Protection Planning Team, Michael Huff, Director |
| Subject: | Gateway Heights Project Fire Hazard Analysis and Approach |
| Date: | 01/30/2023 |
| cc: | Jason Ackerman, Esq., Ackerman Law |
| Attachment(s): | Figures 1-2 |
|  | Attachment 1 - Site Aerial Photograph |
|  | Attachment 2 - Fuel Modification Plan |
|  | Attachment 3 -- Site Plan with Revised Dual Project Access |

This Technical Fire Protection Memorandum documents fire protection planning related to project constraints analysis for the subject project. The approach outlined herein responds to your recommended direction during several meetings and communications regarding the site and its required fire protection features, including emergency ingress/egress to/from the project site and defensible space areas.

## Project description

The proposed Gateway Heights development is a 108 unit detached townhouse project on an approximately 33acre site in the City of Moreno Valley.

- "Detached townhouses" (townhouses by CBC definition are attached; structures are likely to be considered SFDs per code ${ }^{1}$ )
- Structures are separated 6' apart.
- Structures are two-story townhouses
- Proposed 16-acre open space lot north of the developed project site

[^16]
## Existing Site Observations

## Onsite

- Attachment 1 provides a site aerial photograph.
- Vegetation is primarily scattered sage scrub, forbs, and scattered native shrubs and a few ornamental trees in the northeast corner;
- Unmaintained roads/trails traverse the property;
- Evidence of recent fuel reduction activities are present on site.


## Topography

The project site is relatively flat, with a slight upslope gradient to the north; beyond the project to the north is a steep, rocky hillside with sparse scrub and forb vegetation. To the west and south the terrain has gently rolling hills with intermittent drainages. Along the eastern edge of the property is a drainage channel strewn with boulders. To the east of the project is a residential subdivision.

## Vicinity

The project is located in the northeast area of the City of Moreno Valley. The western and northern property lines coincide with the city limits; the lands immediately to the west and north of the property are within unincorporated Riverside County.

- North: open space;
- East of northern open space lot: open space;
- Southeast of project site: residential development;
- West: open space.


## Proposed site plan review / code compliance issues

## Issues to address:

- Driveway lengths: proposed lengths are all less than 150 feet in length and are $24^{\prime}$ wide.
- Hose pull distances: will be greater than 150 ' distance to two or more units along the driveways for Pads 2,5, 7 and 9 through 13. However, the fire code official is authorized to increase the 150 -foot distance since all units will be equipped throughout with automatic fire sprinkler systems. ${ }^{2}$
- Fuel modification width: 100 -foot FMZ can be provided for most units (Attachment 2). The western most units on Pad 13 (NW corner) are 30 feet from the property line; the units on Pad 7 are 69 feet from the property line; The proposed FMZ reduction has been mitigated with placement of non-combustible walls along the property line adjacent to these two buildings as depicted in Attachment 2.


## Primary access

Primary access is proposed using Morton Road on the southern side of the project, which has access to Box Springs Road and the SR60/l-215 Freeway.

## Secondary access

In reviewing the Moreno Valley Fire Code, there is no reference identified whereby a secondary access is required for the project. CFC 503.1.2 authorizes the fire code official to require more than one access road based on the potential for impairment of a single road, but it does not require that an additional access road must be provided.

The project design provides two 36 ' foot wide roadways at the entrance to minimize any potential traffic congestion during an emergency setting; one for ingress and one for egress (see Attachment 3). Each entrance roadway connects to separate "legs" of the internal circulation loop road allowing for approximately half of the occupants to exit in each of two distinct directions without conflict. Based on discussions with the FD, the proposed loop road design with a dual widened roadway entrance meets the intent of the code and will be accepted.

## Internal circulation

- Loop road system;
- Direct access is provided to all structures;
- Unobstructed internal circulation loop roadway width of 24 feet;


## Fuel modification and Vegetation Management

A preliminary fuel modification landscape plan has been prepared and submitted for review and approval.
The two "legs" of the internal circulation loop road, along the eastern and western edges of the project, will be located between the property line and structures providing a paved, non-combustible, defensible space as part of the fuel modification zone.

The project will also comply with the following requirements related to fuel modification and vegetation management outlined in the 2022 California Fire Code. The Project-provided fuel modification landscape plan provides additional details on the Project's consistency with these requirements and has been submitted for review

[^17]to Moreno Valley Fire Department (MVFD). Fencing, decking and/or mulch will be consistent with requirements for fire hazard severity zones and WUI areas, specifics of which will be included in the project's landscape plan and will be to MVFD approval.

## CFC 4903.2.1.2 Final Fire Protection Plan and Ongoing Maintenance

The project HOA is legally responsible for the maintenance of Fuel Modification Zones. HOA maintenance responsibilities concerning Fuel Modification Zones will be incorporated into the HOA's covenants, conditions, and responsibilities (CC\&Rs) to the approval of the MVFD.

CFC 4906.1 General

Planting of vegetation for new landscaping shall be selected to reduce non-fire-resistant vegetation in proximity to a structure and to maintain vegetation as it matures.

## CFC 4906.2 Application

All new plantings of vegetation in State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) designated as a Very High Fire Hazard Severity Zone shall comply with Sections 4906.3 through 4906.5.3.

## CFC 4906.3 Landscape Plans

Landscape plans shall be provided when required by the enforcing agency. The landscape plan shall include development and maintenance requirements for the vegetation management zone adjacent to structures and roadways, and to provide significant fire hazard reduction benefits for public and firefighting safety.

## CFC 4906.3.1 Contents

Landscape plans shall contain the following:

1. Delineation of the 30 -foot ( 9144 mm ) and 100 -foot $(30.5 \mathrm{~m})$ fuel management zones from all structures.
2. Identification of existing vegetation to remain and proposed new vegetation.
3. Identification of irrigated areas.
4. A plant legend with both botanical and common names, and identification of all plant material symbols.
5. Identification of ground coverings within the 30 -foot ( 9144 mm ) zone.

## CFC 4906.4 Vegetation

All new vegetation shall be fire-resistant vegetation in accordance with this section.
Exception: Trees classified as non-fire-resistant vegetation complying with Section 4906.4.2.1.
To be considered fire-resistant vegetation, it must meet at least one of the following:

1. Be identified as fire-resistant vegetation in an approved book, journal or listing from an approved organization.
2. Be identified as fire-resistant vegetation by a licensed landscape architect with supporting justification.
3. Plants considered fire-resistant vegetation and approved by the local enforcing agency.

## CFC 4906.4.1 Shrubs

All new plantings of shrubs shall comply with the following:

1. Shrubs shall not exceed 6 feet ( 1829 mm ) in height.
2. Groupings of shrubs are limited to a maximum aggregate diameter of 10 feet ( 3048 mm ).
3. Shrub groupings shall be separated from other groupings a minimum of 15 feet ( 4572 mm ).
4. Shrub groupings shall be separated from structures a minimum of 30 feet ( 9144 mm ).
5. Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of three times the height of the understory shrubs or 10 feet ( 3048 mm ), whichever is greater.

## CFC 4906.4.2 Trees

Trees shall be managed as follows within the 30 -foot ( 9144 mm ) zone of a structure:

1. New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet ( 3048 mm ) from any combustible structure.
2. The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet ( 3048 mm ).
3. Existing trees shall be trimmed to provide a minimum separation of 10 feet ( 3048 mm ) away from chimney and stovepipe outlets per Title 14, Section 1299.03.

CFC 4906.4.2.1 Non-Fire-Resistant Vegetation

New trees not classified as fire-resistant vegetation, such as conifers, palms, pepper trees and eucalyptus species, shall be permitted provided the tree is planted and maintained so that the tree's drip line at maturity is a minimum 30 feet ( 9144 mm ) from any combustible structure.

## Defensible Space

The project will comply with the following defensible space requirements outlined in the 2022 California Fire Code.

## CFC 4907.1 General

Hazardous vegetation and fuels shall be managed to reduce the severity of potential exterior wildfire exposure to buildings and to reduce the risk of fire spreading to buildings as required by applicable laws and regulations. Defensible space will be managed around all buildings and structures in State Responsibility Areas (SRA) as required in Public Resources Code 4291.

## CFC 4907.2 Application

Buildings and structures located in the following areas shall maintain the required hazardous vegetation and fuel management:

1. All unincorporated lands designated by the State Board of Forestry and Fire Protection as a State Responsibility Area (SRA).
2. Land designated as a Very High Fire Hazard Severity Zone by the Director.
3. Land designated in ordinance by local agencies as a Very High Fire Hazard Severity Zone pursuant to Government Code Section 51179.

## CFC 4907.3 Requirements

Hazardous vegetation and fuels around all buildings and structures shall be maintained in accordance with the following laws and regulations:

1. Public Resources Code, Section 4291.
2. California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3, Article 3, Section 1299.03.
3. California Government Code, Section 51182.
4. California Code of Regulations, Title 19, Division 1, Chapter 7, Subchapter 1, Section 3.07.

## Relevant code sections:

Chapter 7A of the 2022 California Building Code
All new Project buildings will comply with the ignition resistant construction requirements of California Building Code Chapter 7A. Per Chapter 7A, buildings located in any Fire Hazard Severity Zone or any Wildland-Urban Interface (WUI) Fire Area designated by the enforcing agency constructed after the application date shall comply with Chapter 7A provisions. This includes all new buildings with residential, commercial, educational, institutional or similar occupancy type use, which are referred to as "applicable building(s)" (see definition in Section 702A), as well as new buildings and structures accessory to those applicable buildings

The Project's buildings will comply with the following construction and materials requirements identified in the following sections:

- 704A Ignition Resistant Construction
- 705A Roofing
- 706A Vents
- 707A Exterior Covering
- 708A Exterior Windows, Skylights and Doors
- 709A Decking
- 710A Accessory Buildings and Miscellaneous

California Residential Code R337. Materials and Construction Methods for Exterior Wildfire Exposure

Minimum standards for a new building located in a WUI area to resist the intrusion of flame or burning embers projected by a vegetation fire.

California Residential Code R337.1.4. Inspection and Certification.

The local building official shall, upon completion of construction, provide the owner or applicant with a copy of the final inspection report that demonstrates the building was constructed in compliance with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this chapter. Issuance of a certificate of occupancy by the local building official for the proposed building shall be considered as complying with this section.

California Fire Code 503.1.2 Additional access.

Authorizes the fire code official to require more than one access road based on the potential for impairment of a single road, but it does not require that an additional access road must be provided.

## Moreno Valley Fire Code Amendments

- 503.2.1 Fire apparatus access roads - 24 feet wide
- 903.2 Single Family Dwellings shall have automatic fire sprinkler systems
- 4906.4 Fuel Modification Requirements for New Construction. Must meet the criteria established by Riverside County Fire Department (Information Bulletin \#08-05). Submit a Fuel Modification Plan; indicate setback, irrigated and thinning zones (30’ Green Zone; 100' total defensible space).
- App B. Fire Flow and Hydrant Spacing


## Fire environment assessment

The project site's fire environment assessment was performed by Dudek fire protection planners with extensive similar experience throughout California over the last 25 years.

- The site is located within a Very High Fire Hazard Severity Zone ${ }^{3}$.
- At the time of the site assessment, there was no evidence of recent fire on site (no visible signs); fire history data ${ }^{4}$ indicates the site has had 77 fires within a five-mile radius and the site itself has burned four times since 1980 and most recently in 2001 (Watkins Fire).
- Vegetation on site and to the north, west and south is sparse and low growing, which would reduce the impacts from a wildland fire;

[^18]- Adjacent hillslopes to the north exist up and away from the project site. This reduces wildfire risks at the project site as wildfire is more likely to spread at slower rates when moving downslope compared to an upslope direction.
- The project may be subject to an approaching wildland fire from the northeast during Santa Ana wind conditions. While direct impacts from wildfire cannot be completely ruled out, structural ignition risks from ember cast are minimal given modern construction requirements in alignment with Chapter 7A of the California Building Code.


## Fire Behavior assessment

- Selected fuel models Sh1 (low load, dry climate shrub) and Sh2 (moderate load, dry climate shrub) to represent the existing vegetative fuels. Site photographs provided in Attachment 4 depict the fuels present on and adjacent to the project site.
- Selected wildland fire run scenarios from the NE and SW representing an offshore Santa Ana wind event and an onshore wind event. Santa Ana wind events represent "worst-case" conditions and represent the highest wind speeds and lowest fuel moistures likely to occur at the project site.
- Conducted fire behavior modeling using the BehavePlus 6 modeling system for existing conditions and post-development fuel modification (see results in Table 1). The location of model runs is provided in Figure 1.

Table 1. Fire Behavior Modeling Results

| Fire Scenarios | Flame Length (feet) | Fireline Intensity (BTU/feet/second) | Spread Rate (mph) | Spotting Distance (miles) |
| :---: | :---: | :---: | :---: | :---: |
| Scenario 1: 15\% slope, 40 mph NE wind |  |  |  |  |
| Fuel Model Sh1 (scrub/mustard) | 8.4 | 584 | 1.0 | 0.7 |
| Fuel Model Sh2 (scrub/mustard) | 14.1 | 1,781 | 0.8 | 0.9 |
| Scenario 1 Fuel Mod: 10\% slope, 40 mph NE wind |  |  |  |  |
| Fuel Model 8 (irrigated landscaping) | 2.6 | 46 | 0.1 | 0.3 |
| Scenario 2: 15\% slope, 20 mph SW wind |  |  |  |  |
| Fuel Model Sh1 (scrub/mustard) | 8.5 | 589 | 1.0 | 0.7 |
| Fuel Model Sh2 (scrub/mustard) | 14.1 | 1,796 | 0.8 | 0.9 |

Table 1. Fire Behavior Modeling Results

| Fire Scenarios | Flame <br> Length <br> (feet) | Fireline Intensity <br> (BTU/feet/second) | Spread <br> Rate <br> (mph) | Spotting <br> Distance <br> (miles) |
| :--- | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
| Scenario 2 Fuel Mod: 15\% slope, 20 mph SW wind |  |  |  |  |
| Fuel Model 8 (irrigated landscaping) | 2.6 | 46 | 0.1 | 0.3 |

An additional assessment was conducted to determine fire behavior during a Santa Ana wind event (worst-case weather conditions) in areas adjacent to the project site using the FlamMap software package. Direct impacts from wildfire are not likely at the project site due to flame lengths less than 20 feet in adjacent lands and the planned Fuel Modification Zones.

The following paragraphs provide descriptions of the inputs used in processing the FlamMap model. In addition, data sources are cited, and any assumptions made during the modeling process are described. A graphical representation of the model results is provided in Figure 2

## Elevation

The elevation data file represents units of meters above mean sea level (AMSL). Elevations in the FlamMap analysis area range from 1,585 to 2,625 feet AMSL. Elevation data is a required input file for FlamMap runs and are necessary for adiabatic adjustment of temperature and humidity and for conversion of fire spread between horizontal and slope distances.

## Slope

The slope data file represents values in degrees of inclination from horizontal. Slope values in the FlamMap analysis area range from 0-32 degrees. The slope input file is necessary for computing slope effects on fire spread and solar radiance.

## Aspect

The aspect data file represents values in azimuth degrees. Aspect values are important in determining the solar exposure of grid cells.

## Wind and Fuel Moisture

Wind speed and fuel moisture values for the FlamMap analysis utilized the same values as those used in the BehavePlus runs for Santa Ana weather scenarios. Wind and fuel moisture data was collected from local RAWS stations (Stations 045624 (Clark) and 045617 (Beaumont)). The FireFamilyPlus 6.0 software package was utilized to analyze local RAWS station data to empirically determine Santa Ana weather
conditions representative of those which have occurred previously at the project location. Wind alignment and speeds were determined and set to 70 degrees and 40 mph respectively.

## Fuel Model

The fuel model data file was based on the 40 Scott and Burgan (2005) models and represents distinct distributions of fuel loading found among surface fuel components (live and dead), size classes, and fuel types ${ }^{5}$.

## Recommendations / Justification

Reduced/mitigated FMZs have been discussed and upon provisions for measures that provide the same practical effect, approved by the fire department. This Fire Protection Technical Report proposes the following approach and justification. The fire protection measures are evaluated to provide at least equivalent protection based on the experience of the preparers of this report.

1. Site fire environment and fire behavior is not significant. The vegetation on site and on adjacent lands is sparse - dried mustard and scattered sage. The ridge behind the project site slopes up and away from project, is covered with sparse light vegetation and rocks, which is beneficial.
2. Structures will be constructed in accordance with CRC R337 (Residential Code equivalent of CBC Chapter 7A) building codes (within FHSZ) and will include features such as ember resistant vents (baffled not just mesh).
3. FMZ will be provided around entire perimeter of the project site (see Fuel Modification Plan - Attachment 2). (Where the FMZ and Jurisdictional Delineation area overlaps along the upper portion of the southeastern property line, active fuel treatment will be conducted so as to avoid impacts. The channel is comprised of large boulders with limited vegetation and in its existing state acts as a fuel modification area.) The Project will be hardened throughout.
a. The Project shall attempt to obtain an interim off-site FMZ easement for Pads 7 and 13 so that a total of 100 feet of FMZ from the Project's structures can be achieved. The off-site FMZ would be limited to thinning/mowing of existing vegetation annually. Should the off-site easement be infeasible based on an unwilling neighbor, then alternative fire protection is proposed:
i. Wherever less than 100 feet of $\operatorname{FMZ}$ (on and off site combined) is achievable, a 6-foot tall,
[^19]Wall Justification: When buildings are set back from slopes, and a wall is placed at the property line, flames and radiant heat are deflected vertically reducing the effects of heat on the structure. If a structure cannot be setback adequately, or where the slope is less than $30 \%$, a noncombustible wall can help deflect the flames from the structure ${ }^{6}$. The duration of radiant heat impact on the exposed side of the house is also reduced. The structure setback is important to avoid heat and/or flame intersection with the structure.

Heat-deflecting landscape walls of masonry construction that are six feet in height will be incorporated at the edge of lots where FMZs are the most constrained (Pads 7 and 13). The landscape walls provide a vertical, non-combustible surface in the line of heat, fumes, and flame. Once these fire byproducts intersect the wall, they are deflected upward or, in the case where lighter fuels are encountered, they are quickly consumed, heat and flame are absorbed or deflected by the wall, and the fuels burn peaks out within a short ( 30 second2 minute) time frame ${ }^{7}$. Walls like these have been observed to deflect heat and airborne embers on numerous wildfires in San Diego, Orange, Los Angeles, Ventura, and Santa Barbara County.

Rancho Santa Fe Fire Protection District, Laguna Beach Fire Department, Orange County Fire Authority, Murrieta Fire Protection District, and others utilize these walls as alternative methods based on observed performance during wildfires. This has led to these agencies approving use of non-combustible landscape walls as mitigations for reduced fuel modification zones and reduced setbacks at top of slope. While fuel moistures vary slightly across these jurisdictions, Santa Ana wind events create similar fuel moistures across a broad geographical area due to intensive drying of fuels. Therefore, this mitigation is also justified within the MVFD. These walls are consistent with NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire - 2008 Edition, Section 5.1.3.3 and A.5.1.3.3 and International Urban Wildland Interface Code (ICC 2012). NFPA 1144, A.5.1.3.3 states: "Noncombustible walls and barriers are effective for deflecting radiant heat and windblown embers from structures." These walls and barriers are usually constructed of noncombustible materials (concrete block, bricks, stone, stucco) or earth where 30 feet ( 9 meters) of defensible space is not available.
ii. Those units on the west side of the Project that are unable to provide 100' FMZ will be developed at a later date as Phase II after the adjacent development (Gateway Center) has removed the existing native vegetation as part of their grading phase.
4. Provide FMZ inspections annually. Inspections will be performed by RCFD or, at their preference, the Project would fund inspections by a $3^{\text {rd }}$ party to their satisfaction. This measure will ensure that the FMZ is functioning as intended.
5. Identify and mark fire lane and/or no parking areas as required.

[^20]6. Provide enlarged turns at both internal loop roadway turns.
7. Dual pane (both panes) tempered glass for openings on exposed sides of the structures on Pads 7 and 13.
8. Loop internal road system with two 36-foot wide, multi-lane, physically separated ingress/egress roadways.
9. Hardening at Project access point via pavement and landscaping.
10. Fire access points at the terminus of each driveway along the north side of Project for firefighting. Additionally, the area behind the northeast side of the project includes a 10-to-12-foot flat area that will be available to pedestrian firefighters via the provided accesses at the end of each driveway in that area.

## Summary

The structures will be constructed following CRC R337 and CBC Chapter 7A requirements to ensure reduced ignition potential. In addition, hardening of the structures including enhanced vents and enhanced glazing requirements will be included on selected units as noted above and a noncombustible landscape wall will be placed to mitigate FMZ reductions.

The internal circulation provides the necessary access to all structures with fire department turnarounds required for any driveway greater than 150 feet. The minimum roadway width of 36 feet meets the requirements for buildings less than 30 feet in height. Hydrants will need to be installed within the project site.

The primary access off Morton Road has been enhanced to include two 36' wide physically separated roadways for ingress and egress to reduce traffic congestion during emergencies, by providing dedicated ingress and egress routes.

Figures 1-2

| Fire Scenarios | Flame Length (feet) | Fireline Intensity (BTU/feet/second) | $\begin{aligned} & \text { Spread } \\ & \text { Rate } \\ & \text { (mph) } \end{aligned}$ | Spotting Distance (miles) |
| :---: | :---: | :---: | :---: | :---: |
| Scenario 1: 15\% slope, 40 mph NE wind |  |  |  |  |
| Fuel Model Sh1 (scrub/mustard) | 8.4 | 584 | 1.0 | 0.7 |
| Fuel Model Sh2 (scrub/mustard) | 14.1 | 1,781 | 0.8 | 0.9 |
| Scenario 1 Fuel Mod: $10 \%$ slope, 40 mph NE wind |  |  |  |  |
| Fuel Model 8 (irrigated landscaping) | 2.6 | 46 | 0.1 | 0.3 |
| Scenario 2: 15\% slope, 20 mph SW wind |  |  |  |  |
| Fuel Model Sh1 (scrub/mustard) | 8.5 | 589 | 1.0 | 0.7 |
| Fuel Model Sh2 (scrub/mustard) | 14.1 | 1,796 | 0.8 | 0.9 |
| Scenario 2 Fuel Mod: $15 \%$ slope, 20 mph SW wind |  |  |  |  |
| Fuel Model 8 (irrigated landscaping) | 2.6 | 46 | 0.1 | 0.3 |




FIGURE 2

## Attachment 1 Site Aerial Photograph

## Photo log

Gateway Heights - Moreno Valley


Aerial view of Project site. Land cover on site is disturbed, grassland, with minimal shrubs. Slopes to the north/ northeast are sparsely vegetated with heavy rock outcrop ground cover. East/ southeast includes large property single family homes. Land to the west is vacant and planned for development. Morton Road is directly to the west/ southwest.

# Attachment 2 Fuel Modification Plan 



## Attachment 3 Revised Site Plan Including Two Separate Ingress/Egress Roads



## Attachment 4 Site Photographs



Photograph 1: Photograph taken from Morton Road looking northeast at the project site showing on and offsite fuels and adjacent hillslopes that exists up and away from the project site. Rock outcroppings covering the hillslope reduce wildfire hazard by taking away burnable fuels.


Photograph 2: Photograph taken from the western edge of the project site looking east. On-site fuels are low load and comprised of short shrubs and annual grasses.


Photograph 3: Photograph taken from the northern boundary of the project site looking west picturing adjacent shrub and grass fuels and electrical transmission line. Spacing between vegetation decreases wildfire spread.


Photograph 4: Photograph taken from northeastern boundary of project site showing shrub and grass fuels in addition to adjacent trees and rock outcroppings. Fuel loads are highest along the project site's northern boundary.



Total project area: 32.8 acres. Plants to be chosen from County of Riversisede Calioforini friencolly Plant List



NOTE: This information is conceptual in nature and is
subject to adiustments pending subject to ajistrments pending further verification and
Client and Govermmental Agency approvali No waranties Client and Governmental Agency approval. .No wart
or guarantess are siven or or implied by the Architect.





(1) PLAN 1A SECOND FLOOR 785 sq ft


(1) $\frac{\text { PEERAN } 1 A}{\text { FIRST FLOM, } 2.5 \text { sarth }}$ TOTAL 615 sq ft

(1) PLAN 1B SECOND FLOOR 785 sq ft




(1) PLAN 1A LEFT ELEVATION

I
$\qquad$

(1) PLAN IA RIGHT ELEVATION


1) ROOF PLAN 1 A


(1) PLAN 1A FRONT ELEVATION


Packet Pg. 2470

(1) PLAN 1B RIGHT ELEVATION

(1) ROOF PLAN 1B

(1) PLAN 1B LEFT ELEVATION $\qquad$

(1) PLAN 1B FRONT ELEVATION


Packet Pg. 2471

(2) PLAN 2 A SECOND FLOOR 885 sq ft
(2) PLAN 2 A FIRST FLOOR 615 sq ft



(2) PLAN 2B SECOND FLOOR 885 sq ft


(1) $\stackrel{\text { PLEBROM, } 2.5 \text { Baths }}{\text { TOTAL } 1500 \mathrm{sq} \mathrm{ft}}$


(2) PLAN 2A RIGHT ELEVATION $\qquad$

(2) PLAN 2A LEFT ELEVATION $\qquad$

(2) PLAN 2A FRONT ELEVATION $\qquad$

(2) PLAN 2B RIGHT ELEVATION $\qquad$


(2) PLAN 2B LEFT ELEVATION $\qquad$


Packet Pg. 2475

(3) PLAN 3A SECOND FLOOR 987 sq ft

(3) PLAN 3A FIRST FLOOR 615 sqft
. TOTAL 1602 sq ft


(3) PLAN 3B SECOND FLOOR 987 sq ft

(3) PLAN 3B FIRST FLOOR 615 sq ft
(3) $\frac{\text { PEEBROOM, } 2.5 \text { BATHS }}{}$

(3) PLAN 3A RIGHT ELEVATION $\qquad$

(3) PLAN 3A REAR ELEVATION $\qquad$



(3) PLAN 3B REAR ELEVATION $\qquad$

(3) PLAN 3B FRONT ELEVATION


Packet Pg. 2479




VIEW FENCE DETAIL


ENTRY FEATURE DETAIL

GATEWAY HEIGHTS
MORENO VALLEY, CALIFORNIA



## PLANNING COMMISSION

## STAFF REPORT

Meeting Date: June 8, 2023
GENERAL PLAN AMENDMENT, CHANGE OF ZONE, CONDITIONAL USE PERMIT FOR A PLANNED UNIT DEVELOPMENT, AND TENTATIVE TRACT MAP NO. 38459 FOR A 108-UNIT CONDOMINIUM DEVELOPMENT

| Case No.: | General Plan Amendment (PEN20-0095) <br> Change of Zone (PEN20-0096) <br> CUP for a Planned Unit Development (PEN21-0066) <br> Tentative Tract Map No. 38459 (PEN22-0127) |
| :--- | :--- |
| Applicant: | HengHou Group |
| Representative: | Jason Ackerman |
| Property Owner: | Shizao Zheng |
| Project Site: | East side of Morton Road, approximately 300 feet north of Jennings <br> Court. APN 256-150-001 |
| Case Planner: | Luis Lopez, Contract Planner |
| Council District: | 2 |
| Proposed Project: | A General Plan Amendment, Change of Zone, Conditional Use <br> Permit for a Planned Unit Development, and Tentative Tract Map <br> No. 38459 for a 108-unit detached townhouse Planned Unit <br> Development. |
| CEQA: | Adopt Initial Study/Mitigated Negative Declaration and Mitigation <br> Monitoring and Reporting Program. |

## SUMMARY

The applicant, Shizao Zheng (HengHou Group), is requesting approval of a General Plan Amendment (GPA), Change of Zone (CZ), Conditional Use Permit for a Planned Unit Development (CUP), and Tentative Tract Map No. 38459 (TTM) to facilitate a 108
unit townhouse condominium project, on a 16.59-acre portion of 32.56-acre project site. The purpose of the Planned Unit Development (PUD) is to establish flexible standards to encourage innovation in housing types and provide amenities not generally found in suburban subdivisions, such as common open spaces and recreational areas. The General Plan Amendment (GPA), along with the Change of Zone (CZ), will allow for the change of the current land use designation from R2 Residential and Hillside Residential to R10 Residential and Parks/Open Space and the zoning designation from Residential 2 (R2) District and Hillside Residential (HR) District to Residential 10 (R10) District and Open Space (OS) District. The GPA, CZ, Conditional Use Permit (CUP), and Tentative Tract Map (TTM) together constitute the ("Proposed Project").

## PROJECT DESCRIPTION

## General Plan Amendment

A General Plan Amendment (GPA) application was submitted to change the land use designation of the Project Site from R2 Residential and Hillside Residential to R10 Residential and Parks/Open Space. The R10 land use designation is intended to provide for a variety of residential products and to encourage innovation in housing types with amenities not generally found in suburban subdivisions, such as common open spaces and recreational areas. The primary purpose of areas designated Parks/Open Space is to provide areas that are substantially unimproved, including, but not limited to, areas for outdoor recreation and the preservation of natural resources. The proposed General Plan Designations allow for the Proposed Project to be constructed on a 16.59-acre portion of 32.56 -acre Project Site, while retaining the remainder of the Project Site as Open Space.

## Change of Zone

A Change of Zone (CZ) application was submitted to rezone the Project Site from Residential 2 (R2) District and Hillside Residential (HR) District to Residential 10 (R10) District and Open Space (OS) District. Under the Proposed Project's current Residential (R2) District, a maximum of 2.0 units per gross acre is allowed. To obtain the desired number of units a change of zone is required to rezone the Project Site to Residential 10 (R10) District, which allows up to 10.0 units per gross acre.

## Conditional Use Permit for Planned Unit Development

The applicant proposes a Conditional Use Permit for a Planned Unit Development (PUD) to allow for flexible standards to address the unique characteristics of the site. The PUD document (graphics and text) prepared for the Proposed Project will establish the land use regulations, development standards, and design guidelines for the tract, including the dedication of permanent open space.

The PUD document also provides guidelines for architectural themes for the townhomes, that meet or exceed City-wide design standards in the Municipal Code. All development within the tract must meet the standards stated in the PUD, including plotting, setbacks, open space areas, and architecture. Additionally, the PUD provides
design guidance for community entrances and perimeter fencing around the community and around the drainage areas.

## Tentative Tract Map

Tentative Tract Map No. 38459 will subdivide the 32.56 gross acres of vacant and unimproved land into one 16.59 -acre (common-area) lot for 108 condominium units, and one 15.97-acre "remainder" lot for public open space. The tentative map would also create the interior private loop streets, and dedicate the 0.89 -acre park site. All on-site streets and drainage facilities will be maintained lots by a Homeowners Association (HOA).

## Site/Surrounding Area

The 32.56 -acre Project Site is a vacant and unimproved pie-shaped hillside lot located on the east side of Morton Road at the northwestern City Boundary. The Project Site slopes gradually upward away from Morton Road. To the north, properties are located within unincorporated Riverside County and are part of the Box Springs Mountain Reserve. Properties to the east are vacant and located within the Hillside Residential (HR) District. Properties to the east are also located within unincorporated Riverside County and are designated as "Gateway Center" Specific Plan. Properties to the South are located within the Residential 5 (R5) District and Hillside Residential (HR) District and are generally developed with single-family homes.

## Access/Parking

The Proposed Project's access will be provided by Morton Road with a private loop road serving the units. The Proposed Project has been designed to exceed the minimum parking requirements, providing a two-car garage for each unit, as well as 50 guest parking spaces along the private streets.

## Design/Landscaping

The PUD guidelines for the proposed development will include two elevation styles: Santa Barbara and Modern Farmhouse. Each building style will have three color combinations to provide interest among the housing types.

The PUD includes typical configurations for the new homes and common area landscaping. The HOA will maintain all common area landscaping in an effort to maintain a consistent well-maintained appearance of the streetscapes within the community. The Proposed Project also includes a 0.89 -acre park that will primarily serve the local neighborhood, including adjoining developed residential areas.

## REVIEW PROCESS

As part of the standard review process, all appropriate outside agencies have considered the Proposed Project. The Proposed Project was reviewed by the Project Review Staff Committee as required by the Municipal Code. Following subsequent revisions and reviews by staff, the Proposed Project was determined to be complete.

## ENVIRONMENTAL

An Initial Study was prepared by Psomas, in compliance with the California Environmental Quality Act (CEQA) and its guidelines. The Initial Study examined the potential impacts of the Proposed Project on the environment. The Initial Study/Mitigated Negative Declaration (IS/MND) serves as the appropriate CEQA documentation for the Proposed Project. With the implementation of the proposed mitigation measures, the Proposed Project will not have a significant effect on the environment. Technical studies prepared in support of the IS/MND include the following: Air Quality Calculations, Biological Resources Report, Jurisdictional Delineation, Rare Plant Survey Report, Burrowing Owl Survey Report, and Determination of Biologically Equivalent or Superior Preservation (DBESP) Report, Cultural Reports, Energy Calculations, Geotechnical Report, Slope Stability Report, EDR Radius Map Report, Preliminary Drainage Report, Project Specific Water Quality Management Report, Planned Unit Development, Traffic Impact Analysis, and Fire Hazard Analysis and Approach. Copies of the appendices to the IS/MND can be accessed from the link attached to this staff report. The documents can be reviewed at City Hall during operating hours.

Mitigation measures are recommended for the Proposed Project in the following areas: Aesthetics, Biological Resources, Cultural Resources, Energy, Geology and Soils, Hazards and Hazardous Materials, Public Resources, and Tribal Cultural Resources, all of which are incorporated into the Mitigation Monitoring and Report Program (MMRP). The measures for cultural resources have been included to address input from the Tribal governments. The measures are intended to ensure that potential resources that might be discovered are protected. However, these measures are not required to address a known significant impact. Based on the Initial Study and the proposed mitigation measures, the Proposed Project will not cause any significant impacts to the environment. In response to comments received from the California Department of Fish and Wildlife, mitigation measures have been slightly modified. These modifications do not result in a substantial change that would require recirculation of the environmental document.

The public comment period for the Notice of Availability of the Initial Study/Mitigated Negative Declaration began on March 2, 2023 and ended on March 31, 2023, (State Clearing House Number 2023020680) which satisfies the required 30-day review period required for this project.

## NOTIFICATION

Consistent with the City Municipal Code provisions, public notice was sent to all property owners of record within 600 feet of the Project Site, posted on the Project Site, and published in the Press Enterprise Newspaper. As of the preparation of this staff report, no public comments have been received regarding the Proposed Project.

REVIEW AGENCY COMMENTS

Staff has coordinated with outside agencies where applicable, as is the standard review process for these development applications.

## STAFF RECOMMENDATION

Staff recommends that the Planning Commission take the following actions:
A. That the Planning Commission ADOPT Resolution No. 2023-22, and thereby RECOMMEND the City Council:

1. ADOPT the Initial Study/Mitigated Negative Declaration prepared for General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Conditional Use Permit for a Planned Unit Development (PEN21-0066), and Tentative Tract Map No. 38459 (PEN22-0127), on file with the Community Development Department, incorporated herein by this reference, which was completed in compliance with CEQA and the CEQA Guidelines, and reflects that the Planning Commission and City reviewed and considered the information contained in the Initial Study/Mitigated Negative Declaration, and exercised its independent judgment and analysis of the Proposed Project's potential environmental impacts; and
2. ADOPT the Mitigation Monitoring and Reporting Program prepared for the Proposed Project, which consists of General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Conditional Use Permit for a Planned Unit Development (PEN21-0066), and Tentative Tract Map No. 38459 (PEN22-0127), pursuant to CEQA and its guidelines.
B. That the Planning Commission ADOPT Resolution No. 2023-23, and thereby RECOMMEND the City Council:
3. APPROVE General Plan Amendment (PEN20-0095) based on the Recitals, Evidence contained in the Administrative Records and Findings as set forth in Resolution No. 2023-23 and any necessary and corresponding amendment to the City's Zoning Atlas to reflect the proposed changes in the zoning classification and/or redistricting associated with the General Plan Amendment.
C. That the Planning Commission ADOPT Resolution No. 2023-24, and thereby RECOMMEND the City Council:
4. APPROVE Change of Zone (PEN20-0096) based on the Recitals, Evidence contained in the Administrative Records and Findings as set forth in Resolution No. 2023-24 and any necessary and corresponding amendment to the City's Zoning Atlas to reflect the proposed changes in the zoning classification and/or redistricting associated with the Change of Zone.
D. That the Planning Commission ADOPT Resolution No. 2023-26, and thereby RECOMMEND the City Council:
5. APPROVE Conditional Use Permit for a Planned Unit Development (PEN21-0066), and Tentative Tract Map No. 38459 (PEN22-0127) based on the Recitals, Evidence contained in the Administrative Records and Findings as set forth in Resolution No. 2023-26.

Prepared by:
Luis Lopez
Contract Planner - Civic Solution

Approved by:
Sean P. Kelleher
Community Development Director

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. Resolution No. 2023-22 - Initial Study
2. Exhibit A to Resolution No 2023-22 - Initial Study
3. Exhibit B to Resolution No 2023-22 - Notice of Intent to Adopt a Mitigated Negative Declaration/Newspaper Notice
4. Exhibit C to Resolution No 2023-22 - Mitigation Monitoring and Reporting Program
5. Appendicies A-G
6. Appendices $\mathrm{H}-\mathrm{L}$
7. Resolution No. 2023-23 - General Plan Amendment
8. Resolution No. 2023-24 - Change of Zone
9. Resolution No. 2023-26 CUP/TTM
10. Gateway Heights PUD - 1 of 3
11. Gateway Heights PUD - 2 of 3
12. Gateway Heights PUD - 3 of 3
13. Project Plans
14. Aerial Map
15. Public Comments

## RESULT: APPROVED [UNANIMOUS]

MOVER: Ray L. Baker, Commissioner
SECONDER: JoAnn Stephan, Commissioner
AYES: JoAnn Stephan, Alvin DeJohnette, Omar Cobian, Ray L. Baker

March 9, 2023

Luis Lopez, Contract Planner
City of Moreno Valley
14177 Frederick Street
PO Box 88005
Moreno Valley, CA 92552

## Subject: EMWD Comments for the Gateway Heights Project Notice of Intent to Adopt a Mitigated Negative Declaration

> Location: East side of Morton Road, approximately 300 feet north of Jennings Court in the City of Moreno Valley, Riverside County, California.

Dear Mr. Luis Lopez:

Eastern Municipal Water District (EMWD) thanks you for the opportunity to comment on the Notice of Intention to Adopt a Mitigated Negative Declaration for the Gateway Heights Project (project). The project proposes the construction of 108 detached townhouse condominium units, organized in 4-unit to 10 -unit "clusters" on a total of 13 development pads. The project would be located on southwesterly 16.59 acres of the 32.56 -acre project site. The 16.59 acres of the project site would be rezoned to Residential 10 District (R10) which allows maximum density of 10 dwelling units per net acre. The project would include a total of 3.1 acres of common open space, including trails and a 0.89 -acre community park area at the center of the development. The remaining 15.97 acres of the project site would be rezoned to Open Space (OS) and dedicated as conservation land.

EMWD offers the following comments:
To define the impact(s) on the environment and on existing EMWD facilities, and as development within this area occurs over time, the proponents of implementing development projects shall consult EMWD's Development Services Department to compare proposed and existing water demands and sewer flows, and prepare a Design Conditions report (DC), formally known as the Plan of Service (POS), to detail all

EMWD Comments
March 9, 2023
Page 2
pertinent facilities necessary to serve such implementing development projects, resulting in an approved DC, prior to final design and plan check of such facilities.

To help define EMWD's Design Conditions, EMWD requires beginning dialogue with project proponents at an early stage in the site design and development, via a one-hour complementary Due Diligence meeting. To set up this meeting the project proponent should complete a Project Questionnaire (form NBD-058) and submit to EMWD. To download this form or for additional information, please visit our web page www.emwd.org, then select the "Developer" link, then select the "New Development Process Forms" link. This meeting will offer the following benefits:

1. Describe EMWD's development process.
2. Identify project scope and parameters.
3. Provide a preliminary review of the project within the context of existing infrastructure.
4. Discuss potential candidacy for recycled water service.
5. Identify project submittal requirements to start the Design Conditions review.

Following the Due Diligence meeting, and to proceed with a project, the Design Conditions will need to be developed by the developer's engineer and reviewed/approved by EMWD prior to submitting improvement plans for Plan Check. The DC process and approval will provide the following:

1. Technical evaluation of the project's demands and existing system capacities.
2. Identification of impacts to existing facilities.
3. Identification of additional on-site and off-site facilities, necessary to serve the project.
4. Identification of easement requirements, if necessary.
5. Identification of potential EMWD's cost participation in facility oversizing, if applicable.

If you have questions or concerns, please do not hesitate to contact Maroun El-Hage at (951) 928-3777, extension 4468 or by e-mail at El-hagem@emwd.org.

Sincerely,

# A Digitally signed by AI Javier Date: 2023.03.09 15:16:04 -08'00' 

Alfred Javier<br>Director of Environmental and Regulatory Compliance

ARJ: hs
Attachments: Copy of Public Notice

From: Mauricio Alvarez [malvarez@riversidetransit.com](mailto:malvarez@riversidetransit.com)
Sent: Tuesday, March 21, 2023 3:03 PM
To: Luis Lopez [luisl@moval.org](mailto:luisl@moval.org)
Subject: PEN20-0095, PEN20-0096, TTM 38459

Warning: External Email - Watch for Email Red Flags!
Hello Luis,

Thank you for including Riverside Transit Agency in the development review of the proposed 108 unit residential project on Morton Rd \& Jennings Ct. After reviewing the plans, there are no comments to submit for this particular project at this time.

Thank you,

Mauricio Alvarez, MBA
Planning Analyst
Riverside Transit Agency
p: 951.565.5260 | e: malvarez@riversidetransit.com
Website | Facebook | Twitter | Instagram
1825 Third Street, Riverside, CA 92507

Dear Mr. Jason Ackerman, attorney/representative for Gateway Heights<br>Moreno Valley 92557, Asaon.ackerman@ackermanlawpc.com<br>Cc: Mr. Ulises Cabrera Mayor pro temp, mayor@moval.org,<br>Mr. Luis Lopez, Contract Planner City of Moreno Valley, luisl@moval.org<br>Mr. Sean P. Kelleher, Planning Division Manager 95 planningemail@moval.org<br>Mr. Edward A Delgado, District \# representative, edd@moval.org<br>RE: Project Development- Morton Road- Moreno Valley, California

I would like to request a copy of your traffic analysis report(s) regarding Gateway Heights, Moreno Valley, California. In addition, any other pertinent information related to the Gateway Heights project in Moreno Valley.

Furthermore, to be transparent I would like a detailed project announcement to be mailed out to all the residents affected by your proposed development. Our neighbors were taken by surprise. Your informational meeting announcement for the Zoom meeting was not publicly broadcast in our area. The timeframe was such short notice. There were many neighbors who never received this informational presentation meeting announcement nor received any notices from the city of Moreno Valley. Moreover, not everyone has the knowledge to use Zoom media for online meetings.
We already have a bottleneck of congested traffic problems on Box Springs Road at the entrance to the 60 freeway. The City of Moreno Valley has not addressed these issues as well as the narrow lanes going up north or down south on Morton Road.
There are already safety hazards due to illegally parked cars on Morton Road \& Box Springs Road. This is because the parking space inside the Tuscany Apartment is limited. How will this affect Seneca Elementary school? Especially in full peak sessions during pick up and dropping off their kids. Was this factor taken into consideration in your traffic report analysis?
At the meeting, you mentioned the zoning change from ( $\mathrm{R} 2, \mathrm{R} 5$ ) to R10. I believe this will dramatically have a negative economic impact on our property value. How was the rezoning determined? Was that a unilateral decision without the resident's knowledge or objection? We were not notified in a timely manner. In fact, I just barely knew about this zoom meeting from a neighbor. Our neighbors are concerned regarding this high density 108 townhouses development. Furthermore, it is NOT congruent to our custom, semi-custom homes in our area $1 / 2$ acres+. We already have enough problems with homelessness and thefts in our area.

What about the overflow of cars who are unable to park at this new proposed 108 Townhouse units? How will that be addressed? Are they going to park on our streets and move it out on street sweep days?

I mentioned in our Zoom discussion, I have lived here more than 27 plus years. I have not seen any metering devices for traffic activities at Box Springs Road and Morton Road nor at the traffic entrance leading to the entrance of the 60 Freeway. Furthermore, no metering devices at the other 60 freeway entrance/exit on Day Street. All of these are very important concerns. We mentioned, if there was a fire evacuation or emergencies to those of us that live here. Are there contingency plans in place? Was this taken into consideration in your report analysis?
Please provide us with this information that will be helpful and beneficial to all of us who live here in District \#2.I want everyone to know who will be affected by your Rezoning proposal and the traffic congestions that it will cause. I am hoping we can find a happy solution so that everyone will agree.
I am copying the Moreno Valley City Planner and the mayor's office on this email hoping for fair and balanced data that can address our concerns.
I am attaching our public objection to all that will be affected by this General Plan Amendment- Change of Zoning and the Morton Project Development. Signature is to follow. I look forward to hearing from every one of you and from the city planner very soon.
Sincerely, Andy Gildore, US Marine, Veteran, Business Owner

## Notice of Public Objection to General Plan Amendment (PEN20-0095), Change of Zone (PEN20-0096), Conditional Use Permit for a Planned Unit Development (PEN21-0066), and Tentative Tract Map No. 38459 (PEN22-0127)

The HengHou Group, owned by Shizao Zheng, has made application to the City of Moreno Valley to construct a 108 unit development of townhouses in the most Northwestern corner of the City, North of Jennings Court, and East of Morton Road, within District Two of Moreno Valley.

The City has invited Public Comment, which is due March 31, 2023.
For the following reasons, the undersigned residents of the Second District of Moreno Valley object to this proposal.

1) The Proposal requires and establishes a precedent for Radical Changes in Residential Density The Plan Amendment (PEN20-0095) inflicts upon our neighborhood a radical change of zone from R2-R5 Residential to R10 Residential, which is detrimental to the safe and quiet nature of our community, as well as our suburban property values. We have purchased and, at some cost, improved our single family homes in an R2-R5 zone. This significant shift to R10 zoning, with no regard to the needs of the already established community, constitutes a social and economic burden. Our community already experiences adverse effects of housing density: the apartment complex at Morton and Box Springs has brought scofflaws who dangerously park along Morton, blocking half the outgoing lane.

## 2) Traffic Congestion

The Traffic Study completed for this project is a document buried in an online file of 1197 pages. See Figures 13 and 14 on pages 996 and 998 respectively. These figures contrast current traffic volume (without the project) with anticipated traffic volume (with the project). For example, at the corner of Morton and Box Springs, during morning rush hour, there are currently 83 cars turning right onto Box Springs, headed toward the freeway. With this project, there will be 125 cars turning right. In the evening rush hour, turning left onto Morton from Box Springs, we currently see 88 cars. With this project, we are going to see 135 . To summarize, we will face about $50 \%$ more traffic at Morton and Box Springs.


From: Steve Anderson
Sent: Tuesday, March 28, 2023 5:20 PM
To: Luis Lopez
Subject: General Plan Amendment (PEN20-0095)

Warning: External Email - Watch for Email Red Flags!
Hello -
In response to the City of Moreno Valley's request for public comments regarding the proposed development at the top of Morton Road...

While I am not outright opposed to this development, I do have SEVERAL concerns.

- From the side of Penunuri Place on which we reside, up into the foothills, and around Morton Road into unincorporated Riverside - all homes are detached single family, custom built, on $1 / 2$ acre or larger lots. So, the development of high density multi-family housing on MUCH smaller individual parcels seems a bit out of place.
- The neighborhood is also considered a "brush zone" by insurance companies, and homeowners insurance carriers are few and far between. Potential buyers of any such home should be made aware of such limitations. I don't want to THINK how expensive homeowners insurance will be for residents of this proposed multi-family housing development - what with it being RIGHT at the bottom of a mountain that has not burned in more than forty years. That alone could be cost prohibitive for many.
- I do not see anywhere in the vast volume of public documents plans to make any improvements to Morton Road. Sadly, the City of Moreno Valley largely ignores those living in the FAR corner of the city, often treating us as an "ugly redheaded stepchild" worthy of very little service or support. As a result, Morton Road is in VERY poor condition. Adding 1,000 vehicle trips per day, a near FIVE FOLD INCREASE over current traffic volume, is only going to worsen its condition. The City might just as well remove the asphalt and make Morton Road a dirt road. It surely couldn't be much worse.
- A large percentage of residents living farther down Morton Road, off of Wordsworth and Pala Foxia, appear to have NO IDEA our neighborhood exists. This is evidenced by the number of vehicles which FLY right off of these feeder streets onto Morton Road without so much as slowing down - let alone stopping. In the nine years we have called Penunuri Place our home - just my family alone has had HUNDREDS of near misses with vehicles FLYING off of said feeder roads. Approval of this project with no additional traffic controls, such as a stop sign at the
lower outlet of Wordsworth, is a recipe for disaster - and WILL eventually lead to somebody being killed.
- Closely aligned to the previous concern, in the event of a mandatory mass evacuation due to fire or other disaster, I am GRAVELY concerned about the capacity of Morton Road and those to which it connects. Weekday morning traffic on Box Springs Road ROUTINELY backs up to very near Clark Street due to inadequate traffic planning by the City of Moreno Valley, the County of Riverside, and the State of California. It routinely takes me EIGHTEEN MINUTES just to reach the freeway from my home. So, I am ALREADY concerned about road capacity - and now the City is proposing to add EVEN MORE vehicle traffic. In the event of said mass evacuation - people will almost certainly die as a result.
- Some of the above concern is, of course, due to the VERY unwise decision several years ago by the County of Riverside, State of California, and whichever railroad owns the nearby tracks to close the Gernert / Poarch crossing in unincorporated Riverside we residents USED to use regularly by continuing on Morton Road up into the foothills. That cut off a MAJOR point of evacuation. I know this decision had little/nothing to do with the City of Moreno Valley - but NOW it's beginning to come back and bite those who were responsible as the City and County both explore developments in this general vicinity.
- Closely aligned to the three previous bullet points is the City of Moreno Valley's shortsighted, punt heavy decision several years ago to make its side of Morton Road alongside the Tuscany Hills Apartments a No Parking Zone. This pushed the dozens of vehicles which daily parked on the City's side of Morton Road onto the unincorporated side of Morton Road. This, of course, eliminated the City's responsibility for traffic and/or crime enforcement related to the presence of said vehicles parked on ITS side of the road. An unfortunate byproduct of this, though, is that residents of said apartments ROUTINELY park WAY up Morton Road, beyond where it reduces to a single lane in each direction - utterly obstructing/blocking the flow of traffic in the process. Now the City wants to add EVEN MORE vehicles having to navigate a daily obstacle course - all because it was too lazy to deal with the parking related issues on its side of Morton Road? As you might have guessed, the City's decision on this matter is a VERY sore spot for me.
- I am also VERY concerned about what is already the utter lack of law enforcement in our neighborhood. Filed under the same "ugly redheaded stepchild" category - there is open drug dealing and prostitution currently taking place nightly at the cul-de-sac end of Jennings Court. Despite sharing my concerns with Moreno Valley Police multiple times - they wholesale refuse to acknowledge its existence,
let alone investigate or do something to make it stop. We're already on "ignore" up here, and adding 108 multi-family housing units nearby would appear only to further exasperate such problems - although it DOES give even more residents for the City to wholesale ignore, while happily collecting their taxpayer dollars.

This is at least a start to my concerns. I may have a few more to share prior to the deadline now that I've cleared the above from my mind.
iGg,


Steve Anderson
21150 Penunuri Place
Moreno Valley, CA 92557
951.217.1885
starzajo@att.net

From: Sandra Walsh [jaswalsh@hotmail.com](mailto:jaswalsh@hotmail.com)
Sent: Friday, March 31, 2023 10:36 PM
To: Planning Email_DG [planningemail@moval.org](mailto:planningemail@moval.org)
Cc: mortonroaddevelopmentmv@gmail.com
Subject: Public Objection

Warning: External Email - Watch for Email Red Flags!
THIS WILL SERVE AS NOTICE IN SUPPORT OF PUBLIC OBJECTION TO GENERAL PLAN AMENDMENT (PEN20-0095), CHANGE OF ZONE (PEN20-0096), CONDITIONAL USE PERMIT FOR A PLANNED UNIT DEVELOPMENT (PEN21-00660, AND TENTATIVE TRACT MAP NO. 38459 (PEN22-0127). COPY OF PUBLIC OBJECTION ATTACHED.

FIRST AND FOREMOST, neither the Henghou Group nor Shizao Zheng has served proper notice as required of the application or their intent. The application should be denied on the basis alone -- that notice was not formally given to all residents and property owners within the required notification radius.

SECOND, the Box Springs/Ironwood road infrastructure is not designed for the traffic that already impedes our community from freely coming and going from our neighborhood. Moreover, our neighborhood is not regularly policed. Motorhomes, trailers and vehicles are illegally parked on Morton; drivers race down the streets with no regard for the posted speed limit or the pedestrians, children or adults, let alone stop at the posted Stop signs.

THIRD, where will the additional children attend school? Not at our neighborhood elementary school which is already overcrowded Not at our local school because already there is not enough parking for the employees that work at that school and as such, we have illegally parked educators and guardians throughout the school day and during every school event.

Our community would be better served turning the mountainous area into a nature park that supports the wildlife that currently inhabits the area and that includes, but is not limited to donkeys, bobcats, coyotes, racoons, hawks, owls, bats, etc. Improvements such as walking, biking and horse trails would discourage vagrant and "homeless" migration, while increasing the value of our neighborhood.

This community has a voice and we do not want more rentals, more crime, more congestion!

Sandra Walsh
Larry Walsh
21121 Tennyson Road
Moreno Valley, CA 92557
(951) 683-4060

Dr. Doug Michie
1056 E Meta St Ste 103
Ventura, CA 93001-0001

4/23/2023

Chairman DeJohnette
And Planning Commissioners
Planning Commission
City of Moreno Valley
14177 Fredrick Street
Moreno Valley, CA 92553
Re: Project: Gateway Heights
Hearing Date: 5/11/2023
Dear Planning Commissioners,
This letter follows a recent community outreach presentation by the developer of the Gateway Heights project. I own a lot on Penunuri Avenue neighboring this proposed project. I am writing to voice my support for the project as it will be a good addition to the neighborhood.

This area of Moreno Valley needs more multi-family housing. The cost to maintain infrastructure for traditional large lot single family homes is unsustainable, and it is to the City's interest to provide more density, so costs can be spread over a larger tax base in a more limited geographical area.

More importantly, the need for housing in California is so great that multi-family projects such as this one are needed to fulfill that unmet housing demand. Additionally, it is a good fit for the adjoining Gateway Specific Plan area. And finally, the dedication of 17 acres of open space will be a real asset to the open space and recreational needs of the city.

Again, I support this project and I hope that it can be approved with conditions that are financially reachable for the applicant.

Sincerely,

Douglas C. Michie
Doug Michie
PhD Urban Planning
from email: dougmichie@gmail.com
via email to: luisl@moval.org seanke@moval.org.

June 1, 2023
City of Moreno Valley Community Development
14177 Frederick Street Moreno Valley, California 92553
Attn: Catherine Lin , Principal Planner (951) 413-3229
email : catherinel@moval.org
Project Title: Gateway Heights Project
Project Case Number(s): PEN 21-0066
To: Catherine Lin
We never received any notification from the City of Moreno Valley Community Development Department in the mail regarding the proposed Gateway Heights Project and have been unaware of the project until the placement of a sign on the property last Friday May 25, 2023. This project has a direct impact on the existing residents and we were unaware of the recent public comment period and where denied the opportunity to hear, and or provide comments relating to the proposed project. We have lived here for 40 years and are directly impacted from the project and needed to be included in the process.

After reviewing the proposed Gateway Heights Project, Project Case No.PEN 21-0066 and Change of Zoning we would like to state that we are in strong opposition to these changes given the potential aesthetic, visual, air quality, wildlife, and land use compatibility impacts on the existing residents and the West Box Springs Homeowners Association which was part of the planning process with The County of Riverside and the Gateway Center Project approved by the County of Riverside.

The introduction of a multifamily residential housing product type at the urbanized edge of the City's residential neighborhoods that currently abuts a hillside / open space area, represents an incompatibility issue. This project proposes a multifamily residential project adjacent to the rural / open space edge and away from the city core or area of intensity does not provide an appropriate transition to the area.

As stated the entire project as presented is not a comprehensive land use compatible to the area and is in conflict with the low densities reflected by the University Community Plan and the existing sparse rural residents and because it lies within the City of Riverside's sphere of influence, it should also conform to Riverside's Proposition R and Measure C land use ordinances.

Additionally by changing the land use zoning from Residential 2 (R2) and Hillside Residential (HR) 10. and significantly increasing the residential densities it will diminish the home values of the existing residents on the adjacent parcels within the original Gateway Center Specific Plan located in the County of Riverside on the west side of Morton and to the north. The Gateway Center Specific Plan (GCSP) which has only 2 high density areas located directly near the far outer edges closer to the SR-60 Freeway/ Railroad rights-of-way of the 317 acre development close to the freeway which was to
reduce the traffic through the rural/open areas to help preserve the aesthetic, visual, air quality, wildlife and rural area.
"All residential lots along the northerly and easterly perimeters of Planning Area Nos. 16 and 17 shall contain a minimum of 8,000 square feet not including land beyond the limits of grading area. Any residence constructed on these lots shall contain a minimum of 2,600 square feet of living area." (Amended by Staff at P.C. on 10/23/91) GCSP

Traffic congestion and contaminant air pollution will be dramatically impacted by the increase of dwelling units from the current single unit home zoning at 5 per acre to multi unit apartment/condominium of 108 units. New commuter traffic will add over a thousand daily vehicle trips to an already overburdened surface street and freeway transportation system. Increase traffic adjacent to Seneca Elementary School and generating more population and noise. There is only one road Morton for access to our properties due to the closure at Gernert and Watkins for the Metro Line and increased traffic would present a safety issue during any emergency.

The entire Project site is identified as occurring in a hazardous fire area which should require further enhancement of fire hydrants located on Morton Road and at the entrance to aid the Riverside County Fire Protection Master Plan in order to achieve an a better urban level of service. Mitigation measures need to be implemented to provide for better public safety.

The proposed Gateway Center Project has the potential to deplete groundwater supplies by interfering substantially with groundwater recharge by "the change in pervious surfaces to impervious surfaces that would occur with development of the site will reduce the amount of water reaching underground aquifers." Thus lowering the local groundwater table level and affecting the existing residents and the production rate of their pre-existing nearby wells.

Gateway Center Specific Plan No. 250 approved and adopted July 14, 1992 contained conditions of approval to help mitigate some of these impacts and other concerns of the residents directly impacted by development.

We are in strong opposition to the proposed changes for the Gateway Heights Project, Project Case No.PEN 21-0066 and any change of zoning. The project should have single family housing to alien with the planning area 16 and 17 on the Gateway Center Plan.

Thank you for the opportunity to comment on this matter. If you have any questions please contact me.
Sincerely,
Robin and Alan Ablott
10870 Pettegrew Road
Riverside, CA 92507
(951) 788-6764

The areas in dark orange/red are The Gateway Center higher density housing and the Gateway Heights project of a proposed townhouse condominium development is inconsistent with the planning areas 16 \& 17 of the Gateway Center plans and the rural area.


## Sean P. Kelleher

| From: | ftcinc123@outlook.com [luis@finaltouchconstruction.net](mailto:luis@finaltouchconstruction.net) |
| :--- | :--- |
| Sent: | Saturday, July 29, 2023 9:37 AM |
| To: | Sandra Walsh; Andy Gildore |
| Cc: | Sean P. Kelleher; mortonroaddevelopmentmv@gmail.com; jason.ackerman@ackermanlawpc.com; |
|  | Moreno Valley Mayor; luisl@moval.org; Planning Email_DG; Edward A. Delgado; Mike Lee; Michael |
|  | Lloyd, P.E.; Brian Mohan; Melissa Walker, P.E.; Sean P. Kelleher; Jane Halstead; mmichaell@moval.org; |
|  | Don Avery; Planning Notices_DG; Roberta Hawkins; joeangelocarter@aol.com; |
|  | stanzahrt@sbcglobal.net; penoon@icloud.com; dantyrrel@sbcglobal.net; Illjian@hotmail.com; Elena |
|  | Baca-Santa Cruz; David Martinez; Cheylynda Barnard |
|  | RE: Moreno Valley Morton Road repavement \& communication failure |

## Warning: External Email - Watch for Email Red Flags!

Good Morning all,
I'm very involved with the city of Fontana where my business is located. I recently attended a city meeting where a similar situation was taking place here. The project did NOT pass because of all the backlash from the community. Over 200 hundred signatures and roughly $20-25$ community members spoke against the project every time it was up for conversation. I share this with you so that maybe it can re-spark some interest with this matter. I plan to attend the meeting to share my thoughts regarding this project and speak against it.

Sent from Mail for Windows

From: Sandra Walsh
Sent: Sunday, June 11, 2023 1:00 PM
To: Andy Gildore
Cc: Sean P. Kelleher; mortonroaddevelopmentmv@gmail.com; jason.ackerman@ackermanlawpc.com; mayor@moval.org; luisl@moval.org; planningemail@moval.org; edd@moval.org; Mike Lee; P.E.; Brian Mohan; P.E.; Manuel A. Mancha; Jane Halstead; mmichaell@moval.org; luis echeverria; Don Avery; planningnotices@moval.org; Roberta Hawkins; joeangelocarter@aol.com; stanzahrt@sbcglobal.net; penoon@icloud.com; dantyrrel@sbcglobal.net; Illjian@hotmail.com; elenab@moval.org; davidm@moval.org; cheylyndab@moval.org
Subject: Re: Moreno Valley Morton Road repavement \& communication failure
Afternoon,
My husband and I live within the required written notice radius and never received anything by mail.
In addition to Andy Gildore's seven (7) issues outlined below and which we still are awaiting answers, we add an eighth (8):
8. There is a significant environmental impact to also be considered before approving this project: What is planned for re-homing the burros, bobcats, rabbits, owls, etc.?

My husband is from rural Montana and the nature that surrounds us was a huge draw when we decided to purchase our home in this neighborhood. We do not want more concrete and congestion.

Sincerely,
Sandra and Larry Walsh

On Jun 8, 2023, at 4:56 AM, Andy Gildore [gildore@gmail.com](mailto:gildore@gmail.com) wrote:

Subject: Urgent Concerns Regarding the Gateway Heights Rezoning Proposal
Dear Mr. Sean Kelleher, Protemp/Mayor, District\#2 Rep Mr Delgado and Concerned Neighbors, I hope this email finds you well. I am writing to bring some urgent concerns to your attention regarding the Gateway Heights proposal for rezoning from R2 Residential to R10 Residential. Unfortunately, despite my previous attempts, I have not received a confirmation for inclusion on the Moreno Valley City email listserv for events related to this proposal. This is my third request, and I would appreciate your assistance in rectifying this issue.
Furthermore, I have discovered that only two streets in the vicinity of the proposed site received a Public Hearing Notice for June 8, 2023, 6 p.m. by U.S. mail, while the remaining residents were solely informed through a posted sign at the property. This lack of consistent notification has left many of us feeling taken aback and excluded from the decision-making process.
Regrettably, I must express my disappointment with the City of Moreno Valley's communication practices, not only towards its citizens but also in regard to responsiveness. Myself and other concerned neighbors have reached out to the contract planner and Moreno Valley City Officials via email, but we have yet to receive any form of acknowledgment or response. This absence of transparency, trust, and integrity in ensuring equal access and open communication is disheartening.
To provide clarity, let me outline the concerns of our community regarding the proposed rezoning:

1. Preservation of the R2 zoning: We strongly believe that maintaining the R2 zoning is essential to preserving the character of our neighborhood. The proposed R10 rezoning would introduce high-density townhome units that are not in harmony with our existing semi-custom to custom homes.
2. Parking concerns: We seek clarification on how the overflow of cars from the proposed townhomes will be accommodated. If a family has more than two cars, where will the additional vehicles be parked? We also question the monitoring and enforcement of any regulations in place and the potential consequences for non-compliance.
3. Community Park management: It is imperative to address the concerns surrounding the proposed Community Park. Specifically, we need reassurance that measures will be in place to prevent issues such as homelessness, loitering, encampments, and the accumulation of trash within the park area.
4. Emergency preparedness: Given the potential risks to our health and safety, we need to understand the evacuation plans in case of emergencies such as road closures or fires. It is crucial that adequate measures are in place to protect lives and properties in the event of an unfortunate incident.
5. Traffic impact mitigation: The absence of an unbiased traffic study report raises concerns regarding the proposed development's impact on our already congested Morton Road. Considering the 108 units, each with a 2-car garage, we estimate a significant increase of 216 to 324 cars on Morton Road alone. We urge the City of Moreno Valley to address this issue and provide a comprehensive plan to alleviate the potential traffic problems.
6. Property value compensation: We kindly request clarification on whether the City of Moreno Valley will provide compensation for any potential depreciation in property values resulting from the rezoning and the construction of the proposed townhomes.
We believe that the proposed rezoning from R2 to R10 will exacerbate the aforementioned concerns and negatively impact our community. Therefore, we urgently request your attention to these matters and seek your support in addressing and rectifying these issues.
Thank you for your time and consideration. We look forward to your prompt response, as our community's well-being and quality of life are at stake.

Sincerely,<br>Andy Gildore<br>Business Owner<br>U.S. Marine Corps Veteran

On Mon, May 1, 2023 at 7:27 AM Andy Gildore [gildore@gmail.com](mailto:gildore@gmail.com) wrote:
Dear Mr. Sean Kellher,
How are you doing? I hope all is well with you. On the early morning of Thursday, April $27^{\text {th }}, 2023$. All of our neighbors were taken by surprise because the entire Morton Road was closed. The entire Morton Road was being repaved from Box Springs Road to Jennings Court. Thank you very much, it was long overdue.
However, this is a formal complaint I want registered to the City of Moreno Valley and to the person in-charge of this project. We were not only late for work and important appointments. Our time/fuel wasted driving around without any detour signs posted in advance especially to all of us who live and use this road.
I believe the City of Moreno Valley has the obligation and responsibility to notify residents in writing prior to starting this project. In addition, we kept driving from one closed street to another without any directional signs. We were trapped in heavy traffic. I did talk to one of the street workers who mentioned- "All American Asphalt and Western Asphalt" were hired by the City of Moreno Valley. I made a remark to the worker that there were no detour signs nor advance notification posted. There should have been signs all around. The closure start/stop dates and alternate routes. So that we are aware of the appropriate day or two before this repaving project starts. Our only exit out of the area was Clark Street to Box Springs Road/Ironwood Ave. Later that morning the signs and safety cones were placed with detours posted with arrows. Too little too late.
Mr . Kellher, this is unacceptable a total communication breakdown under the watch of Moreno Valley City. There is a serious communication failure. We are taxpayers that fund the city personnel (their salary) who are public servants. This is a total disregard of our health, safety and well-being. Is it because they don't live here because of lack of care or it's a disorganized system? Do you think if dignitaries live here --- yourself or colleagues, would this happen here? It is so upsetting for this to have happened. Please forward this email to the officer in-charge of this project.
By the way, in my previous email you mentioned that my email will be registered on alert notification regarding Gateway Heights projects or any projects related to Morton Road or activity development alerts. I never received any city confirmation email of such listserv or bulletins. Please subscribe to me on this mailing list. In today's communication technology, there are vast ways of Media resources to broadcast information. We should have been notified. I have served my military time honorably for our country. "First to go, last to know" I expect some common-sense open transparent communication by those individuals in charge in the chain of command. Thank you!
Furthermore, by this event it is a perfect example NOT to rezone (R2-R5 to R10) or building the Gateway Heights project of 108 Townhouses. The traffic congestion is not conducive to our environment, quality of life and above all our property value.
If there was a fire or any evacuation emergencies we will be trapped because this is the only main road to get out because the dirt road is also closed off. Clark Street is our only other way out. Morton Road is a single lane going up and one lane going down by Seneca Elementary School. There will also have a negative impact on the elementary school to their kid's learning environment.
This is a formal notice I want registered that we will hold the City of Moreno Valley liable and responsible. In the future development of this area, it is unconscionable to build high density homes without ingress/egress accessibility, safety, and proper traffic flow. We already have traffic congestion. Thank you for your kind understanding and appreciate your cooperation.
Sincerely,
Andy Gildore
U.S. Marine Veteran \& Business Owner

## Sean P. Kelleher

| From: | Frank Almeida [frnkalmeida@gmail.com](mailto:frnkalmeida@gmail.com) |
| :--- | :--- |
| Sent: | Tuesday, August 29, 2023 6:41 PM |
| To: | Moreno Valley Mayor; Edward A. Delgado; Elena Baca-Santa Cruz; David Martinez; Cheylynda |
|  | Barnard |
| Cc: | Sean P. Kelleher; Catherine Lin; Jason.ackerman@ackermanlawpc.com |
| Subject: | Gateway Heights Project - Letter of Support - Sept. 5, 2023 City Council Meeting |

## Preview attachment FW: Thank you for your time today.eml

FW: Thank you for your time today.eml

## 172 KB

Dear Mayor Cabrera and City Councilmembers:

My name is Frank Almeida and I live at 21012 Pala Foxia Place in Moreno Valley. On June 8, 2023, I attended the Moreno Valley Planning Commission meeting and expressed my opposition to the Gateway Heights project. Based on my conversations with the Gateway Heights project representative, Jason Ackerman, and City Staff, I am sending you this email in support of the project.

Jason gave me his contact information at the Planning Commission meeting and we connected a couple of days later. We talked about the project's traffic impact analysis, the existing roadway conditions and illegal parking on Morton Road, and issues related to homelessness and illegal dumping. Jason introduced me to Sean Kelleher and Catherine Lin via email and I shared additional concerns about illegal off-roading and illegal parking in our residential tract. (See attached email). Sean forwarded my concerns to various departments within the City and we are continuing to work together on these issues.

Based on my conversations with Jason and the City Staff, my opinion about the Gateway Heights project has changed. I believe the Gateway Heights project is a well-planned project that will not make any of the existing traffic problems worse. Also, the project will improve the area by offering new homes, completing flood control improvements, and contributing land to the Box Springs Canyon Preserve. Therefore, I am sending you this email in support of the Gateway Height project.

Sincerely,

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F.1.p
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Frank Almeida

November 13, 2023
Mr. Jason Ackerman
Ackerman Law PC
(via email)
Subject: Gateway Heights Moreno Valley - Parking Study
Dear Jason:
Translutions, Inc. (Translutions) is pleased to provide this parking study report summarizing the parking demand and supply for the proposed Gateway Heights residential project in the City of Moreno Valley. This analysis has been conducted based on the Off-Site Parking Standards from the City of Moreno Valley Municipal Code as well as the Institute of Transportation Engineers' (ITE) Parking Generation, $5^{\text {th }}$ Edition.

## PROJECT DESCRIPTION

The proposed project site is located on the eastside of Morton Road and north of Jennings Court and proposes the construction of 108 detached condos. Access to the project will be provided by one full-access driveway on Morton Road. The proposed project provides 283 parking spaces.

## PARKING REQUIREMENT PER CITY CODE

Moreno Valley Municipal Code. Chapter 9.11 Parking, Pedestrian and Loading Requirements, Section 9.11.040 Offstreet parking requirements provides the number of off-site parking requirements for the City. Table 9.11.040A-12 (relevant uses summarized below) shows the number of parking spaces required for relevant uses:

Table 9.11.040A-12 Off-Street Parking Requirements

| Residential Uses | Requirement | Covered Parking | Notes |
| :--- | :---: | :---: | :--- |
| Single-family | $2 /$ unit | Within an enclosed garage |  |
| Duplex | $2 /$ unit | Within an enclosed garage |  |
| 3 or more units: |  |  |  |
| Studio | $1.25 /$ unit | 1 covered/unit | Guest parking is required for all units at 0.25 |
| 1 bedroom | $1.5 /$ unit | 1 covered/unit | spaces/unit. Guest parking is included in the |
| 2 bedrooms | $2.0 /$ unit | 1 covered/unit | minimum required parking standard. |
| $3+$ bedrooms | $2.5 /$ unit | 2 covered/unit |  |

## PARKING ANALYSIS PER CITY CODE

This analysis evaluates the following scenarios:

1. Using rates for Single Family/Duplex Units
2. Using rates for 3 or more units for the following scenarios:
a. $50 \%$ 2-bedroom \& $50 \% 3+$ bedroom units
b. $100 \% 3+$ bedroom units

Single Family/Duplex Units. The City Code requirements listed in Table 9.11.040A-12 Off-Street Parking Requirements requires two (2) spaces per dwelling unit. Since the project proposes 108 units, the parking requirement would be 216 spaces. The proposed project provides 283 parking spaces, which is $31 \%$ higher than what is required by City Code.

Multiple Unit Development ( 3 or More Units). For projects that propose more than 3 units, the City Code requires parking based on number of bedrooms. This evaluation is based on the requirements listed in Table 9.11.040A-12 Off-Street Parking Requirements. This scenario evaluates one scenario where half the units ( 54 units) are 2-bedroom units, and the remainder are 3+ bedroom units.
$\mathbf{5 0 \%}$ 2-Bedroom \& 50\% 3+ Bedroom Units. Table A shows the number of spaces required under this scenario. As seen in Table A, the City Code requires 243 parking spaces. The proposed project provides 283 parking spaces, which is approximately $16 \%$ higher than what is required by City Code.

Table A: Parking Requirements for 50\% 2-Bedroom \& 50\% 3+ Bedrooms (City Code)

| Unit Type | \# of Units | Rate | Required Parking |
| :--- | :---: | :---: | :---: |
| Studio | 0 | $1.25 /$ unit | 0 |
| 1 bedroom | 0 | $1.5 /$ unit | 0 |
| 2 bedrooms | 54 | $2.0 /$ unit | 108 |
| 3+ bedrooms | 54 | $2.5 /$ unit | 135 |
| Total Units | 108 |  | $\mathbf{2 4 3}$ |

$100 \% 3+$ Bedroom Units. This scenario was evaluated to identify how many spaces would be required if all units were constructed with more than 3 bedrooms. Table B shows the number of spaces required under this scenario. As seen in Table B, the City Code requires 270 parking spaces. The proposed project provides 283 parking spaces, which is approximately $5 \%$ higher than what is required by City Code.

Table B: Parking Requirements for 100\% 3+ Bedrooms (City Code)

| Unit Type | \# of Units | Rate | Required Parking |
| :--- | :---: | :---: | :---: |
| Studio | 0 | 1.25/unit | 0 |
| 1 bedroom | 0 | $1.5 /$ unit | 0 |
| 2 bedrooms | 0 | $2.0 /$ unit | 0 |
| 3+ bedrooms | 108 | $2.5 /$ unit | 270 |
| Total Units | 108 |  | $\mathbf{2 7 0}$ |

## PARKING REQUIREMENT PER ITE PARKING GENERATION, 5 TH EDITION

The ITE Parking Generation, $5^{\text {th }}$ Edition is based on actual surveys and provides different rates based on observations during weekday and weekends. The data is segregated based on Dense Multi-Use Urban areas and General Urban/Suburban areas. The data is further divided based on whether the observed site is within $1 / 2$ mile of transit or not. This analysis is based on data for General Urban/Suburban "Not within $1 / 2$ mile of transit). Further, the ITE does not provide data for Single Family Residential uses and similar to the analysis based on City Code, the evaluation is based on rates for Low-Rise Multi-Family Residential development. Table C shows the parking demand for weekday and weekend days. As seen in Table C, the peak demand occurs on Sunday with a demand of 220 parking spaces. The proposed project provides 283 parking spaces, which is approximately $29 \%$ higher than the forecast demand.

Table C: Peak Parking Demand Based on ITE

| Land Use | Units ${ }^{1}$ | ITE Vehicle Parking Generation Rates |  |  |  |  |  | Project Parking Demand |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Average Rate |  |  | 85th Percentile Rate |  |  | Average Rate |  |  | 85th Percentile Rate |  |  |
|  |  | Week. | Sat. | Sun. | Week. | Sat. | Sun. ${ }^{2}$ | Week. | Sat. | Sun. | Week. | Sat. | Sun. |
| Multi-Family Housing Low Rise Not Close to Transit | 108 DU | 1.21 | 1.31 | 1.66 | 1.52 | 1.61 | 2.04 | 131 | 141 | 179 | 164 | 174 | 220 |
| Total Parking Provided |  |  |  |  |  |  |  | 283 | 283 | 283 | 283 | 283 | 283 |
| Total Parking Required |  |  |  |  |  |  |  | 131 | 141 | 179 | 164 | 174 | 220 |
| Parking Surplus (+)/Parking Deficit (-) |  |  |  |  |  |  |  | 152 | 142 | 104 | 119 | 109 | 63 |

## Notes:

- Based on Land Use 220-"Muttifamily Housing (Low-Rise) General Urban/Suburban No Nearby Rail Transit" from Institute of Transportation Engineers (ITE) Parking Generation (5th Ed.)
2 85th Percentile Rate for Sunday not available. Calculated by applying ratio of 85 th percentile \& average rate for Salurday applied to average Sunday rate.


## CONCLUSION

Based on the above analysis, it is our professional opinion that the proposed project provides more parking spaces than required either by City Code or those based on observations by the ITE Parking Generation, $5^{\text {th }}$ Edition.

If you have any questions, please do not hesitate to contact us at (949) 656-3131.
Sincerely,

## translutions, inc.



## Applicant Volunteered Conditions of Approval

1: The projects Covenants, Codes and Restrictions (CC\&R's) shall include a restriction that prohibits residents from using attached garages for storage and requires residents to use their garages for offstreet parking. Said statement shall be consistent with the following language: "No resident may convert or use any garage for purposes other than parking of the number of vehicles such garage was designed to contain and storage of reasonable amounts of household goods that do not interfere with the ability to park the number of vehicles such garage was designed to accommodate or create a fire or safety hazard."

2: The projects Covenants, Codes and Restrictions (CC\&R's) shall include a parking permit policy, requiring all residents to register their vehicles with the HOA in order to prohibit residents from utilizing designated guest parking spaces.

3: The Applicant shall provide a minimum of twenty-seven (27) guest parking spaces, clearly identified with signage. The final location of said spaces shall be reviewed and approved by the Planning Official.

## Community Development Department <br> Planning Division

## MEMORANDUM

To: Honorable Mayor Cabrera and Members of the City Council
From: Sean Kelleher, Community Development Director
Date: December 05, 2023
Subject: Public Hearing Item \# F. 1 (General Plan Amendment (PEN20-0095) Change of Zone (PEN20-0096) CUP (PEN21-0066) Tentative Tract Map (PEN22-0127)

After the publication of the agenda, City staff received the attached Public Comment.

# RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT 

December 5, 2023

City of Moreno Valley<br>Community Development Department Planning Division<br>Post Office Box 88005<br>Moreno Valley, CA 92552-0805

Attention: Kirt Coury Re: PEN 20-0095, PEN 20-0096, PEN 21-0066, PEN 22-0127, APN 256-150-001

The Riverside County Flood Control and Water Conservation District (District) does not normally recommend conditions for land divisions or other land use cases in incorporated cities. The District also does not plan check City land use cases or provide State Division of Real Estate letters or other flood hazard reports for such cases. District comments/recommendations for such cases are normally limited to items of specific interest to the District including District Master Drainage Plan facilities, other regional flood control and drainage facilities which could be considered a logical component or extension of a master plan system, and District Area Drainage Plan fees (development mitigation fees). In addition, information of a general nature is provided.

The District's review is based on the above-referenced project transmittal, received November 27, 2023. The District has not reviewed the proposed project in detail, and the following comments do not in any way constitute or imply District approval or endorsement of the proposed project with respect to flood hazard, public health and safety, or any other such issue:

This project would not be impacted by District Master Drainage Plan facilities, nor are other facilities of regional interest proposed.

This project involves District proposed Master Drainage Plan facilities, namely, $\qquad$ . The District will accept ownership of such facilities on written request by the City. The Project Applicant shall enter into a cooperative agreement establishing the terms and conditions of inspection, operation, and maintenance with the District and any other maintenance partners. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required. All regulatory permits (and all documents pertaining thereto, e.g., Habitat Mitigation and Monitoring Plans, Conservation Plans/Easements) that are to be secured by the Applicant for both facility construction and maintenance shall be submitted to the District for review. The regulatory permits' terms and conditions shall be approved by the District prior to improvement plan approval, map recordation, or finalization of the regulatory permits. There shall be no unreasonable constraint upon the District's ability to operate and maintain the flood control facility(ies) to protect public health and safety.
$\boxtimes \quad$ If this project proposes channels, storm drains larger than 36 inches in diameter, or other facilities that could be considered regional in nature and/or a logical extension a District's facility, the District would consider accepting ownership of such facilities on written request by the City. The Project Applicant shall enter into a cooperative agreement establishing the terms and conditions of inspection, operation, and maintenance with the District and any other maintenance partners. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required. The regulatory permits' terms and conditions shall be approved by the District prior to improvement plan approval, map recordation, or finalization of the regulatory permits. There shall be no unreasonable constraint upon the District's ability to operate and maintain the flood control facility(ies) to protect public health and safety.
$\boxtimes \quad$ This project is located within the limits of the District's Moreno Valley West End Area Drainage Plan Area Drainage Plan for which drainage fees have been adopted; applicable fees should be paid by cashier's check or money order only to the Flood Control District or City prior to issuance of grading permits. Fees to be paid should be at the rate in effect at the time of issuance of the actual permit.

An encroachment permit shall be obtained for any construction related activities occurring within District right of way or facilities, namely, $\qquad$ . If a proposed storm drain connection exceeds the hydraulic performance of the existing drainage facilities, mitigation will be required. For further information, contact the District's Encroachment Permit Section at 951.955.1266.
$\boxtimes \quad$ The District's previous comments dated September 5, 2023 are still valid.

## GENERAL INFORMATION

This project may require a National Pollutant Discharge Elimination System (NPDES) permit from the State Water Resources Control Board. Clearance for grading, recordation or other final approval should not be given until the City has determined that the project has been granted a permit or is shown to be exempt.

If this project involves a Federal Emergency Management Agency (FEMA) mapped floodplain, then the City should require the applicant to provide all studies, calculations, plans and other information required to meet FEMA requirements, and should further require that the applicant obtain a Conditional Letter of Map Revision (CLOMR) prior to grading, recordation or other final approval of the project, and a Letter of Map Revision (LOMR) prior to occupancy.

The project proponent shall bear the responsibility for complying with all applicable mitigation measures defined in the California Environmental Quality Act (CEQA) document (i.e., Negative Declaration, Mitigated Negative Declaration, Environmental Impact Report) and/or Mitigation Monitoring and Reporting Program, if a CEQA document was prepared for the project. The project proponent shall also bear the responsibility for complying with all other federal, state, and local environmental rules and regulations that may apply.

If a natural watercourse or mapped floodplain is impacted by this project, the City should require the applicant to obtain a Section 1602 Agreement from the California Department of Fish and Wildlife and a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers, or written correspondence from these agencies indicating the project is exempt from these requirements. A Clean Water Act Section 401 Water Quality Certification may be required from the local California Regional Water Quality Control Board prior to issuance of the Corps 404 permit.

Very truly yours,


AMY MCNEILL
Engineering Project Manager
Attachment
EM:blm

# RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT 

September 5, 2023
City of Moreno Valley
Community Development Department Planning Division
Post Office Box 88005
Moreno Valley, CA 92552-0805
Attention: Kirt Coury
Re: PEN 20-0095, PEN 20-0096, PEN 21-0066, TTM 38459, PEN 22-0127 and
APN 256-150-001
The Riverside County Flood Control and Water Conservation District (District) does not normally recommend conditions for land divisions or other land use cases in incorporated cities. The District also does not plan check City land use cases or provide State Division of Real Estate letters or other flood hazard reports for such cases. District comments/recommendations for such cases are normally limited to items of specific interest to the District including District Master Drainage Plan facilities, other regional flood control and drainage facilities which could be considered a logical component or extension of a master plan system, and District Area Drainage Plan fees (development mitigation fees). In addition, information of a general nature is provided.

The District's review is based on the above-referenced project transmittal, received August 28, 2023. The District has not reviewed the proposed project in detail, and the following comments do not in any way constitute or imply District approval or endorsement of the proposed project with respect to flood hazard, public health and safety, or any other such issue:
$\square \quad$ This project would not be impacted by District Master Drainage Plan facilities, nor are other facilities of regional interest proposed.

This project involves District proposed Master Drainage Plan facilities, namely, $\qquad$ . The District will accept ownership of such facilities on written request by the City. The Project Applicant shall enter into a cooperative agreement establishing the terms and conditions of inspection, operation, and maintenance with the District and any other maintenance partners. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required. All regulatory permits (and all documents pertaining thereto, e.g., Habitat Mitigation and Monitoring Plans, Conservation Plans/Easements) that are to be secured by the Applicant for both facility construction and maintenance shall be submitted to the District for review. The regulatory permits' terms and conditions shall be approved by the District prior to improvement plan approval, map recordation, or finalization of the regulatory permits. There shall be no unreasonable constraint upon the District's ability to operate and maintain the flood control facility(ies) to protect public health and safety.
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Re: PEN 20-0095, PEN 20-0096, PEN 21-0066,
TTM 38459, PEN 22-0127 and
252647
finalization of the regulatory permits. There shall be no unreasonable constraint upon the District's ability to operate and maintain the flood control facility(ies) to protect public health and safety.
$\boxtimes \quad$ This project is located within the limits of the District's Moreno Valley West End Area Drainage Plan for which drainage fees have been adopted; applicable fees should be paid by cashier's check or money order only to the Flood Control District or City prior to issuance of grading permits. Fees to be paid should be at the rate in effect at the time of issuance of the actual permit.
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The District's previous comments are still valid.

## GENERAL INFORMATION

This project may require a National Pollutant Discharge Elimination System (NPDES) permit from the State Water Resources Control Board. Clearance for grading, recordation or other final approval should not be given until the City has determined that the project has been granted a permit or is shown to be exempt.

If this project involves a Federal Emergency Management Agency (FEMA) mapped floodplain, then the City should require the applicant to provide all studies, calculations, plans and other information required to meet FEMA requirements, and should further require that the applicant obtain a Conditional Letter of Map Revision (CLOMR) prior to grading, recordation or other final approval of the project, and a Letter of Map Revision (LOMR) prior to occupancy.

The project proponent shall bear the responsibility for complying with all applicable mitigation measures defined in the California Environmental Quality Act (CEQA) document (ie., Negative Declaration, Mitigated Negative Declaration, Environmental Impact Report) and/or Mitigation Monitoring and Reporting Program, if a CEQA document was prepared for the project. The project proponent shall also bear the responsibility for complying with all other federal, state, and local environmental rules and regulations that may apply.

If a natural watercourse or mapped floodplain is impacted by this project, the City should require the applicant to obtain a Section 1602 Agreement from the California Department of Fish and Wildlife and a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers, or written correspondence from these agencies indicating the project is exempt from these requirements. A Clean Water Act Section 401 Water Quality Certification may be required from the local California Regional Water Quality Control Board prior to issuance of the Corps 404 permit.

Very truly yours,

[^21]Report to City Council
TO: Mayor and City Council
FROM:
Sean P. Kelleher, Community Development Director
AGENDA DATE:
December 19, 2023
TITLE:
BEYOND FOOD MART

## RECOMMENDED ACTION

## RECOMMENDED ACTION

## Recommendations: That the City Council:

1. ADOPT Resolution 2023-XX:
2. CERTIFYING the Initial Study/Mitigated Negative Declaration prepared for the Proposed Project consisting of Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176); and
3. ADOPTING the Mitigation Monitoring and Reporting Program prepared for the Mitigated Negative Declaration; and
4. ADOPT Resolution 2023-XX:
5. APPROVING Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176);

## SUMMARY

Beyond Food Mart, Inc. ("Applicant") submitted applications for a Master Plot Plan (PEN22-0238) for a 1.31-acre commercial development and a Conditional Use Permit (PEN22-0176) for the operation of an eight (8) island fueling station, six (6) vehicle charging stations, 7,400 square foot convenience store, and drive-thru carwash, along with the associated landscaping, and on-site and off-site improvements ("Proposed Project"). The Proposed Project is located on the northwest corner of the intersection of Iris Avenue and Oliver Street (APN: 486-310-038) within the Downtown Center (DC) District. The Proposed Project, as designed and conditioned, is consistent with the
goals, policies, and objectives of the City's General Plan and the requirements of the Downtown Center (DC) District and the City's Municipal Code.

## BACKGROUND

The Proposed Project was considered by the Planning Commission at a duly noticed public hearing conducted on November 9, 2023, and the Planning Commission voted unanimously ( $7-0$ ) to certify and approve the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program and approve the Master Plot Plan (PEN22-0238) and the Conditional Use Permit (PEN22-0176) for the Proposed Project.

## DISCUSSION

## Proposed Project

## Master Plot Plan

The Proposed Project consists of a Master Plot Plan for the development of the 1.31acre commercial site with eight (8) island fueling stations, six (6) vehicle charging stations, a 7,400 square foot convenience store, and a drive-thru carwash, along with the associated landscaping, and on-site and off-site improvements.

## Conditional Use Permit

Pursuant to the requirements of Section 9.02.060 (Conditional Use Permits) of the City's Planning and Zoning Code, approval of an auto service station with accessory uses including vehicle charging stations, convenience store, and drive-thru carwash located within 300 feet from a residential zone or use is permitted within the subject Downtown Center (DC) District subject to the approval of a Conditional Use Permit.

The proposed Beyond Food Mart project operation as an eight (8) island fueling station, six (6) vehicle charging stations, convenience store, and drive-thru carwash is consistent with and in compliance with the development standards, requirements, and regulations of the Municipal Code for a Conditional Use Permit, as well as the goals, policies, and objectives of the City's General Plan.

With the exception of the proposed drive-thru carwash, the proposed Beyond Food Mart project facilities will be open seven (7) days per week and twenty-four (24) hours per day. At this time, there will be a total of twelve (12) employees covering three (3) shifts with a minimum of three (3) employees per shift. Beyond Food Mart utilizes a state-of-the-art security system with alarms, surveillance cameras, and security lighting for security purposes. Additionally, the employees are trained and directed so that the property is walked hourly to ensure cleanliness and safety. The operating hours of the drive-thru carwash and vacuum stations will be from 8:00 a.m. to 10:00 p.m.

## Site and Surrounding Area

The Project Site is currently vacant and unimproved. The parcels directly to the north and west of the Project Site are within the Downtown Center (DC) District and are
currently vacant and unimproved. The parcels to the east of the Project Site across Oliver Street are within 300 feet and developed with single-family residences within the Residential Medium Low (ML) District of the Moreno Valley Ranch Specific Plan (SP193). The parcels south of the Project Site across Iris Avenue are also within 300 feet and developed with single-family residences within the Residential Medium Low (ML) District of the Moreno Valley Ranch Specific Plan (SP193). The existing Kaiser Permanente Moreno Valley Medical Center is approximately 400 feet west of the Project Site.

## Access/Parking

The proposed Beyond Food Mart project provides direct access via two (2) primary entrances/exits, one (1) located along Iris Avenue and another on Oliver Street. Both driveways are restricted to "right-turn in" and "right-turn out" movements for public safety purposes. The internal site circulation has been designed to adequately accommodate on-site vehicular circulation including access to the island fueling stations, vehicle charging stations, convenience store, and drive-thru carwash tunnel and vacuum stations. Additionally, the carwash drive-thru lane has been designed to provide adequate stacking for the proposed use, not to impede internal vehicular circulation.

The Proposed Project provides 48 off-street parking spaces in compliance with Section 9.11.040 (Off-Street Parking Requirements) of the City's Planning and Zoning Code.

## Design/Landscaping

The architectural design is modern with varied rooflines and projections incorporated into the façade and varying paint colors and façade material schemes to create visual interest in the structures. Incorporating articulated wall surfaces and features, as well as the island fueling station canopy design, will enhance the visual aesthetics at this intersection.

The proposed landscaping plan provides for on-site landscaping along the perimeter of the Project Site. A combination of small and large trees, various shrubs, and ground cover will be utilized on the corner of the subject site along Iris Avenue and Oliver Street to enhance the Project Site and create pedestrian-friendly features.

As designed, the proposed Beyond Food Mart project conforms to the development standards of the Downtown Center (DC) District, the City's Landscaping Standards, and the design guidelines for commercial developments prescribed in the City's Municipal Code.

## REVIEW PROCESS

As part of the standard review process, all appropriate outside agencies have considered the Proposed Project. The Proposed Project was reviewed by the Project Review Staff Committee as required by the Municipal Code. Following subsequent revisions and staff review, the project was deemed complete.

## ENVIRONMENTAL

An Initial Study was prepared by EPD Solutions, Inc. and accepted by the Planning Division Staff in compliance with the requirements of the California Environmental Quality Act (CEQA) and its guidelines. The Initial Study examined the potential impacts of the proposed project on the environment. The Initial Study/ Mitigated Negative Declaration (IS/MND) serves as the appropriate CEQA documentation for the Proposed Project. With the implementation of the proposed mitigation measures, the Proposed Project will not have a significant effect on the environment. Technical studies prepared in support of the IS/MND include the following: Air Quality Analysis (CalEEMod 2022 Outputs); Health Risk Assessment; Biological Resources Assessment; Cultural Resources Assessment; Phase I Environmental Site Assessment; Preliminary Hydrology Report; Preliminary Water Quality Management Plan; Noise Impact Study; Traffic Impact Analysis; and Vehicle Miles Traveled Screening Analysis. Copies of the appendices to the IS/MND can be accessed from the link attached to this staff report. The documents can be reviewed at City Hall during operating hours, and online on the City's website.

Mitigation measures are recommended for the Proposed Project in the following areas: Air Quality, Biological Resources, and Tribal and Cultural Resources, all of which are incorporated into the Mitigation Monitoring and Report Program (MMRP). The cultural resources measures are intended to ensure that potential resources that might be discovered are protected. However, these measures are not required to address a known significant impact. Based on the Initial Study and with the implementation of the proposed mitigation measures, the Proposed Project will not cause any significant impacts to the environment.

The public comment period for the Notice of Availability of the Initial Study/Mitigated Negative Declaration began on October 13, 2023, and ended on November 2, 2023, (State Clearing House Number 2023100360) which satisfies the required 30 -day review period required for this project. As of the preparation of this staff report, no comments have been received. Written comments received after the preparation of this staff report will be provided at the public hearing.

## ALTERNATIVES

1. Certify and approve the Initial Study/Mitigated Negative Declaration and the Mitigated Monitoring and Reporting Program, and approve the Proposed Project. (Staff recommends this alternative.)
2. Deny the Proposed Project. (Staff does not recommend this alternative.)

## FISCAL IMPACT

The applicant estimates the project will generate between $\$ 150,000$ and $\$ 225,000$ in annual sales tax revenue to the City.

Additionally, the development of the site will generate approximately $\$ 172,000$ in one-

Page 4
time Development Impact Fees, including approximately $\$ 60,000$ for the purpose of public art. The Development Impact Fee estimate is based on the July 1, 2023, Development Impact fee rates. The Development Impact Fee amount is subject to change.

## NOTIFICATION

Consistent with the City Municipal Code provisions and applicable law, public notice was sent to all property owners of record within 600 feet of the Project Site, posted on the Project Site, and published in the Press Enterprise Newspaper. Public comments received prior to publication of the report have been attached to this report.

## PREPARATION OF STAFF REPORT

## CITY COUNCIL GOALS

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

Positive Environment. Create a positive environment for the development of Moreno Valley's future.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" $W$ on the left hand side of this document for the necessary attachment.

1. Resolution No. 2023-XX - Initial Study/MND
2. Appendix A - CalEEMod 2022 Detailed Report
3. Appendix B - Health Risk Assessment
4. Appendix C - Biological Resources Assessment
5. Appendix D-Cultural Resources Assessment
6. Appendix E-Phase I Environmental Assessment Report
7. Appendix F - Preliminary Hydrology Study
8. Appendix G - Preliminary WQMP
9. Appendix H-Noise Impact Analysis
10. Appendix I - Traffic Impact Analysis
11. Appendix J - VMT Screening Analysis
12. Resolution No. 2023-XX - Master Plot Plan \& Conditional Use Permit
13. Location Map
14. Project Plans - Architectural
15. Project Plans - Conceptual Landscaping and Preliminary Grading
16. Planning Commission Staff Report - Beyond Food Mart
17. Planning Commission - Written Public Comments

## APPROVALS

Budget Officer Approval $\quad \checkmark$ Approved 12/11/23 11:56 AM
City Attorney Approval
City Manager Approval
$\checkmark$ Approved
$\checkmark$ Approved $\quad 12 / 11 / 23$ 12:16 PM

## RESOLUTION NUMBER 2023-XX

## A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, ADOPTING AND APPROVING A MITIGATED NEGATIVE DECLARATION AND A MITIGATION MONITORING AND REPORTING PROGRAM FOR MASTER PLOT PLAN (PEN22-0238) AND CONDITIONAL USE PERMIT (PEN22-0176) FOR THE BEYOND FOOD MART LOCATED ON THE NORTHWEST CORNER OF IRIS AVENUE AND OLIVER STREET (APN: 486-310-038)

WHEREAS, the City of Moreno Valley ("City") is a general law city and a municipal corporation of the State of California, and the lead agency for the preparation and consideration of environmental documents for local projects that are subject to requirements of the California Environmental Quality Act (CEQA ${ }^{1}$ ) and CEQA Guidelines ${ }^{2}$; and

WHEREAS, Beyond Food Mart, Inc. ("Applicant") has submitted applications for a Master Plot Plan (PEN22-0238) for a 1.31-acre commercial development and a Conditional Use Permit (PEN22-0176) for the operation of an eight (8) island fueling station, six (6) vehicle charging stations, 7,400 square foot market, and a drive-thru carwash, including a state-of-the-art security system with alarms, surveillance cameras and security lighting, and the prohibition of alcohol beverage sales ("Proposed Project") located at the northwest corner of Iris Avenue and Oliver Street (APN: 486-310-038), within the Downtown Center (DC) District ("Project Site"); and

WHEREAS, Planning Division Staff completed an Initial Study ("Environmental Assessment") for the Proposed Project and based on the Environmental Assessment, recommended adoption of a Mitigated Negative Declaration ("MND") and adoption of a Mitigation Monitoring and Reporting Program ("MMRP") in accordance with Section 6 (ND Procedures) of the City's Rules and Procedures for the Implementation of the California Environmental Quality Act and the requirements of CEQA the CEQA Guidelines Sections 15070-15075; and

WHEREAS, a Notice of Intent to Adopt a Mitigated Negative Declaration was duly noticed and circulated for public review for a period of twenty (20) days commencing on October 13, 2023, through November 2, 2023; and

WHEREAS, in compliance with CEQA and the CEQA Guidelines, a MMRP, which is a program for monitoring and reporting on the Proposed Project's mitigation measures was prepared for the Proposed Project and circulated with the MND; and

WHEREAS, on November 9, 2023, a hearing was conducted by the Planning Commission whereby the Planning Commission voted unanimously 7-0 to adopt Planning Commission Resolution No. 2023-47 adopting the MND and the MMRP for the Proposed

[^22]Project, and adopt Planning Commission Resolution 2023-48 approving the Proposed Project; and

WHEREAS, on December 19, 2023, a hearing was conducted by the City Council to approve the Mitigated Negative Declaration/Initial Study, Mitigation Monitoring and Reporting Program, and the Proposed Project; and

WHEREAS, at the conclusion of the December 19, 2023 public hearing, in the exercise of its own independent judgment, the City Council determined that the Initial Study/Mitigated Negative Declaration and the Mitigation Monitoring and Reporting Program will reduce the environmental impacts of the Proposed Project to levels of insignificance and that there is no substantial evidence supporting a fair argument that the Proposed Project will have a significant effect on the environment.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

## Section 1. Recitals and Exhibits

That the foregoing Recitals and attached exhibits are true and correct and are hereby incorporated by this reference.

## Section 2. Evidence

That the City Council has considered all the evidence submitted into the Administrative Record for the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, including, but not limited to, the following:
(a) Initial Study/Mitigated Negative Declaration prepared for the Proposed Project, attached hereto as Exhibit A; and
(b) Notice of Intent to Adopt a Mitigated Negative Declaration and Newspaper Notice, attached hereto as Exhibit B; and
(c) Mitigation Monitoring and Reporting Program, attached hereto as Exhibit C; and
(d) Staff Report and Resolutions prepared for the Planning Commission's consideration and all documents, records, and references related thereto, and Staff's presentation at the public hearing; and
(e) Testimony, comments, and correspondence from all persons that were provided at, or prior to, the November 9, 2023, Planning Commission public hearing; and
(g) Staff Report for the City Council's consideration and all documents, records, and references related thereto, and Staff's presentation at the December 19, 2023, public hearing; and
(h) Testimony, comments, and correspondence from all persons that were provided at, or prior to, the City Council December 19, 2023 public hearing.

## Section 3. Findings

That based on the content of the foregoing Recitals and the Evidence contained in the Administrative Record as set forth above, the City Council makes the following findings:
(a) That all environmental impacts of the Proposed Project, with the mitigation measures set forth in the MMRP, have been reduced to levels of insignificance and there is no substantial evidence supporting a fair argument that the Proposed Project will have a significant effect on the environment that would otherwise require the preparation and certification of an Environmental Impact Report;
(b) That the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program have been completed in compliance with CEQA and the CEQA Guidelines and are consistent with the City's Rules and Procedures for the Implementation of the California Environmental Quality Act;
(c) That the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program represent the independent judgment and analysis of the City Council and the City as the lead agency for the Proposed Project; and
(d) That the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program are adequate to serve as the required CEQA environmental documentation for the Proposed Project.

## Section 4. Adoption

That based on the foregoing Recitals, Evidence contained in the Administrative Record and Findings, as set forth herein, the City Council hereby adopts the Initial Study/Mitigated Negative Declaration and the Mitigation Monitoring and Reporting Program attached hereto as Exhibits A and B.

## Section 5. Repeal of Conflicting Provisions

That all the provisions as heretofore adopted by the City Council that are in conflict with the provisions of this Resolution are hereby repealed.

## Section 6. Severability

That the City Council declares that, should any provision, section, paragraph, sentence, or word of this Resolution be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this Resolution as hereby adopted shall remain in full force and effect.

## Section 7. Effective Date

That this Resolution shall take effect immediately upon the date of adoption.

## Section 8. Certification

That the City Clerk of the City Council shall certify to the passage of this Resolution.
PASSED AND ADOPTED THIS 19th DAY OF DECEMBER, 2023.
CITY OF MORENO VALLEY CITY COUNCIL

Ulises Cabrera,
Mayor of the City of Moreno Valley

ATTEST:

Jane Halstead, City Clerk

APPROVED AS TO FORM:

Steven B. Quintanilla, City Attorney

Exhibits:
Exhibit A: Initial Study/Mitigated Negative Declaration
Exhibit B: Mitigation Monitoring and Reporting Program
Exhibit C: Notice of Intent to Adopt a Mitigated Negative Declaration

## Exhibit A

## INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

CITY OF MORENO VALLEY

## INITIAL STUDY FOR Beyond Food Mart Oliver and Iris


(Master Plot Plan PEN22-0176 Conditional Use Permit PEN22-0238)

October 2023
Lead Agency CITY OF MORENO VALLEY

14177 Frederick Street
Moreno Valley, CA 92552

## Prepared By

Lilburn Corporation
1905 Business Center Drive
San Bernardino, California 92408
(909) $890-1818$

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## MITIGATION MONITORING AND REPORTING PROGRAM (Separate Document if applicable)

## APPENDICES (Separate Documents)

A. CalEEMod 2022 Outputs
B. Health Risk Assessment Study
C. Biological Resources Assessment, Jurisdictional Delineation, and MSHCP Consistency Analysis
D. Phase I Cultural Resources Assessment
E. Phase I Environmental Site Assessment Report
F. Preliminary Hydrology Study
G. Project Specific Water Quality Management Plan
H. Noise Impact Study
I. Traffic Impact Analysis
J. Vehicle Miles Traveled Screening Analysis

## BACKGROUND INFORMATION AND PROJECT DESCRIPTION:

1. Project Case Number(s): PEN 22-0176, PEN 22-0238
2. Project Title: Beyond Food Mart Oliver and Iris
3. Public Comment Period: September 29, 2023 - October 18, 2023
4. Lead Agency: City of Moreno Valley

Oliver Mujica, Planning Department
14177 Frederick Street
Moreno Valley, CA 92552
(951) 413-3206

Planningnotice@moval.org
5. Documents Posted At: https://www.moreno-valley.ca.us/cdd/documents/aboutprojects.html
6. Prepared By: Lilburn Corporation

1905 Business Center Drive
San Bernardino, CA 92408
(909) 890-1818
cheryl@lilburncorp.com
7. Project Sponsor:

Property Owner
/Applicant/Developer
Paradise Lake, LLC
4300 Edison Avenue
Chino, California, 91710
reijvtit@gmail.com
8. Project Location: The Project is generally located within Section 22, Township 3 South,

Range 3 West, and is depicted on the Sunnymead U.S. Geological Survey (USGS) 7.5 -minute topographic map. The Project Site is located at the northwest corner of Iris Avenue and Oliver Street with an address of 27990 Iris Avenue, Moreno Valley, CA. The APN is 486-310-038 and the Assessor's Map shows the property is 1.31 acres Refer to Figure 1, Regional Location Map and Figure 2, Vicinity Map.
9. General Plan Designation: The Project Site is designated as Downtown Center (DC SP 218LM) Land Use District
10. Specific Plan Name and Designation: Downtown Center/AquaBella, Planned Commercial (PC)
11. Existing Zoning: Downtown Center (DC)
12. Surrounding Land Uses and Setting:

Table 1
Project Site and Surrounding Land Uses

|  | Land Use | General Plan | Zoning |
| :---: | :---: | :---: | :---: |
| Project <br> Site | Vacant | Planed Commercial <br> (PC) | Downtown Center (DC) |
| North | Vacant | Planned Commercial (PC) | Downtown Center (DC) |
| South | Single Family Residential <br> (R10) | Suburban Residential <br> (SP 193 ML) | Medium Low Density <br> Residential (ML) |
| East | Single Family Residential <br> (R10) | Suburban Residential (SP <br> 193 ML) | Medium Low Density <br> Residential (ML) |
| West | Vacant | Planned Commercial (PC) | Downtown Center (DC) |

## 13. Description of the Site and Project:

## Environmental Setting

The Project Site is located in the City of Moreno Valley in western Riverside County in a primarily residential area of the city. The property is currently vacant and is surrounded by residential development to the east and south. Vacant parcels are to the north and to the west; the Kaiser Permanente Moreno Valley Hospital is west of the Project Site. Approximately $1 / 2$-mile to the south lie the foothills of the Lake Perris Recreational Area. Proposed Site photos are included as Figure 7.

## Project Description

Beyond Food Mart, Inc. (Applicant) is requesting to construct and operate an eight-island fueling station, a 7,460 square-foot convenience store, and a 1,790 square-foot drive-thru carwash. The proposed Site Plan is included as Figure 3, the Preliminary Grading Plan as Figure 4, the Preliminary Landscaping Plan as Figure 5, and the Building Elevation Plans are Figures 6a and 6b. The Project Site contains 1.31 acres (APN: 486-310-038). The Project Site is located at the northwest corner of Iris Avenue and Oliver Street in the City of Moreno Valley.

The fueling station includes two underground storage tanks (USTs). One tank would have a capacity of 27,000 gallons and would be a split tank that would store both E85 and unleaded fuel. The second tank would have a capacity of 15,000 gallons and would store unleaded premium and diesel fuel. The fueling islands would include 16 fueling positions and would be located under a 5,979 square-foot canopy with a height of 19'6". The development would include 14,944 square-feet of landscaping. There would be a total of 43 passenger car parking spaces to include two handicap accessible spaces, two spaces for electric vehicles (EV), four spaces for low emission (carpool/vanpool) vehicles, 3 spaces for bicycle parking, and one additional parking space will be reserved as a loading/unloading space. Access to the Project Site will be provided by two approximately 35 -foot driveways on the eastern and southern portion of the lot; one from Iris Avenue and one from Oliver Street.

The maximum height of the convenience store and canopies would not exceed 50 feet. The Proposed Project is expected to operate 24 hours a day, seven days a week, and will include approximately 12 employees.

The Proposed Project also includes a storm water system with one underground bioretention basin with a storm water retention volume of 15,237 cubic-feet (CF) that would be located on the southeast portion of the Project Site and one vegetation swale located (refer to Figure 3). There is an existing water line in Iris Avenue that the Proposed Project would connect to. The Proposed Project would also connect to an existing sewer line in Iris Avenue.

The Proposed Project's Landscape Plan (see Figure 5) includes as a Design Feature, a number of mature trees on-site as well as shrubs and ground cover representing $35 \%$ of the site development and will be in accordance with the City's Municipal Code 9.17.030.
14. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

The City initiated AB 52 consultation on August 19, 2023 for a 30 -day period. A total of seven tribes received letter notification, which are:

- Agua Caliente Band of Cahuilla - Desert Cahuilla Indians Indians
- Morongo Band of Mission Indians - Pechanga Cultural Resources Department
- San Manuel Band of Mission Indians
- Soboba Band of Luiseno Indians
- Ricon Band of Luiseno Indians

Two tribes responded as follows:

| Tribe | Comment Letter <br> Received | Summary of Response | Conclusion |
| :--- | :--- | :--- | :--- |
| Agua Caliente Band of Cahuilla <br> Indians | $8 / 30 / 2023$ | Tribal Historic Preservation <br> Office's concerns have been <br> addressed. | AB 52 <br> consultation is <br> concluded |
| San Manuel Band of Mission <br> Indians | $8 / 31 / 2023$ | Project outside of Serrano <br> ancestral territory. | Consultation not <br> requested |

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.
15. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):
a. None
16. Other Technical Studies Referenced in this Initial Study (Provided as Appendices):
A. CalEEMod 2022 Outputs
B. Health Risk Assessment
C. Biological Resources Assessment, Jurisdictional Delineation, and MSHCP Consistency Analysis
D. Phase I Cultural Resources Assessment
E. Phase I Environmental Site Assessment Report
F. Preliminary Hydrology Study
G. Project Specific Water Quality Management Plan
H. Noise Impact Study
I. Traffic Impact Analysis
J. Vehicle Miles Traveled Screening Analysis

## 17. Acronyms:

| ADA - | American with Disabilities Act |
| :--- | :--- |
| ALUC - | Airport Land Use Commission |
| ALUCP - | Airport Land Use Compatibility Plan |
| AQMP - | Air Quality Management Plan |
| CEQA - | California Environmental Quality Act |
| CIWM - | California Integrated Waste Management District |
| CMP - | Congestion Management Plan |
| DTSC - | Department of Toxic Substance Control |
| DWR - | Department of Water Resources |
| EIR - | Environmental Impact Report |
| EMWD - | Eastern Municipal Water District |
| EOP - | Emergency Operations Plan |
| FEMA - | Federal Emergency Management Agency |
| FMMP - | Farmland Mapping and Monitoring Program |
| GIS - | Geographic Information System |
| GHG - | Greenhouse Gas |
| GP - | General Plan |
| HCM | Highway Capacity Manual |
| HOA - | Home Owners' Association |
| IS - | Initial Study |
| LHMP - | Local Hazard Mitigation Plan |
| LOS - | Level of Service |
| LST - | Localized Significance Threshold |
| MARB - | March Air Reserve Base |
| MARB/IPA- | March Air Reserve Base/Inland Port Airport |
| MSHCP - | Multiple Species Habitat Conservation Plan |
| MVFP - | Moreno Valley Fire Department |
| MVPD - | Moreno Valley Police Department |
| MVUSD - | Moreno Valley Unified School District |
| MWD - | Metropolitan Water District |
| NCCP - | Natural Communities Conservation Plan |
| NPDES - | National Pollutant Discharge Elimination System |
| OEM - | Office of Emergency Services |

OPR - $\quad$ Office of Planning \& Research, State
PEIR - Program Environmental Impact Report
PW - Public Works
RCEH - Riverside County Environmental Health
RCFCWCD - Riverside County Flood Control \& Water Conservation District
RCP - Regional Comprehensive Plan
RCTC - Riverside County Transportation Commission
RCWMD - Riverside County Waste Management District
RTA - Riverside Transit Agency
RTIP - Regional Transportation Improvement Plan
RTP - Regional Transportation Plan
SAWPA - $\quad$ Santa Ana Watershed Project Authority
SCAG - Southern California Association of Governments
SCAQMD - $\quad$ South Coast Air Quality Management District
SCE - Southern California Edison
SCH - State Clearinghouse
SKRHCP - Stephens' Kangaroo Rat Habitat Conservation Plan
SWPPP - Storm Water Pollution Prevention Plan
SWRCB - State Water Resources Control Board
USFWS - United States Fish and Wildlife
USGS - United States Geologic Survey
VMT - Vehicle Miles Traveled
VVUSD - Valley Verde Unified School District
WQMP - Water Quality Management Plan
WRCOG - Western Riverside Council of Government


REGIONAL LOCATIO
Tabel Cent
City of Moreno Valley, Califorriu



PRELIMINARY GRADING PLA


City of Moreno Valley, California


City of Moreno Valley, California



Photo 3 -
Southwest corner of parcel, facing northeast.


## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

| $\square$ | Aesthetics | $\square$ |  <br> Forestry Resources | $\square$ | Air Quality |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\square$ | Biological Resources | $\square$ | Cultural Resources <br> Greenhouse Gas <br> Emissions | $\square$ | $\square$ |
| $\square$ | Geology \& Soils | $\square$ | Hazards \& Hazardous <br> Materials |  |  |
| $\square$ |  <br> Water Quality | $\square$ | Land Use \& Planning | $\square$ | Mineral Resources |
| $\square$ | $\square$ | Population \& Housing | $\square$ | Public Services |  |
| $\square$ | Neise | $\square$ | Transportation | $\square$ | Tribal Cultural <br> Resources |
| $\square$ |  | $\square$ | Wildfire | $\square$ | Mandatory Findings of <br> Significance |

## DETERMINATION (To be completed by the Lead Agency):

On the basis of this initial evaluation:
I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
I find that the proposed project MAY have a "potentially significant" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DFCLARATION pursuant to applicable standards, and (b) have been


## EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a Lead Agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a projectspecific screening analysis).
2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3) Once the Lead Agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4) Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The Lead Agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or another CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
a) Earlier Analyses Used. Identify and state where they are available for review.
b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7) Supporting Information Sources. A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.
8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9) The explanation of each issue should identify:
a) the significance criteria or threshold, if any, used to evaluate each question; and
b) the mitigation measure identified, if any, to reduce the impact to less than significance.

## Mitigation Monitoring and Reporting Program

## Introduction

The California Environmental Quality Act (CEQA) requires a lead or public agency that approves or carries out a project for which an Mitigated Negative Declaration has been certified which identifies one or more significant adverse environmental effects and where findings with respect to changes or alterations in the project have been made, to adopt a "...reporting or monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment" (CEQA, Public Resources Code Sections 21081, 21081.6).

A Mitigation Monitoring and Reporting Program (MMRP) is required to ensure that adopted mitigation measures are successfully implemented. The City of Moreno Valley is the Lead Agency for the project and is responsible for implementation of the MMRP. Table 1 of this report describes the MMRP for the Project and identifies the parties that will be responsible for monitoring implementation of the individual mitigation measures in the MMRP. This report also describes existing Plans, Programs, or Policies (PPPs) that apply to the project in Table 2.

## Mitigation Monitoring and Reporting Program

The MMRP for the Project will be active through all phases of the Project, including design, construction, and operation. The attached table identifies the mitigation program required to be implemented by the City for the Project. The table identifies mitigation measures required by the City to mitigate or avoid significant impacts associated with the implementation of the Project, the timing of implementation, and the responsible party or parties for monitoring compliance.

The MMRP also includes a column that will be used by the compliance monitor (individual responsible for monitoring compliance) to document when implementation of the measure is completed. As individual Plan, Program, Policies; and mitigation measures are completed, the compliance monitor will sign and date the MMRP, indicating that the required actions have been completed.

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TABLE 1: MITIGATION MONITORING AND REPORTING PROGRAM

| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
| :---: | :---: | :---: | :---: |
| Air Quality |  |  |  |
| MM AQ-1: Compliance with SCAQMD Rules 402 and 403. The <br> Project Proponent would be required to comply with Rules 402 nuisance, and 403 fugitive dust, which require the implementation of Best Available Control Measures (BACMs) for each fugitive dust source, and the AQMP, which identifies Best Available Control Technologies (BACTs) for area sources and point sources. The BACMs and BACTs would include, but not be limited to the following: <br> 1. The Project Proponent shall ensure that any portion of the site to be graded shall be pre-watered prior to the onset of grading activities (see Figures 4 and 6). <br> a) The Project Proponent shall ensure that watering of the site or other soil stabilization method shall be employed on an on-going basis after the initiation of any grading activity on the site. Portions of the site that are actively being graded shall be watered regularly ( $3 x$ daily) to ensure that a crust is formed on the ground surface and shall be watered at the end of each workday. <br> b) The Project Proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed upon. <br> c) The Project Proponent shall ensure that landscaped areas are installed as soon as possible to reduce the potential for wind erosion. <br> d) The Project Proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when winds exceed 25 miles per hour. <br> During construction, exhaust emissions from construction vehicles and equipment and fugitive dust generated by | In Construction Plans and Specifications Prior to Demolition, Grading and Building Permits | City of Moreno Valley Building and Safety Division |  |


| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
| :---: | :---: | :---: | :---: |
| equipment traveling over exposed surfaces would increase $\mathrm{NO}_{x}$ and $\mathrm{PM}_{10}$ levels in the area. Although the Proposed Project does not exceed SCAQMD thresholds during construction, the Applicant/Contractor would be required to implement the following conditions as required by SCAQMD: <br> 1. To reduce emissions, all equipment used in grading and construction must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel. <br> 2. The Project Proponent shall ensure that existing power sources are utilized where feasible via temporary power poles to avoid on-site power generation during construction. <br> 3. The Project Proponent shall ensure that construction personnel are informed of ride sharing and transit opportunities. <br> 4. All buildings on the Project Site shall conform to energy use guidelines in Title 24 of the California Administrative Code. <br> 5. The operator shall maintain and effectively utilize and schedule on-site equipment in order to minimize exhaust emissions from truck idling. <br> 6. The operator shall comply with all existing and future California Air Resources Board (CARB) and SCAQMD regulations related to diesel-fueled trucks, which may include among others: (1) meeting more stringent emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low sulfur fuel; and (4) use of alternative fuels or equipment. |  |  |  |


| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
| :---: | :---: | :---: | :---: |
| Biological Resources |  |  |  |
| MM BIO-1: Migratory Bird Treaty Act. Nesting bird nesting season generally extends from February 1 through September 15 in southern California and specifically, March 15 through August 31 for migratory passerine birds. To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist will conduct pre-construction Nesting Bird Surveys (NBS) prior to Project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist will set appropriate no-work buffers around the nest which will be based upon the nesting species, its sensitivity to disturbance, nesting stage, and expected types, intensity, and duration of the disturbance. The nests and buffer zones shall be field-checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity shall commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive. | Surveys to be conducted if construction occurs during the nesting period of February 1 through September 15. | City of Moreno Valley Community Development Department |  |
| Cultural Resources |  |  |  |
| MM CR-1: Archaeological Monitoring. Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated | Confirmation of professional archaeologist retention/ongoing/monitoring/submittal of Report of Findings. Prior to issuance of Grading Permit and during subsurface excavation. | City of Moreno Valley Community Development Department |  |


| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
| :---: | :---: | :---: | :---: |
| the $A B 52$ tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include: <br> a. Project grading and development scheduling; <br> b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as needed basis; <br> c. The protocols and stipulations that the contractor, City, Consulting Tribe(s), and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, include any newly discovered cultural resource deposits that shall be subject to a cultural resource evaluation. |  |  |  |


| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
| :---: | :---: | :---: | :---: |
| Geology and Soils |  |  |  |
| MM GEO-1: Paleontological Resources. A paleontologist selected from the roll of qualified paleontologists maintained by the City shall be retained to provide spot-check monitoring services for the project. The paleontologist shall develop a Paleontological Resources Impact Mitigation Plan (PRIMP) to mitigate the potential impacts to unknown buried paleontological resources that may exist onsite. The PRIMP shall require that the paleontologist be present at the pre-grading conference to establish procedures for paleontological resource surveillance. The PRIMP shall require paleontological spot-check monitoring of excavation that exceeds depths of 5 feet. The PRIMP shall state that the project paleontologist shall reevaluate the necessity for paleontological monitoring after 50 percent or greater of the excavations deeper than 5 feet have been completed. <br> In the event that paleontological resources are encountered, ground-disturbing activity within 50 feet of the area of the discovery shall cease. The paleontologist shall examine the materials encountered, assess the nature and extent of the find, and recommend a course of action to further investigate and protect or recover and salvage those resources that have been encountered. <br> Criteria for discard of specific fossil specimens will be made explicit. If a qualified paleontologist determines that impacts to a sample containing significant paleontological resources cannot be avoided by project planning, then recovery may be applied. Actions may include recovering a sample of the fossiliferous material prior to construction, monitoring work and halting construction if an important fossil needs to be recovered, and/or cleaning, identifying, and cataloging specimens for curation and research purposes. Recovery, salvage and treatment shall be | Confirmation of professional paleontologist retention/ongoing/monitoring/submittal of Paleontological Resources Impact Mitigation Plan (PRIMP). Prior to issuance of Grading Permit and during subsurface excavation. | City of Moreno Valley Community Development Department |  |


| MITIGATION MEASURE |  | Responsible for <br> ENSURING COMPLIANCE <br> /VERIFICATION |
| :--- | :--- | :--- |
| COMPLETED <br> AND INITIALS |  |  |
| done at the applicant's expense. All recovered and salvaged <br> resources shall be prepared to the point of identification and <br> permanent preservation by the paleontologist. Resources shall <br> be identified and curated into an established accredited <br> professional repository. The paleontologist shall have a <br> repository agreement in hand prior to initiating recovery of the <br> resource. |  |  |
| ACTION AND TIMING |  |  |


| TABLE 2: EXISTING PLANS, PROGRAMS, OR POLICIES |  |  |  |
| :---: | :---: | :---: | :---: |
| PPP | Action and Timing | Responsible for Ensuring Compliance / Verification | Date Completed and Initials |
| AIR QUALITY |  |  |  |
| PPP AQ-1: Rule 402. The project is required to comply with the provisions of South Coast Air Quality Management District (SCAQMD) Rule 402. The project shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. | Compliance with Rule 402. Construction. | City of Moreno Valley Community Development Department |  |
| PPP AQ-2: Rule 403. The project is required to comply with the provisions of South Coast Air Quality Management District (SCAQMD) Rule 403, which includes the following: <br> - All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions. <br> - The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the project are watered, with complete coverage of disturbed areas, at least 3 times daily during dry weather; preferably in the mid-morning, afternoon, and after work is done for the day. <br> - The contractor shall ensure that traffic speeds on unpaved roads and project site areas are reduced to 15 miles per hour or less. | Compliance with Rule 403. Construction. | City of Moreno Valley Community Development Department |  |
| PPP AQ-3: Rule 1113. The project is required to comply with the provisions of South Coast Air Quality Management District Rule (SCAQMD) Rule 1113. Only | Compliance with Rule 1113. Construction. | City of Moreno Valley Community Development Department |  |


| "Low-Volatile Organic Compounds" paints (no more than 50 gram/liter of VOC) and/or High Pressure Low Volume (HPLV) applications shall be used. |  |  |  |
| :---: | :---: | :---: | :---: |
| BIOLOGICAL RESOURCES |  |  |  |
| PPP BIO-1: MSHCP Development Impact Fees. Prior to issuance of a grading or building permit, the project applicant will be required to pay relevant City of Moreno Valley mitigation fees to the City. | Pay MSHCP fee. <br> Prior to Grading Permit. | City of Moreno Valley Community Development Department |  |
| GEOLOGY |  |  |  |
| PPP GEO-1: California Building Code. The Project is required to comply with the California Building Code as included in the City's Municipal Code Chapter 8.20 to preclude significant adverse effects associated with seismic hazards. California Building Code related and geologist and/or civil engineer specifications for the Project are required to be incorporated into grading plans and specifications as a condition of Project approval. | Comply with California Building Cod. Prior to Grading Permit. | City of Moreno Valley Community Development Department |  |
| GREENHOUSE GAS EMISSIONS |  |  |  |
| PPP GHG-1: CalGreen Compliance. The project is required to comply with the CalGreen Building Code as included in the City's Municipal Code to ensure efficient use of energy. CalGreen specifications are required to be incorporated into building plans as a condition of building permit approval. | Comply with CalGreen efficient energy specifications. Prior to building permit. | City of Moreno Valley Community Development Department |  |
| PUBLIC SERVICES |  |  |  |
| PPP PS-1: The project will be required to pay applicable development fees levied by the Moreno Valley Unified School District pursuant to the School Facilities Act (Senate Bill [SB] 50, Stats. 1998, c.827) to offset any effects on school facilities resulting from new development. | Pay SB 50 school fees. Prior to building permits. | City of Moreno Valley Community Development Department |  |


| PPP PS-2: Park Fees. As a condition of the approval of a residential development, the project shall pay applicable park related fees and/or dedicate parkland pursuant to Municipal Code Section 3.38.080 and Chapter 3.40. | Pay applicable park fees. <br> Prior to building permits. | City of Moreno Valley Community Development Department |  |
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| WATER QUALITY |  |  |  |
| PPP WQ-1: Stormwater Pollution Prevention Plan. Prior to grading permit issuance, the project developer shall have a Stormwater Pollution Prevention Plan (SWPPP) prepared by a Qualified SWPPP Developer (QSD) in accordance with the City's Municipal Code Chapter 8.10 and the Santa Ana Regional Water Quality Control Board National Pollution Discharge Elimination System (NPDES) Storm Water Permit Order No. R4-2012-0175 (MS4 Permit). The SWPPP shall incorporate all necessary Best Management Practices (BMPs) and other NPDES regulations to limit the potential of erosion and polluted runoff during construction activities. Project contractors shall be required to ensure compliance with the SWPPP and permit periodic inspection of the construction site by the City of Moreno Valley staff or its designee to confirm compliance. | Review and approval of SWPPP. Prior to Grading Permit. | City of Moreno Valley Community Development Department |  |
| PPP WQ-2: Water Quality Management Plan, Prior to grading permit issuance, the project applicant shall have a Water Quality Management Plan (WQMP) approved by the City for implementation. The project shall comply with the City's Municipal Chapter 8.10 and the Municipal Separate Storm Sewer System (MS4) permit requirements in effect for the Regional Water Quality Control Board (RWQCB) at the time of grading permit to control discharges of sediments and other pollutants during operations of the project. | Review and approval of WQMP. Prior to Grading Permit. | City of Moreno Valley Community Development Department |  |

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I. AESTHETICS - Except as provided in Public Resources Code $\$ 21099$ - Modernization of Transportation Analysis for Transit-Oriented Infill Projects - Would the project:
a) Have a substantial adverse effect on a scenic vista?


## Response: Less than Significant Impact

Scenic vistas are publicly accessible viewpoints that provide views of areas from the Project Site. Scenic vistas within the City include Box Springs Mountains and Reche Canyon area to the north approximately 1.7 miles from the Project Site, the "Badlands" to the east approximately 12 miles from the Project Site, and the Mount Russel area to the south approximately 12.4 miles from the Project Site.

The Project Site is located at the northwest corner of Oliver Street and Iris Avenue. Surrounding land uses include: one and two-story single-family residential units to the east, two-story singlefamily residential units to the south; a vacant parcel and Kaiser Permanente Hospital to the west, and a vacant parcel and additional hospital equipment storage to the north. Perimeter walls around the single-family residential homes located to the east and south of the Project Site, block views of scenic vistas from backyards and first floors of the single-family residential homes. The single-family residential units to the south are approximately 10 feet higher in elevation compared to the Project Site. Ornamental trees are located along Iris Avenue to the north and south, partially blocking scenic views of the Box Springs Mountains, and are also located east of Oliver Street, partially blocking views of the Box Spring Mountains from the single-family residential units to the east of Oliver Street.

The proposed Beyond Food Mart convenience store would be 23 feet in height at its tallest point and the fueling station canopy would not exceed 20 feet in height. Views of the Box Spring Mountains to the north of the Project Site would be intermittently blocked while traveling east on Iris Avenue due to ornamental trees located north of the street. While traveling west on Iris Avenue, views of the Box Spring Mountains would be partially blocked by the convenience store building and fueling station canopy. The development of the Beyond Food Mart would block some travelers' views of Box Spring Mountains to the north of the Project Site but is not considered a substantial adverse effect. The Upland Game Hunting Area can be seen when traveling south on Oliver Street and views will partially be blocked by the proposed Beyond Food Mart. Overall, with adherence to the development standards and regulations pursuant to Title IX (Planning and Zoning) of the City's Municipal Code, the development of the Proposed Project would have a less than significant impact on scenic vistas due to its limited size and height, and no mitigation is required.
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

## Response: Less than Significant Impact

The Project Site is currently vacant. Surrounding land uses include single-family residential to the east and south, and vacant land to the north and west. Two scenic highways are located within the City which includes State Route 60 (SR-60) and Moreno Beach Drive. State Route 60 is located approximately 3 miles north of the Project Site while Moreno Beach Drive is located approximately 0.3 mile east of the Project Site. However, single-family residential units are currently blocking views of the Project Site from Moreno Beach Drive. Therefore, the

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development of the Proposed Project will have a less than significant impact related to scenic resources and no mitigation is required.
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

## Response: Less than Significant Impact

The Project Site is located in an urbanized area. The construction phase of the Project would introduce the use of machinery such as excavators and bulldozers. The presence of the construction equipment, as well as the construction activities, would temporarily alter the visual character of a portion of the Project Site. Construction staging areas, including earth stockpiling, storage of equipment and supplies, and related activities would contribute to a disturbed site, which would be a short-term visual impact. However, these construction activities would be temporary, and therefore not create a permanent significant visual impact.

Regarding long-term views, the Project Site is currently vacant and undeveloped. Single-family residential units are located to the south and east of the Project Site, with vacant undeveloped land located to the north and west. Just west of the vacant land is Kaiser Permanente Hospital (refer to Figures 2 and 3). The Proposed Project would comply with the City of Moreno Valley General Plan policies and regulations regarding the appearance of the proposed building and fuel station canopy. In addition, the height of the convenience store building and the fueling canopy would be equal or less than that of a single-family home. Therefore, the minor changes in visual character that would result from implementation of the Proposed Project would be less than significant. No mitigation is required.

The Proposed Project would be consistent with applicable development standards and regulations pursuant to Title IX (Planning and Zoning) of the City's Municipal Code for the Downtown Center (DC) Land Use District, as demonstrated below in Table 2.

Table 2
Commercial Development Standards

| Municipal Code Standard |  | Project Consistency |
| :--- | :--- | :--- |
| Block Development | Blocks over 500 feet should <br> feature mid-block connections as <br> pedestrian pathways or alleys. <br> Block sizes should range <br> between 330 and 660 linear feet <br> where feasible | N/A. The Proposed Project <br> would be developed on <br> 1.31 acres and does not <br> include residential or <br> commercial blocks. |
| Mid-Block Pathways | Mid-block pathways shall be no <br> less than 16 feet wide | N/A. Proposed Project has no <br> mid-block pathways. |
| Building Orientation | Buildings shall be oriented such <br> that frontages and entrances are <br> visible and accessible from the <br> public right-of-way pedestrian <br> connections, parks, or plazas | Consistent. The Project's main <br> access would be from Oliver <br> Street to the east and Iris <br> Avenue to the south. Sidewalks <br> exist along both project <br> frontages. |



| Density - Dwelling Units (DU)/Acre | NA (with or without affordable housing) | N/A. The Proposed Project does not include residential uses. |
| :---: | :---: | :---: |
| Minimum Site Area | As determined through area plan if required or site plan review | Consistent. The size of the Proposed Project is 57,064 square feet ( 1.31 acres) and is subject to site plan review. |
| Minimum Site Width (feet) | As determined through area plan if required or site plan review | Consistent. The size of the Proposed Project is 57,064 square feet ( 1.31 acres) and is subject to site plan review. |
| Minimum Site Depth (feet) | As determined through area plan if required or site plan review | Consistent. The size of the Proposed Project is 57,064 square feet ( 1.31 acres) and is subject to site plan review. |
| Front Building Setback (feet), (after dedications for right-of-way) ground floor use | 0-10 | Consistent. The front setback for all structures would 10 feet |
| Side Street Building Setback Area (feet), (after dedications for right-of-way) | 0-10 | Consistent. The street side setback for all structures would be 10 feet. |
| Interior Side Yard Setback (feet) | 0-10 | N/A. The Proposed Project does not include residential uses. |
| Rear Yard Setback (feet) | 0-10 | N/A. The Proposed Project does not include residential uses. |
| Lot Coverage, Maximum | Pending landscape and open space requirements | Consistent. The maximum lot coverage would be 16,376 square feet and landscaping consists of 14,944 square feet. |
| Building Height (feet), Maximum | None (50 ft Max on Site Plans) | Consistent. The maximum building height will be 23 feet. |
| Floor Area Ratio (FAR) | N/A | Consistent. The Floor Area Ratio for the Proposed Project is $6.16 \%$. |
| Minimum Dwelling Size | a) Studio and One Bedroom: 450 square feet; <br> b) Two Bedroom: 800 square feet; <br> c) Three Bedroom: 1,000 square feet | N/A. The Proposed Project does not have residential uses. |
| Minimum Distance Between Buildings (feet), (between residential and commercial uses) | 10 ft | Consistent. The minimum distance between Proposed Project buildings and adjacent residential use property lines would be at least 100 feet. |
| Parking (surface) Side Street Setback (feet), (after dedications for right-of-way) | 10 ft | Consistent. The minimum setback distances are met. |

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| Parking (surface) Side <br> Street Setback (feet), <br> (after dedications for <br> right-of-way) | Consistent. The minimum <br> setback distances are met. |  |
| :--- | :---: | :--- |
| Garage/Truck-Under <br> Parking | Prohibited along front lot lines | N/A. There is no proposed <br> garage or truck-under parking <br> within the Project Site. |
| Underground/Podium <br> Parking | Allowed beneath building <br> footprints | N/A. There will not be any <br> underground or podium parking <br> within the Project Site. |
| Above Ground Parking <br> Structure | Allowed if screened from views <br> from public right-of-way and <br> adjacent single family residential <br> zones | N/A. There will be no above <br> ground parking structures on <br> the Project Site. |
| Setback Landscaping | All setbacks exclusive of required <br> walkways and driveways will be <br> landscaped planting areas | Consistent. The Proposed <br> Project would include <br> landscaped setbacks. |
| Publicly Accessible <br> Open Space <br> (nonresidential) | N/A. The Proposed Project <br> does not have open space <br> uses. |  |
| Private Open Space area <br> (multifamily <br> residential) | 150 sq ft per unit on 1st floor, and <br> 100 sq ft per unit on upper floors | N/A. The Proposed Project <br> does not have residential uses. |
| Common Open Space <br> (multifamily <br> residential) | 300 sq ft per unit | N/A. The Proposed Project <br> does not have residential uses. |
| Ground floor building <br> frontages clear glazing <br> material | $60 \%$ | Consistent. The architectural <br> materials requirements are met. |
| Ground floor-to-ceiling <br> minimum height (feet) | $15-20$ | Consistent. The minimum <br> ceiling heights are met. |

As discussed above, in Table 2, the Proposed Project would be consistent with the applicable development standards and regulations pursuant to Title IX (Planning and Zoning) of the City's Municipal Code. Thus, the Proposed Project would not conflict with the regulations regarding aesthetics and scenic quality in the Moreno Valley Municipal Code. The new buildings would be setback from adjacent streets and would not encroach into existing public long-distance views. Landscaping would be installed pursuant to the City's standards. As a result, the Proposed Project would not result in the creation of an aesthetically detrimental site open to public view. Therefore, while the Proposed Project would change the visual character of the site, it would not substantially degrade the existing visual quality of its surroundings, and impacts would be less than significant.


## Response: Less than Significant Impact

The Project Site presently does not contain any source of light. Sources of light in the area include street lighting along Iris Avenue and Oliver Street, as well as the fully improved roadways, and single-family residential lighting south and east of the site. Glare is a daytime occurrence resulting from light reflecting off polished surfaces and affecting viewers in nearby moving vehicles. The development of the Beyond Food Mart would create new sources of light

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and glare. At night, the Proposed Project's interior and exterior building lights and landscape/security lighting would be visible from the adjacent single-family residential uses, and to a lesser extent, from the surrounding public streets. However, these light sources would not contribute to impacts on the night sky, as they would not exceed existing background light levels already present within the surrounding area. In addition, new construction shall comply with the City of Moreno Valley's General Plan and Municipal Code requirements. A lighting plan would be submitted to the City for approval prior to issuance of Building Permits. Therefore, lighting impacts would be less than significant. No mitigation is required.

Sources of glare as a result of the Proposed Project implementation include reflective building materials and vehicles parked within and traveling to and from the property. The amount of glare would depend on the location of the reflective surfaces and the direction of the sun. Any glare produced by the reflective surfaces would be temporary, as the location of the sun would be changing throughout the day. The Proposed Project is consistent with the City's General Plan and Municipal Code. Therefore, impacts from glare would be less than significant. No mitigation required.

## Sources:

1. Moreno Valley 2040 General Plan, adopted June 15, 2021.
2. Chapter 10 - Open Space \& Resource Conservation

- Figure OSRC-3: Scenic resources and Ridgelines

3. Draft Environmental Impact Report MoVal 2040: Moreno Valley Comprehensive Plan Update, certified May 20, 2021.
4. Section 4.1 - Aesthetics
5. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
6. Section 9.10.110 - Light and Glare of the Moreno Valley Municipal Code.
7. Chapter 9.16 - Design Guidelines
8. Cal trans: State Scenic Highway Map.
II. AGRICULTURE AND FOREST RESOURCES - In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest protocols adopted by the California Air Resources Board. Would the project:
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?

## Response: No Impact

The California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP) compile important farmland maps pursuant to the provisions of Section 65570 of the California Government Code. The maps are updated every two years using a computer

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mapping system, aerial imagery, public review and field reconnaissance. According to the FMMP, the Project Site lies within "farmland of local importance and is surrounded by farmland of local importance and urban and built-up land". However, much of this land has already been developed or is planned to be developed into various urban uses. The closest Prime Farmland to the Project Site is located approximately 2.8 miles north of the Project Site. Therefore, no Prime, Unique, or Farmland of Statewide Importance is located within the Project limits and no impact would result from the development of the Proposed Project. No mitigation is required.
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

## Response: No Impact

The California Land Conservation Act of 1965 - or commonly known as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses. In return, landowners are given a lower property tax assessment. The Project Site does not contain land that is enrolled in a Williamson Act contract. Additionally, according to the City of Moreno Valley's Zoning Map, the Project Site is currently zoned for "Downtown Center (DC)." In addition, the surrounding area contained existing or planned suburban development, and the City has no agricultural land use designations in its General Plan or zoning. Due to the Project Site not part of a Williamson Act contract, nor is zoned for agricultural uses, no impact associated with this issue would occur. No mitigation is required.
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section $12220(\mathrm{~g})$ ), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section $51104(\mathrm{~g})$ )?

## Response: No impact

The Project Site is currently vacant and undeveloped. The site does not contain any forest land, Timberland Production, nor is it zoned for such uses. Therefore, the Proposed Project would have no impact on forest land, timberland, or timberland zoned Timberland Production. No mitigation is warranted.
d) Result in the loss of forest land or conversion of forest land to non-forest use?

## Response: No Impact

As defined in Public Resources Code (PRC) Section 12220(g), "Forest land" is land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. The Project Site and surrounding properties are not currently zoned, being managed, defined or used as forest land as identified in PRC Section 12220(g). Furthermore, the Project Site and surrounding area do not contain trees that would constitute urban forestry or any forest-related resources. Therefore, implementation of the Proposed Project would not convert forest land to non-forest use. No impacts are identified or anticipated, and no mitigation measures are required.

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e) Involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

## Response: No Impact

As noted above, the Project Site is currently vacant and is not utilized for agricultural production or timberland. Neither the Project Site nor adjacent facilities are being used for or zoned for farmland or forest land. Therefore, the development of the Proposed Project would not result in the conversion of farmland to non-agricultural use or forest land to non-forest uses. No impact to the conversion of agricultural lands or forest lands would occur. No mitigation is required.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 7 - Conservation Element - Section 7.7 - Agricultural Resources

2. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021

- Section 5.8 - Agricultural Resources
- Figure 5.8-1 - Important Farmlands

3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
III. AIR QUALITY - Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:
a) Conflict with or obstruct implementation of the applicable air quality plan?


## Response: Less than Significant Impact

The Project Site is located in the South Coast Air Basin (SCAB). The South Coast Air Quality Management District (SCAQMD) has jurisdiction over air quality issues and regulations within the SCAB. The Air Quality Management Plan (AQMP) for the basin establishes a program of rules and regulations administered by SCAQMD to obtain attainment of the state and federal air quality standards. The most recent AQMP (2022 AQMP) was adopted by the SCAQMD on December 2, 2022. The 2022 AQMP incorporates the latest scientific and technological information and planning assumptions, including transportation control measures developed by the Southern California Association of Governments (SCAG) from the 2022 Regional Transportation Plan/Sustainable Communities Strategy, and updated emission inventory methodologies for various source categories.

A project is inconsistent with the AQMP if:

1) it does not comply with the approved general plan; or
2) it uses a disproportionately large portion of the forecast growth increment (change population or employment levels). The City of Moreno Valley currently designates the Project Site as Downtown Center (DC)under which the Proposed Project is an allowable use.

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Additionally, large population or employment increases could affect transportation control strategies, which are among the most important in the air quality plan, since transportation is a major contributor to particulates and ozone for which the SCAB is not in attainment. Because the Proposed Project use has been considered in the City's General Plan or does it include activities that would substantially change population or employment levels within the air basin, the Proposed Project would not conflict with or obstruct implementation of the applicable air quality plan.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Sections 12.2 and 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993). These indicators are discussed below:

Consistency Criterion No. 1
The Proposed Project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP. The violations that Consistency Criterion No. 1 refers to are the California Ambient Air Quality Standards (CAAQS) and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded. As emissions will not exceed the applicable thresholds, the Proposed Project is determined to be consistent with the first criterion.

Consistency Criterion No. 2
The Proposed Project would not exceed the assumptions in the AQMP based on the years of Project Site buildout phase. The 2022 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the SCAG, which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in the Moreno Valley GP is considered to be consistent with the AQMP.

## Construction Impacts - Consistency Criterion

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities.

## Operational Impacts - Consistency Criterion 2

The Project Site is located within the City of Moreno Valley. As per the General Plan, the Project is designated as Planned Commercial (PC) within the Downtown Center (DC) zone. The Proposed Project would include an eight-island fueling station, a 7,460-sf convenience store mart, and a 1.790 sf drive through car wash. The proposed land uses are consistent with the General Plan designation. Therefore, the project is determined to be consistent with the second criterion.

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## AQMP Consistency Conclusion

The Proposed Project would not result in or cause NAAQS or CAAQS violations. The Proposed Project is consistent with the land use and growth intensities reflected in the adopted in the GP. Furthermore, the Proposed Project would not exceed any applicable regional or local thresholds. As such, the Proposed Project is therefore considered to be consistent with the AQMP and a less than significant impact is expected.
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

## Response: Less than Significant Impact

Construction and operational emissions for the Project Site were screened using CalEEMod version 2022 (see Appendix A). The CalEEMod outputs were based on the Site Plan, which is a 1.31-acre lot that would be developed with a 7,460 sf convenience store, an eight island fueling station with a 5,979 sf canopy, and a 1,790 sf drive-thru car wash. The emissions incorporate Rule 402 and 403 by default as required during construction. The criteria pollutants screened for include reactive organic gases (ROG), nitrous oxides (NOx), carbon monoxide (CO), sulfur dioxide (SO2), and particulates ( $\mathrm{PM}_{10}$ and $\mathrm{PM}_{2.5}$ ). Two of the analyzed pollutants, ROG and NOx, are ozone precursors. Both summer and winter season emission levels were estimated.

## Construction Emissions

Construction emissions are considered short-term, temporary emissions and were modeled with the following construction parameters: site preparation, grading (fine and mass grading), building construction, paving, and architectural coating. Construction emissions were modeled with an anticipated beginning date in early 2024 and an estimated completion date in late 2024 for an early 2025 operational year. The resulting emissions generated by construction of the Proposed Project are shown in Table 3, which represent the maximum summer and winter construction emissions, respectively.

Table 3
CaIEEMod 2022
Maximum Summer and Winter Construction Emissions
(Pounds per Day)

| Source/Phase | ROG | $\mathbf{N O}_{\mathbf{x}}$ | $\mathbf{C O}$ | $\mathbf{S O}_{\mathbf{2}}$ | $\mathbf{P M}_{\mathbf{1 0}}$ | $\mathbf{P M}_{\mathbf{2 . 5}}$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Summer Max | 1.15 | 9.51 | 10.4 | 0.02 | 0.42 | 0.35 |
| Winter Max | 9.21 | 15.9 | 16.8 | 0.02 | 3.64 | 2.05 |
| SCAQMD Threshold | 75 | 100 | 550 | 150 | 150 | 55 |
| Significant | No | No | No | No | No | No |

Source: CalEEMod. 2022 Winter and Summer Max Emissions.
Phases do not overlap and represent the highest concentration.

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As shown, both summer and winter season construction emissions are below SCAQMD thresholds. The Proposed Project does not exceed applicable SCAQMD regional thresholds during construction activities. Therefore, no significant adverse impacts are identified or anticipated, and no mitigation measures are required.

## Compliance with SCAQMD Rules 402 and 403

Although the Proposed Project does not exceed SCAQMD thresholds for construction emissions, the Project Proponent would be required to comply with all applicable SCAQMD rules and regulations as the SCAB is in non-attainment status for ozone and suspended particulates ( $\mathrm{PM}_{10}$ and $\mathrm{PM}_{2.5}$ ).

The Project Proponent would be required to comply with Rules 402 nuisance, and 403 fugitive dust, which require the implementation of Best Available Control Measures (BACMs) for each fugitive dust source, and the AQMP, which identifies Best Available Control Technologies (BACTs) for area sources and point sources. The BACMs and BACTs would include, but not be limited to the following:

1. The Project Proponent shall ensure that any portion of the site to be graded shall be pre-watered prior to the onset of grading activities (see Figures 4 and 6).
(a) The Project Proponent shall ensure that watering of the site or other soil stabilization method shall be employed on an on-going basis after the initiation of any grading activity on the site. Portions of the site that are actively being graded shall be watered regularly ( $3 x$ daily) to ensure that a crust is formed on the ground surface and shall be watered at the end of each workday.
(b) The Project Proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed upon.
(c) The Project Proponent shall ensure that landscaped areas are installed as soon as possible to reduce the potential for wind erosion.
(d) The Project Proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when winds exceed 25 miles per hour.

During construction, exhaust emissions from construction vehicles and equipment and fugitive dust generated by equipment traveling over exposed surfaces would increase NOx and PM 10 levels in the area. Although the Proposed Project does not exceed SCAQMD thresholds during construction, the Applicant/Contractor would be required to implement the following conditions as required by SCAQMD:

1. To reduce emissions, all equipment used in grading and construction must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel.
2. The Project Proponent shall ensure that existing power sources are utilized where feasible via temporary power poles to avoid on-site power generation during construction.
3. The Project Proponent shall ensure that construction personnel are informed of ride sharing and transit opportunities.

## ISSUES \& SUPPORTING <br> INFORMATION SOURCES:

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4. All buildings on the Project Site shall conform to energy use guidelines in Title 24 of the California Administrative Code.
5. The operator shall maintain and effectively utilize and schedule on-site equipment in order to minimize exhaust emissions from truck idling.
6. The operator shall comply with all existing and future California Air Resources Board (CARB) and SCAQMD regulations related to diesel-fueled trucks, which may include among others: (1) meeting more stringent emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low sulfur fuel; and (4) use of alternative fuels or equipment.

## Operational Emissions

The operational mobile source emissions were calculated using the CalEEMod (Version 2022) default mode at full buildout. Operational emissions are listed in Table 3 and Table 4, which represent summer and winter operational emissions, respectively.

Table 4
Summer Operational Emissions Summary
(Pounds per Day)

| Source | ROG | $\mathbf{N O}_{\mathbf{x}}$ | $\mathbf{C O}$ | $\mathbf{S O}_{\mathbf{2}}$ | $\mathbf{P M}_{\mathbf{1 0}}$ | $\mathbf{P M}_{\mathbf{2} .5}$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Mobile | 10.5 | 8.18 | 73.1 | 0.17 | 14.3 | 3.72 |
| Area | 0.29 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 |
| Energy | 0.0 | 0.04 | 0.04 | 0.0 | 0.0 | 0.0 |
| Totals (Ibs./day) | $\mathbf{1 0 . 8}$ | $\mathbf{8 . 2 2}$ | $\mathbf{7 3 . 5}$ | $\mathbf{0 . 1 7}$ | $\mathbf{1 4 . 3}$ | $\mathbf{3 . 7 2}$ |
| SCAQMD Threshold | 55 | 55 | 550 | 150 | 150 | 55 |
| Significance | No | No | No | No | No | No |

Source: CalEEMod 2022 Summer Emissions.
Emissions represent the daily maximum emissions.
Table 5
Winter Operational Emissions Summary (Pounds per Day)

| Source | ROG | $\mathbf{N O}_{\mathbf{x}}$ | $\mathbf{C O}$ | $\mathbf{S O}_{\mathbf{2}}$ | $\mathbf{P M}_{\mathbf{1 0}}$ | $\mathbf{P M}_{\mathbf{2 . 5}}$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Mobile | 9.7 | 8.76 | 62.8 | 0.16 | 14.3 | 3.72 |
| Area | 0.22 | -- | -- | -- | -- | -- |
| Energy | 0.0 | 0.04 | 0.04 | 0.0 | 0.0 | 0.0 |
| Totals (Ibs./day) | $\mathbf{9 . 9 3}$ | $\mathbf{8 . 8}$ | 62.8 | $\mathbf{0 . 1 6}$ | $\mathbf{1 4 . 3}$ | $\mathbf{3 . 7 2}$ |
| SCAQMD Threshold | 55 | 55 | 550 | 150 | 150 | 55 |
| Significance | No | No | No | No | No | No |

Source: CalEEMod 2022 Winter Emissions.
Emissions represent the daily maximum emissions.
As shown, both summer and winter season operational emissions are below SCAQMD thresholds. The Proposed Project does not exceed applicable SCAQMD regional thresholds during operational activities. Therefore, no significant adverse impacts are identified or anticipated, and no mitigation measures are required.

Therefore, because the Proposed Project does not exceed the SCAQMD Risk Thresholds, the Project would pose a less than significant impact and no further mitigations are required.

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| c) Expose sensitive receptors to substantial | $\square$ | $\square$ | $\square$ | $\square$ |

Response: Less than Significant Impact
A Tier 2 screening level Toxic Air Contaminant (TAC) Health Risk Assessment (HRA) Technical Memorandum was prepared by Ganddini Group, Inc. on April 28, 2023 (see Appendix B).

As determined in the California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal. 4th 369 (CBIA) case the California Supreme Court determined that CEQA does not generally require an impact analysis of the existing environmental conditions on the future residents of a proposed project and generally only requires an analysis of the proposed project's impact on the environment. However, the CBIA case also stated that when a Proposed Project brings development and people into an area already subject to specific hazards and the new development/people exacerbate the existing hazards, then CEQA requires an analysis of the hazards and the proposed project's effect in terms of increasing the risks related to those hazards. Regarding air quality hazards, TACs are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. As such, if a Proposed Project would not exacerbate pre-existing hazards (e.g., TAC health risks) then an analysis of those hazards and the Proposed Project's effect on increasing those hazards is not required.

The Project is proposing a fueling station in proximity to existing residential uses and would be a source of toxic air contaminants; therefore, an analysis of the potential toxic air contaminant emissions has been conducted.

Those who are sensitive to air pollution include children, the elderly, and people with preexisting respiratory or cardiovascular illnesses. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities. Commercial and industrial facilities are not included in the definition because employees do not typically remain on-site for 24 hours.

The study identified that the closest sensitive receptors to the proposed service station include: the single-family residential uses to the east of Oliver Street, located at a distance of approximately 141 feet ( $\sim 43$ meters) from the façade of the residential dwelling unit to the edge of the fueling canopy, and the single-family residential uses to the south, located approximately 219 feet ( $\sim 67$ meters) from the underground storage tanks; approximately 250 feet ( $\sim 76$ meters) from the edge of the fueling canopy.

The Fresenius Kidney Care Dialysis Center is located at 27420 Iris Avenue, approximately 530 feet ( $\sim 161$ meters) northwest of the corner of the fueling canopy and Kaiser Permanente Moreno Valley Medical Center is located at 27300 Iris Avenue, approximately 667 feet ( $\sim 203$ meters) northwest of the edge of the fueling canopy.

The closest commercial uses would be on-site at the proposed car wash and the proposed convenience store, both of which are located approximately 65 feet ( $\sim 20$ meters) from the edge of the fueling canopy. The fueling station portion of the Project would be permitted by SCAQMD. Fuel-related emissions will be regulated by the SCAQMD Rule 461, and the facility would be required to obtain a Permit to Operate. Gasoline dispensing facilities are required to use Phase I/II EVR (enhanced vapor recovery) systems. Phase II EVR has an average efficiency

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of 95.1 percent and Phase I EVR has an average efficiency of 98 percent. Therefore, potential for fugitive VOC or TAC emissions from the fuel pumps is negligible.

Assuming 5.04 million gallons per year of throughput for this fuel dispensing facility ( provided by Project applicant), using the SCAQMD Risk Assessment Procedures for Rules 1401, 1401.1 and 2126 and the SCAQMD Risk Tool (V1.105) R0409197 and a downwind distance of approximately 43 meters (the closest sensitive receptor location where an individual could remain for 24 hours), in the Perris area; the residential (Maximum Individual Cancer Risk) MICR for the closest residential receptor is 9.684 in a million. The commercial MICR at a distance of 20 meters is 1.452 in a million.

As the neither the residential cancer risk nor the commercial cancer risk exceeds 10 in a million, the project is not considered to be a significant source of TACs or fugitive VOC emissions and sensitive receptors in the project vicinity and the proposed commercial receptors would not be exposed to toxic sources of air pollution.

Additionally, as the MICR does not exceed SCAQMD thresholds at the closest receptors, any receptors located further away than the closest receptors would also not be exposed to significant TACs or fugitive VOC emissions. Therefore, the HRA found that the health risk impacts associated with the Proposed Project are considered to be less than significant, and no further analysis or mitigation is required.

Although no Mitigation Measures are required, the Proposed Project shall be required to adhere to:

Mitigation Measure: AQ-1 Compliance with SCAQMD Rules 402 and 403
Although the Proposed Project does not exceed SCAQMD thresholds for construction emissions, the Project Proponent would be required to comply with all applicable SCAQMD rules and regulations as the SCAB is in non-attainment status for ozone and suspended particulates ( $\mathrm{PM}_{10}$ and $\mathrm{PM}_{2.5}$ ).

The Project Proponent would be required to comply with Rules 402 nuisance, and 403 fugitive dust, which require the implementation of Best Available Control Measures (BACMs) for each fugitive dust source, and the AQMP, which identifies Best Available Control Technologies (BACTs) for area sources and point sources. The BACMs and BACTs would include, but not be limited to the following:

1. The Project Proponent shall ensure that any portion of the site to be graded shall be pre-watered prior to the onset of grading activities (see Figures 4 and 6).
(a) The Project Proponent shall ensure that watering of the site or other soil stabilization method shall be employed on an on-going basis after the initiation of any grading activity on the site. Portions of the site that are actively being graded shall be watered regularly

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( $3 x$ daily) to ensure that a crust is formed on the ground surface and shall be watered at the end of each workday.
(b) The Project Proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed upon.
(c) The Project Proponent shall ensure that landscaped areas are installed as soon as possible to reduce the potential for wind erosion.
(d) The Project Proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when winds exceed 25 miles per hour.

During construction, exhaust emissions from construction vehicles and equipment and fugitive dust generated by equipment traveling over exposed surfaces would increase $\mathrm{NO}_{x}$ and $\mathrm{PM}_{10}$ levels in the area. Although the Proposed Project does not exceed SCAQMD thresholds during construction, the Applicant/Contractor would be required to implement the following conditions as required by SCAQMD:

1. To reduce emissions, all equipment used in grading and construction must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel.
2. The Project Proponent shall ensure that existing power sources are utilized where feasible via temporary power poles to avoid on-site power generation during construction.
3. The Project Proponent shall ensure that construction personnel are informed of ride sharing and transit opportunities.
4. All buildings on the Project Site shall conform to energy use guidelines in Title 24 of the California Administrative Code.
5. The operator shall maintain and effectively utilize and schedule on-site equipment in order to minimize exhaust emissions from truck idling.
6. The operator shall comply with all existing and future California Air Resources Board (CARB) and SCAQMD regulations related to diesel-fueled trucks, which may include among others: (1) meeting more stringent emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low sulfur fuel; and (4) use of alternative fuels or equipment.

Impacts associated with the Proposed Project potentially generating substantial pollutant concentrations are considered to be less than significant, and no further analysis or mitigation is required
d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?

## Response: Less than Significant Impact

The Proposed Project includes the development of a Beyond Food Mart, carwash, and fueling station. The nearest sensitive receptors to the Project Site are the residences in the neighborhood to the south and east, adjacent to Iris Avenue and Oliver Street. Potential odor sources associated with the Proposed Project may result from construction equipment exhaust

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and the application of asphalt and architectural coatings during construction activities as well as the temporary storage of domestic solid waste associated with the Proposed Project's longterm operational uses. Standard construction requirements would minimize odor impacts resulting from construction activity. It should be noted that any construction odor emissions generated would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction activity. Potential sources that may emit odors during the on-going operations of the Proposed Project would include odor emissions from the intermittent delivery truck emissions and trash storage areas. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations. The Proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances related to odors. Therefore, a less than significant adverse impacts are identified or are anticipated, and no mitigation measures are required.

## Sources:

1. CaIEEMod 2022 Outputs.
2. Moreno Valley General Plan, adopted June 15, 2021
3. Final Environmental Impact Report City of Moreno Valley General Plan, certified July 11, 2006

- Section 5.3 - Air Quality

4. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code

- Section 9.10.050 - Air Quality of the Moreno Valley Municipal Code
- Section 9.10.150 - Odors of the Moreno Valley Municipal Code
- Section 9.10.170 - Vibration of the Moreno Valley Municipal Code

5. Moreno Valley Municipal Code Section 12.50 .040 - Limitations on Engine Idling

## IV. BIOLOGICAL RESOURCES - Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

## Response: Less than Significant with Mitigation Incorporated

A Biological Resources Assessment (BRA), Jurisdictional Delineation, and Multiple Species Habitat Conservation Plan (MSHCP) Consistency Analysis prepared for the Proposed Project by Jennings Environmental, LLC dated February 2023 is summarized herein (see Appendix C). As part of the BRA, Jennings Environmental, LLC (Jennings) conducted a background data search for information on plant and wildlife species known occurrences within the vicinity of the Project Site. Jennings evaluated the Project Site in relation to the Western Riverside County MSHCP areas including criteria cells, core habitat, linkages, and areas proposed for conservation. The data review included biological text on general and specific biological resources, and resources considered to be sensitive by various wildlife agencies, local government agencies and interest groups. The Biology Resources Assessment states that according to the California National Diversity Database (CNDDB), the California Native Plant Society Inventory of Rare and Endangered Plants (CNPSIE), and other relevant literature or databases, 47 sensitive species including 10 listed species, and 1 sensitive habitat, have been

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documented in the Sunnymead and Perris quads. This list of sensitive species and habitats includes any State and/or federally listed threatened or endangered species, the CDFW designated Species of Special Concern (SSC), and otherwise Special Animals.

A general reconnaissance survey was conducted on January 29, 2023, to identify the potential for the occurrence of special status species, vegetation communities, or habitats that could support special status wildlife species. Below are the findings.

## Flora

The habitat on-site consists of a mix of ruderal vegetation and bare ground. The Project Site shows signs of recent vegetation management in the form of mowing and disking. The plant species observed on-site include Tumble weed (Salsola tragus), London rocket (Sisymbrium irio), Menzie's fiddleneck (Amsinckia menziesii), Wall barley (Hordeum murinum), Stinknet (Oncosiphon pilulifer), Common stork's bill (Erodium cicutarium), Schismus grass (Schismus spp.), and Slender wild oat (Avena barbata). Among the documented vegetation species, no State and/or federally listed threatened or endangered species were observed on-site.

## Fauna

Species observed or otherwise detected on or in the vicinity of the Project Site during the surveys included white-crowned sparrow (Sayornis nigricians), black phoebe (Sayornis nigricans), and house finch (Haemorhous mexicanus).

Based on the January 2023 field survey, the Project Site does not contain suitable habitat for Burrowing owl (Athene cunicularia). The property is continually maintained by mowing or disking. No burrowing owls were observed during the site visit. No portion of the Project Site showed any evidence including burrows, feathers, whitewash, or castings, of past or present burrowing owl activity. Additionally, the Project Site does not contain suitable burrow surrogate species (i.e., California ground squirrel (Otospermophilus beecheyi). Therefore, the Project Site is not suitable for burrowing owl, and this species is considered absent from the Project Site.

Portions of the Project Site and the immediate surrounding area do provide suitable habitat for nesting birds. There are mature trees in the adjacent neighborhoods and the vacant lands provide suitable habitat for other ground nesting species such as killdeer (Charadrius vaciferus). Therefore, potentially significant impacts could occur if construction occurs during the nesting season. Implementation of Mitigation Measure $\mathrm{BIO}-1$ would mitigate any potentially significant impacts.

## Mitigation Measure BIO 1: Migratory Bird Treaty Act.

Nesting bird nesting season generally extends from February 1 through September 15 in southern California and specifically, March 15 through August 31 for migratory passerine birds. To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist will conduct pre-construction Nesting Bird Surveys (NBS) prior to Project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist will set appropriate no-work buffers around the nest which will be based upon the nesting species, its sensitivity to disturbance, nesting stage, and expected types, intensity, and duration of the disturbance. The nests and buffer zones shall be field-checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked

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in the field, within which no disturbance activity shall commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.

The Project Site is not mapped within a criteria cell or subunit of the Multiple Species Habitat Conservation Plan (MSHCP). The Project Site is not located within an area mapped for Narrow Endemic Plant Species, Special Status Species, or protected habitats. The site is mapped within an area for Criteria Area Species Surveys for burrowing owl. However, as stated above this species is considered absent from the Project Site. Therefore, the project is consistent with MSCHP policies and conditions. The Project Site is also not located with or adjacent to any USFWS designated Critical Habitat.

With the implementation of mitigation measure BIO 1, any potential impacts to candidate, sensitive, listed, or special status species, particularly nesting birds, can be reduced to a less than significant level.
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

## Response: Less than Significant Impact

The Project Site is relatively flat, with mixed ruderal vegetation and bare ground. The MSHCP Consistency analysis states, the Project Site is not located within an area mapped for sensitive habitats including Narrow Endemic Plants, Special Status Species, Riparian, Riverine, or Vernal Pools. The Biological Resources Assessment states that the National Wetlands Inventory (NWI) maps did not identify the Project Site containing Riverine or Riparian habitat. The Project Site does not contain hydric vegetation, hydric soils, or wetland hydrology. In order to be classified as a wetland, all three criteria must be present within the Project Site. Additionally, no MSHCP Narrow Endemic Plant species are known to occur in the Project area. Therefore, because the Project Site does not contain any riparian habitat, or other sensitive natural community that conflicts with the USFWS or MSCHP, potential impacts are considered less than significant. No mitigation is required.
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

## Response: No Impact

The Project Site is currently vacant and is currently surrounded by residential and commercial uses. No federal jurisdictional waters, wetlands, and/or streambeds regulated by the CDFW were identified within the Project area. Additionally, as previously stated, the Project Site does not contain hydric soil, hydric vegetation, wetland hydrology, or any habitats such as Riparian, Riverine, or Vernal Pools. Therefore, the Proposed Project would have no impact on, Waters of the U.S., or Waters of the State.

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## Response: No Impact

The Project Site is currently vacant and is surrounded by residential and institutional uses. The Proposed Project would not affect wildlife movement, since the parcel is surrounded by urban development and species associated with urban environments are able to navigate these areas. Additionally, according to the California Essential Habitat Connectivity Project, the Project Site is not mapped within an area for aquatic or terrestrial wildlife movement. Therefore, the Proposed Project would not have an impact on any current wildlife corridors.
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?


There are no streams, channels, washes, or swales that meet the definitions of Section 1600 of the State of California Fish and Game Code (FGC) under the jurisdiction of the CDFW, Section 401 ("Waters of the State" ) of the Clean Water Act (CWA) under the jurisdiction of the Regional Water Quality Control Board (RWQCB), or "Waters of the United States" (WoUS) as defined by Section 404 of the CWA under the jurisdiction of the U.S. Army Corps of Engineers (Corps) within the subject parcel. Therefore, no permit from any regulatory agency would be required and the Proposed Project would have a less than significant impact on surrounding land uses. No mitigation is required.

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## Sources:

1. Biological Resources Assessment, Jurisdictional Delineation, and Multiple Species Habitat Conservation Plan (MSHCP) Consistency Analysis. Jennings Environmental, LLC. February 2023.
2. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 7 - Conservation Element - Section 7.1 - Biological Resources

3. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20,2021

- Section 4.4 - Biological Resources

4. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code

- Section 9.17.030 G - Heritage Trees

5. Moreno Valley Municipal Code Chapter 8.60 - Threatened and Endangered Species
6. Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), http://www.wrc-rca.org/about-rca/multiple-species-habitat-conservation-plan/
7. Stephens' Kangaroo Rat Habitat Conservation Plan (SKRHCP), Governing Documents RCHCA, CA

## V. CULTURAL RESOURCES - Would the project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

## Response: Less than Significant Impact

A Phase I Cultural Resources Assessment of Master Plot Plan No. PEN22-0238 and Conditional Use Permit No. PEN 22-0176, dated April 2023, was conducted by a Cultural Resources Consultant, Jean A. Keller (see Appendix D) and is summarized herein. A records search was provided by the Eastern Information Center on March 29, 2023, indicating that the subject property had been involved in one previous cultural resources study, conducted in 2017 by LSA. Entitled "Cultural Resources Assessment, Sater Arco Project, City of Moreno Valley, Riverside County, California" (RI-10128), the study included the entirety of what is now PEN220238 and PEN22-0176. During the course of the field survey, a single isolated artifact of historical origin, P-33-027260, was recorded approximately 130 feet northwest of the intersection of Iris Avenue and Oliver Road. The artifact was a fragment of a pre-WWII riveted steel irrigation pipe. The report determined that isolated artifacts, particularly those of historicperiod origin that have no specific association are generally considered not significant and therefore, are not "historical resources" under the California Environmental Quality Act (CEQA). The artifact was left in situ, or its original place and no further research was recommended.

Archival research indicated that a house and stable were built on the subject property in 1894, by Marion Heacock Hotchkiss, a member of one of the founding families of Moreno Valley. Although Marion Hotchkiss sold the subject property in 1899, the structures remained on the property until at least 1939, the last year they were assessed by the Riverside County Assessor. However, cartographic research indicates that at least one structure was located at the southeastern corner of the Project Site until 1978. No structural remains were observed during the current field survey.

Therefore, because there are no structures within the Project Site and the remaining historical artifact is not considered significant, the Project Site would not significantly degrade any historical resources pursuant to $\S 15064.5$.

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b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to $\S 15064.5$ ?

## Response: Less than Significant with Mitigation Incorporated

The Project Site is located in a well-studied area, with 11 previous cultural resources studies having been conducted within a one-mile radius, most of which have large acreage. During the course of these studies, 22 cultural resources properties have been recorded, one of which was located on the Project Site. With the exception of the isolated historical-era artifact found on the Project Site, all of the remaining sites are Native American bedrock milling sites, although one site also has a small rock shelter and midden. No significant archaeological sites have been recorded in less than a one-half mile radius of the subject property. However, due to the existence of a historical artifact on the Project Site, the presence of another irrigation feature off property, and the number of Native American milling sites within a one mile radius, part-time archaeological monitoring during grading activities is recommended as described in Mitigation Measure CUL-1.

## Mitigation Measure CUL-1:

Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:
a. Project grading and development scheduling;
b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as needed basis;
c. The protocols and stipulations that the contractor, City, Consulting Tribe(s), and Project archaeologist will follow in the event of inadvertent cultural resources discoveries,

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include any newly discovered cultural resource deposits that shall be subject to a cultural resource evaluation.

With the implementation of Mitigation Measure CUL-1, the Proposed Project would have a less than significant impact on historic or archaeological resources within the Project Site and surrounding land uses.
c) Disturb any human remains, including those interred outside of formally dedicated cemeteries?


Response: Less than Significant with Mitigation Incorporated
California Health and Safety Code §7050.5, Public Resources Code § 5097.98, and § 15064.5 of the California Code of Regulations (CEQA Guidelines) mandate procedures to be followed, including that, if human remains are encountered during excavation, all work must halt, and the County Coroner must be notified (Section 7050.5 of the California Health and Safety Code). The coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the supervising archaeologist, determines that the remains are prehistoric, the coroner will contact the Native American Heritage Commission (NAHC).

With the implementation of Mitigation Measure CUL-1, the Proposed Project would have a less than significant impact on the disturbance on any human remains, including those interred outside of formally dedicated cemeteries.

The NAHC will be responsible for designating the most likely descendant (MLD) responsible for the ultimate disposition of the remains, as required by Section 5097.98 of the Public Resources Code. The MLD should make his/her recommendations within 48 hours of their notification by the NAHC. This recommendation may include:
a. the nondestructive removal and analysis of human remains and items associated with Native American human remains;
b. preservation of Native American human remains and associated items in place;
c. relinquishment of Native American human remains and associated items to the descendants for treatment; or
d. other culturally appropriate treatment. Section 7052 of the Health \& Safety Code also states that disturbance of Native American cemeteries is a felony. With adherence to these existing regulations impacts would be less than significant.

## Sources:

1. Phase I Cultural Resources Assessment. Jean A. Keller. April 2023.
2. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 7 - Conservation Element - Section 7.2 - Cultural and Historical Resources

3. Final Environmental Impact Report City of Moreno Valley General Plan, certified July 11, 2006

- Section 5.10 - Cultural Resources

4. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
5. Moreno Valley Municipal Code Title 7 - Cultural Preservation
6. Cultural Resources Inventory for the City of Moreno Valley, Riverside County, California, prepared by Daniel F. McCarthy, Archaeological Research Unit, University of California,

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Riverside, October 1987 (This document cannot be provided to the public due to the inclusion of confidential information pursuant to Government Code Section 6254.10.)

## VI. ENERGY - Would the project:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

## Response: Less than Significant Impact

## Electricity

Southern California Edison (SCE) currently provides electrical service to the Project area. The demand for electricity associated with the Proposed Project would be for operation of the convenience store, carwash, and fueling station. In 2021, the Commercial sector of the Southern California Edison planning area consumed 5965.998733 GWh of electricity. Based on the CalEEMod 2022 emission output tables for the Proposed Project, the estimated electricity demand is 0.312242 GWH (refer Air Quality Report). The Proposed Project's estimated annual electricity consumption compared to the 2020 annual electricity consumption of the overall Industry Sector in the SCE Planning Area would account for approximately 0.0052337 percent of total electricity consumption. Total electricity demand in SCE's service area is estimated to increase by approximately 12,000 GWh between the years 2015 and 2026. The increase in electricity demand from the Proposed Project is insignificant compared to the projected electricity demand within SCE's service area. Furthermore, the project design and materials would comply with the applicable Building Energy Efficiency Standards. Prior to issuance of a building permit, the City of Moreno Valley shall review and verify that the project plans demonstrate compliance with the current version of the Building Energy Efficiency Standards. The Proposed Project would also be required to adhere to CALGreen, which establishes planning and design standards for sustainable site development, and energy efficiency. No significant adverse impacts are identified or are anticipated, and no mitigation measures are required.

## Natural Gas

Southern California Gas Company currently provides natural gas service to the project area. In 2021, the Commercial sector of the Southern California Gas Company planning area consumed 98.293612 million therms of natural gas. Based on the CalEEMod emission output tables for the Proposed Project, the estimated natural gas demand is $1,552.59$ therms of natural gas per year. The Proposed Project's estimated annual natural gas consumption compared to the 2020 annual natural gas consumption of the overall Industry Sector in the Southern California Gas Company Planning Area would account for approximately 0.0015795 percent of total natural gas consumption. No significant adverse impacts are identified or are anticipated, and no mitigation measures are required.

In summary, the construction and operation of the Proposed Project would not result in the inefficient, wasteful, or unnecessary use of energy. Impacts associated with energy use would be less than significant and no mitigation is required.

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## Response: Less than Significant Impact

The California Title 24 Building Code contains energy efficiency standards for residential buildings. These standards address electricity and natural gas efficiency in lighting, water, heating, and air conditioning, as well as the effects of the building envelopes (e.g., windows, doors, walls and roofs, etc.) on energy consumption. As described previously, the Project would comply with the Title 24 California Green Building Standards. Since the Proposed Project would comply with applicable State standards, the Project would not conflict with nor obstruct a state or local plan adopted for the purposes of increasing the amount of renewable energy or energy efficiency. Therefore, this impact would be less than significant, and no mitigation is required.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 7 - Conservation Element - Section 7.6 - Energy Resources

2. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021
3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
4. https://ecdms.energy.ca.gov/Default.aspx. Accessed June 2023.

## VII. GEOLOGY AND SOILS - Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to https://www.conservation.ca.gov/cgs/Document s/SP 042.pdf

## Response: Less than Significant Impact

The Project Site is located within the Peninsular Range Geomorphic Province, an area characterized by active northeast trending strike slip faults, including the San Jacinto Fault and the Elsinore Fault. The Project Site is not located within the boundaries of an Earthquake Fault Zone as defined by the Alquist Priolo Earthquake Fault Zoning Act of 1972 (California Geological Survey 2005). There are no known active or potentially active faults that traverse the Project Site and the risk of ground rupture due to a fault displacement beneath the site is low. The closest known fault is the San Jacinto-San Jacinto Valley (San Bernardino) Fault zone approximately 4.1 miles northeast of the Project Site. Therefore, impacts related to earthquake faults would be less than significant. No mitigation is required.
ii) Strong seismic ground shaking?

## Response: Less than Significant Impact

Like all of Southern California, the Project Site will continue to be subject to ground shaking generated from activity on local and regional faults. In addition, the site lies in relatively close proximity to an active fault; therefore, during the life of the proposed improvements, the property

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will probably experience similar moderate to occasionally high ground shaking from these fault zones, as well as some background shaking from other seismically active areas of the Southern California region. However, the design and construction in accordance with the current California Building Code (CBC) requirements is anticipated to address the issues related to potential ground shaking. With the implementation of California Building Code (CBC) requirement, seismic-related impacts would be less than significant. No mitigation is required.

| iii) $\begin{array}{l}\text { Seismic-related } \\ \text { liquefaction? }\end{array}$ | ground failure, including | $\square$ | $\square$ | $\searrow$ | $\square$ |
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Response: Less than Significant Impact
Liquefaction describes the phenomenon where loosely packed or waterlogged fine-grained sediments near or at the ground surface lose their strength in response to strong ground shaking. There are three basic factors that must exist concurrently in order for liquefaction to occur. These factors include:

- A source of ground shaking, such as an earthquake, capable of generating soil mass distortions;
- A relatively loose silty and/or sandy soil; and
- A relatively shallow groundwater table (within approximately 50 feet below ground surface) or completely saturated soil conditions that will allow positive pore pressure generation.

A Preliminary Geotechnical Engineering Investigation, prepared by Salem Engineering Group, Inc., November 30, 2017 is on-file with the City and is summarized herein. According to the Geotechnical Report, the Project Site is not located within a liquefaction zone. Considering the granular nature of the existing subsoils, along with the absence of groundwater within 50 feet of the surface, potential susceptibility for liquefaction due to an earthquake is considered unlikely. Therefore, a less than significant impact related to this issue would occur. No mitigation is required.
iv) Landslides?

## Response: Less than Significant Impact

The geologic and topographic characteristics of an area, often determine its potential for landslides. Steep slopes, the extent of erosion, and the rock composition of a hillside all contribute to the potential for slope failure and landslide events. In order to fail, unstable slopes typically need to be disturbed; the common triggering mechanisms of slope failure include undercutting of slopes by erosion or grading, saturation of marginally stable slopes by rainfall or irrigation, and shaking of marginally stable slopes during earthquakes. According to the Geotechnical Report the Project Site is not located in an area that is susceptible to landslides. The Upland Game Hunting Area is located approximately 0.4 mile south of the site, which has the potential for landslides. However, the Proposed Project would be required to adhere to applicable regulations regarding the City's Building Ordinance. With the use of these safety regulations, the potential for landslides to occur within the Project Site is considered to be low. Therefore, the impacts related to landslides would be less than significant. No mitigation is required.

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b) Result in substantial soil erosion or the loss of topsoil? $\square$
Response: Less than Significant
The Project Site is underlain by a mix of Gorgonio loamy sand and Hanford coarse sandy loam. Prior to the issuance of grading permits, the Project proponent would be required to prepare and submit detailed grading plans for the Project Site. These plans must be prepared in conformance with applicable standards of the City's Grading Ordinance.

Construction activities associated with the development of the Proposed Project would expose underlying soils, thus increasing their susceptibility to erosion until the Project is fully developed. Development of the site would involve more than one acre of ground disturbance; therefore, the proposed project is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit. A Storm Water Pollution Prevention Plan (SWPPP) would also be required to address erosion and discharge impacts associated with the proposed onsite grading by implementing appropriate best management practices (BMPs). Adherence to the BMPs contained in the SWPPP would ensure that the potential for soil erosion impacts would be reduced to less than significant with mitigation incorporated levels by implementation of existing water quality regulations. No mitigation is required.
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onor off-site landslide, lateral spreading, subsidence, liquefaction or collapse?
Response: Less than Significant
Subsidence is the sudden sinking or gradual downward settling of the earth's surface with little or no horizontal movement. Subsidence is caused by a variety of activities, which include, but are not limited to, withdrawal of groundwater, pumping of oil and gas from underground, the collapse of underground mines, liquefaction, and hydro compaction. The Project Site is generally flat and gently slopes down to the northwest. Onsite soils primarily consist of upper 3 to 4 feet of dry, loose and compressible silty fine sand, overlying gravelly fine to medium coarse sand of moderate consistency with scattered rock fragments and rocks. Due to the absence of groundwater within 50 -feet and the relatively flat site topography, the potential susceptibility for onsite soil liquefaction and lateral spreading due to an earthquake is considered low.

No structural fills and/or load bearing foundations and concrete slabs should be constructed bearing directly on the surface soils currently existing on the Project Site. The Project Site is not located within an area that is susceptible to landslides. The Proposed Project would be required to adhere to applicable regulations ensuring building safety and a Final geotechnical report shall be prepared and approved by the City Engineer. Therefore, the impacts would be less than significant. No mitigation is required.

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## Response: Less than Significant

Expansive soils are fine-grained silts and clays which are subject to swelling and contracting. The swelling and contracting is due to the amount of fine-grained clay materials present in the soils and the amount of moisture either introduced or extracted from the soils. According to the Soils Feasibility Study, 13 onsite soils are considered non-expansive. Additionally, approval of a Final Geotechnical and Soils Report ensure impacts related to soils are reduced to less than significant levels. No mitigation is required.
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

## Response: No Impact

The Proposed Project would connect to existing sewer main lines adjacent to the Project Site. The Proposed Project would not use septic tanks or other alternative wastewater disposal system. Therefore, the development of the project would have no impact related to this issue. No mitigation measures are required.
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?


## Response: Less than Significant with Mitigation Incorporated

The Project Site contains Alluvial Fan Deposits which consist of unconsolidated gravel, sand, and silt. Cobble- and boulder-size clasts are also present and become more abundant closer to the hills and mountains. These sediments were eroded from higher elevations, carried by flooding streams and debris flows, and deposited in a fan or lobe shape at the base of the hills. ${ }^{1}$ Based on the geology of the site, construction of the Proposed Project would not impact, either directly or indirectly, any known unique paleontological resource or site of unique geologic features. Given the site's history of disturbance, the potential for undiscovered paleontological or geological resources is considered low. ${ }^{2}$ However, ground-disturbing activities at the Project Site still have the potential to disturb previously unknown resources. With implementation of Mitigation Measure GEO-1, a less than significant impact to paleontological resources would occur.

## Mitigation Measure GEO-1:

If paleontological resources (fossils) are discovered during Project grading, work will be halted in that area until a qualified paleontologist can be retained to assess the significance of the find. The Project paleontologist shall monitor remaining earthmoving activities at the Project Site and shall be equipped to record and salvage fossil resources that may be

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unearthed during grading activities. The paleontologist shall be empowered to temporarily halt or divert grading equipment to allow recording and removal of the unearthed resources. Any fossils found shall be evaluated in accordance with the CEQA Guidelines and offered for curation at an accredited facility approved by the City of Moreno Valley. Once grading activities have ceased or the paleontologist determines that monitoring is no longer necessary, monitoring activities shall be discontinued. This measure shall be implemented to the satisfaction of the City Planning Division.

## Sources:

1. Preliminary Geotechnical Engineering Investigation, Salem Engineering Group, Inc., November 30, 2017.
2. USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2023).
3. Phase I Cultural Resources Assessment prepared by Jean A. Keller, April 2023.
4. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 6 - Safety Element - Section 6.5 - Geologic Hazards
- Chapter 7 - Conservation Element - Section 7.4 -- Soils

5. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021
6. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
7. Moreno Valley Municipal Code Chapter 8.21 - Grading Regulations
8. Local Hazard Mitigation Plan, City of Moreno Valley Fire Department, adopted October 4, 2011, amended 2017, http://www.moval.org/city hall/departments/fire/pdfs/haz-mitplan.pdf

- Chapter 4 - Earthquake
- Chapter 8 - Landslide

9. Emergency Operations Plan, City of Moreno Valley, March 2009, http://www.moval.org/city hall/departments/fire/pdfs/mv-eop-0309.pdf

## VIII. GREENHOUSE GAS EMISSIONS - Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?


## Response: Less than Significant Impact

The City adopted the Moreno Valley Climate Action Plan (CAP) in June 2021. The CAP is designed to reinforce the City's commitment to reducing greenhouse gas (GHG) emissions and demonstrate how the City will comply with State of California's GHG emission reduction standards. As a Qualified GHG Reduction Strategy, the CAP will also enable streamlined environmental review of future development projects, in accordance with the California Environmental Quality Act (CEQA).

However, the City of Moreno Valley has not adopted its own numeric threshold of significance
for determining impacts with respect to Greenhouse Gas (GHG) emissions. A screening threshold of $3,000 \mathrm{MTCO2e} / \mathrm{yr}$. was therefore utilized to determine if additional analysis is required for the Proposed Project).

## Construction Activity GHG Emissions

Project construction activities would generate $\mathrm{CO}_{2}$ and $\mathrm{CH}_{4}$ emissions. As discussed in the Air Quality Impact Analysis, Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

Construction was expected to commence in January 2024 and be operational in 2025. The analysis represents a worst-case scenario, as GHG emissions improve over time due to the introduction of new technologies and larger vehicle fleets utilizing energy sources alternative to fossil fuels. For construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Proposed Project, the SCAQMD recommends calculating the total GHG emissions for the construction activities, dividing it by a 30 -year Project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions. The amortized construction emissions are presented in Table 6.

Table 6
Greenhouse Gas Construction Emissions
(Metric Tons per Year)

| Source/Phase | $\mathbf{C O}_{2}$ | $\mathbf{C H}_{4}$ | $\mathbf{N}_{2} \mathbf{0}$ | $\mathbf{R 1}$ |
| :--- | :--- | :--- | :--- | :--- |
| 2024 Annual Max | 1,286 | 0.14 | 0.08 | 319 |
| Total MTCO2e | $\mathbf{1 , 6 3 2}$ |  |  |  |
| Construction Amortized over 30 <br> years | $\mathbf{6 . 7}$ |  |  |  |

Source: CalEEMod 2022 Annual Emissions.

## Operational GHG Emissions

Operational activities associated with the Project will result in emissions of $\mathrm{CO} 2, \mathrm{CH} 4$, and N 2 O from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- Water Supply, Treatment, and Distribution
- Solid Waste

The annual GHG emissions associated with the operation of the proposed Project are summarized in Table 7. As shown, the Project would generate approximately 1,632 MTCO2e/yr.

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Table 7
Greenhouse Gas Operational Emissions (Metric Tons per Year)

| Source/Phase | $\mathbf{C O}_{\mathbf{2}}$ | $\mathbf{C H}_{\mathbf{4}}$ | $\mathbf{N}_{\mathbf{2}} \mathbf{0}$ | $\mathbf{R 1}$ |
| :--- | :--- | :--- | :--- | :--- |
| Mobile | 1,212 | 0.1 | 0.08 | 1.99 |
| Area | 0.19 | 0.0 | 0.0 | -- |
| Energy | 72.4 | 0.01 | 0.0 | -- |
| Water | 0.67 | 0.0 | 0.0 | -- |
| Waste | 0.3 | 0.03 | 0.0 | -- |
| Refrigeration | -- | -- | -- | 317 |
| Construction Amortized 30 Years | 6.7 |  |  |  |
| Total MTCO2e | $\mathbf{1 , 6 3 2}$ |  |  |  |
| County Screening Threshold | 3,000 |  |  |  |
| Significant | No |  |  |  |

Source: CaIEEMod 2022 Annual Emissions.
As depicted in Tables 6 and 7, the Proposed Project would result in a net total of approximately 1,632 MTCO2/yr. The Proposed Project would not exceed the SCAQMD/City's screening threshold of 3,000 MTCO2e/yr. Thus, the Proposed Project would not have the potential to result in a cumulatively considerable impact with respect to GHG emissions. A less than significant impact is anticipated and no mitigation is required.
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of greenhouse gases?


## Response: Less than Significant Impact

Pursuant to 15604.4 of the CEQA Guidelines, a lead agency may rely on qualitative analysis or performance-based standards to determine the significance of impacts from GHG emissions. As such, the Proposed Project's consistency with SB 32 (2017 Scoping Plan), is discussed in the GHG Analysis, 2017 Scoping Plan Consistency of the GHG Analysis. Consistency with AB 32 and the 2008 Scoping Plan is not necessary, since the target year for AB 32 and the 2008 Scoping Plan was 2020. It should be noted that if the project is commenced and completed after the dates cited in the GHG Analysis then the emissions estimates for the project is a worstcase as greenhouse gas and other air pollutant emissions tend to go down over time due to more stringent emission standards for vehicles which are a primary source of such pollutants.

## SB 32/2017 Scoping Plan Consistency

The 2017 Scoping Plan Update reflects the 2030 target of a $40 \%$ reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. The GHG Analysis overviews the Project's consistency with the 2017 Scoping Plan. As summarized, the Project will not conflict with any of the provisions of the Scoping Plan.

As shown in Tables 6 and 7 of the GHG Analysis, the Project would not conflict with any of the 2017 Scoping Plan elements as any regulations adopted would apply directly or indirectly to the Project. Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to $40 \%$ below 1990 levels by 2030.

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## City of Moreno Valley General Plan Measure Consistency

The City of Moreno Valley General Plan does not identify specific GHG or climate change policies or goal, a number of the measures identified in the General Plan's Air Quality Element act to reduce or control criteria pollutant emissions and peripherally reduce GHG emissions. As shown in the GHG Analysis, the Proposed Project has been evaluated for consistency with the City's General Plan Air Quality Element. The project is consistent with the City's General Plan.

## City of Moreno Valley Energy Efficiency and CAS (Climate Action Strategy) Consistency

The City of Moreno Valley released an Energy Efficiency and CAS as well as a GHG Analysis for public review on May 8, 2012. The documents were approved on October 9, 2012. The CAS identifies ways that the City can reduce energy and water consumption and GHG emissions as an organization (its employees and the operation of its facilities) and outlines the actions that the City can encourage, and community members can employ to reduce their own energy and water consumption and GHG emissions. The policies in the document are to reduce GHG emissions in 2010 by $15 \%$ by 2020. The City of Moreno Valley General Plan Consistency of the GHG Analysis consists of an analysis of Project consistency with the policies in the CAS. The project has been found to be consistent with the policies in the CAS (unless the policies are not applicable).

Based on this analysis, the Project would not conflict with any applicable plan, policy or regulation, a less than significant impact is expected. No mitigation is required.

## Sources:

1. CaIEEMod 2022 Outputs.
2. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
3. California's 2017 Climate Change Scoping Plan, prepared by the California Air Resources Board, November 2017, https://www.arb.ca.gov/cc/scopingplan/scoping plan 2017.pdf, accessed July 17, 2023.

## IX. HAZARDS AND HAZARDOUS MATERIALS - Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?


Response: Less than Significant Impact
Potentially hazardous materials such as fuels, lubricants, and solvents would be used during Project construction. The proposed Beyond Food Mart would utilize hazardous materials on a daily basis including gasoline, oil, solvents, and cleaning products. Two underground storage tanks (USTs) (17,000 and 25,000 gallons) are proposed on the south side of the proposed canopy along with 8 MPDs (16 total fueling stations). The transport, use, and storage of hazardous materials during construction and operation of the Proposed Project would be conducted in accordance with all applicable State and federal laws, such as the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, the California Hazardous Material Management Act, and the California Code of Regulations, Title 22.

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The Project Applicant would be required to prepare a Spill Contingency Plan to be filed with the County of Riverside Hazardous Materials Department. All operations of the fueling station and related USTs would be required to comply with all federal, state and local laws regulating the management and use of hazardous materials. These regulations mandate the testing and frequent inspections of the UST facilities.

Development of the Project Site would also be subject to the National Pollutant Discharge Elimination System. Compliance with all applicable laws and regulations would reduce the potential impact associated with the routine transport, use, storage, or disposal of hazardous materials to a less than significant level.

No mitigation is required.
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
Response: Less than Significant Impact
The Project Applicant would be required to prepare a Spill Contingency Plan to be filed with the County of Riverside Hazardous Materials Department. All operations of the fueling station and related USTs would be required to comply with all federal, state and local laws regulating the management and use of hazardous materials. These regulations mandate the testing and frequent inspections of the UST facilities.

Development of the Project Site would be subject to the National Pollutant Discharge Elimination System (NPDES) permit requirements. Requirements of the permit include development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The purpose of the SWPPP is to: 1) identify pollutant sources that may affect the quality of discharges of storm water associated with construction activities and 2) identify, construct, and implement storm water pollution control measures to reduce pollutants in storm water discharges from the construction site during and after construction. The SWPPP must include Best Management Practices (BMPs) to control and abate pollutants.

The NPDES also requires a Water Quality Management Plan (WQMP). A Preliminary WQMP has been prepared for the Proposed Project. The WQMP is intended to comply with the requirements of City. Review and approval of the WQMP by the City would ensure that all potential pollutants of concern are minimized or otherwise appropriately treated prior to being discharged from the Project Site.

With regulatory compliance, the Proposed Project would have a less than significant impact related to the release of hazardous materials and no mitigation is required.

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## Response: Less than Significant Impact

The nearest school to the Project Site is Landmark Middle School located at 15261 Legendary Drive approximately 0.2 mile north of the Project Site. Hazardous or toxic materials transported in association with construction of the Proposed Project may include items such as oils, paints, and fuels. All materials required during construction would be kept in compliance with State and local regulations.

The handling of hazardous materials or emission of hazardous substances, at the Project Site would be in accordance with a Hazardous Materials Business Emergency Plan prepared for the Proposed Project and administered by the City Fire Prevention Bureau. All hazardous materials would be handled or transported in accordance with California Health and Safety Code Section 25507 and other local, state, and federal standards, ordinances, and regulations.

No mitigation is required.
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

## Response: No Impact

A Phase I Environmental Site Assessment (ESA) for the Proposed Project was completed March 4, 2023 and is included as Appendix E and summarized herein. The assessment concluded that no locations in the immediate adjacency of the Project Site were found to pose any environmental threat to the subject property, based on the data obtained via the Nationwide Environmental Title Research (NETR) governmental records database and the conducted agency records search. There is no indication if the Project Site was once used for agricultural purposes. Dating back to 1967, the Project Site has been vacant and undeveloped with the exception of a structure that once stood on the southeast corner of the property (probably a water tank) but was removed sometime between 1978 and 1996. According to the EnviroStor website and the Phase I ESA, no hazardous material sites on or adjacent to the Project Site were identified. The closest reportable site was the La Jolla Elementary School located approximately 1 mile north of the Project Site. The site type was a school investigation with no action required as of September 8,2003 . The fueling station use would be required to comply with all applicable federal, state, and local laws and regulations regarding hazardous materials. The underground fuel storage tanks would also require permitting and monitoring by the City Fire Department and the County Department of Environmental Health as the Certified Unified Program Agency (CUPA) for Riverside County. Therefore, no impacts are identified or anticipated, and no mitigation measures are required.

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## Response: No Impact

The Project Site is not located within two miles of an airport or private airstrip. The closest airport is the March Air Reserve Base/March Inland Port Airport, located approximately 3.5 miles to the west of the Project Site. As shown on Map S-7: Airport Land Use Compatibility Zone of the Moreno Valley General Plan, the Proposed Project is located outside of the Airport Influence Area. Therefore, the Proposed Project would have no potential to result in a safety hazard or excessive noise for people residing or working in the Project area, and no mitigation is required.
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?


## Response: Less Than Significant Impact

According to the Moreno Valley Local Hazard Mitigation Plan (LHMP), emergency evacuation routes within the City includes I-215, SR-60, and major roadways adjacent to the Project Site including Iris Avenue and Oliver Street, and Alessandro Boulevard which is 1.5 miles north of the Project Site. When responding to emergencies, the City uses the Standardized Emergency Management System (SEMS) which provides preparedness, response, recovery, and mitigation to a disaster event. It is not anticipated that development of the Project Site would impair implementation of or physically interfere with the LHMP, SEMS, or other emergency plans because site activities would be confined within the Proposed Project. The proposed onsite parking and circulation plans would be in accordance with the City of Moreno Valley Municipal Code Chapter 9.11: Parking, Pedestrian and Loading Requirements. And reviewed by the Fire Department and City Engineering Department to ensure that the Proposed Project's ingress/egress are adequate for accommodating emergency vehicles. Therefore, through compliance with the City's established LHMP and Municipal Code, and through review of the Project by the Fire Department and City Engineering Department, the potential for the Project to physically interfere with an adopted emergency response plan, or evacuation plan is less than significant. No mitigation is required.
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?


## Response: Less Than Significant Impact

As further discussed in Section XX Wildfire, the Project Site is not located within a Fire Hazard Severity Zone (FHSZ) as defined in the Fire Hazard Severity maps from CALFIRE and the
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1.35 miles from the Project Site, provides urban fire response. Implementation of the Proposed Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires resulting in a less than significant impact and no mitigation is required.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021
2. Phase I Environmental Site Assessment Report
3. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021
4. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
5. Local Hazard Mitigation Plan, City of Moreno Valley Fire Department, adopted October 4, 2011, amended 2017, http://www.moval.org/city hall/departments/fire/pdfs/haz-mitplan.pdf
6. Emergency Operations Plan, City of Moreno Valley, March 2009, http://www.moval.org/city hall/departments/fire/pdfs/mv-eop-0309.pdf
7. EnviroStor.
https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Moreno+Valley

## X. HYDROLOGY AND WATER QUALITY - Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

## Response: Less than Significant Impact

A Preliminary Hydrology Study dated December 2022 and revised April 27, 2023, and a Project Specific WQMP dated November 7, 2022, and revised April 19, 2023, was prepared by Blue Engineering and Consulting, Inc. for the Project Site (see Appendices F and G). Findings of the reports are discussed herein. The Project Site is currently undeveloped and is composed of 100 percent pervious surfaces due to routine disking. Construction of the Project will involve site clearing, rough grading, compaction, pouring of concrete and asphalt, and construction of the structures. The Project Site clearing and grading phases would disturb vegetation and surface soils, potentially resulting in erosion and sedimentation. If left exposed and with no vegetative cover, the Project Site's bare soil could be subject to additional wind and water erosion. Since the Proposed Project involves over one acre of ground disturbance, it is subject to National Pollution Discharge Elimination System (NPDES) requirements and must implement a Storm Water Pollution Prevention Plan (SWPPP). Implementation of site-specific best management practices (BMPs), as established by the SWPPP, will ensure all impacts related to erosion and sedimentation from ground disturbance are less than significant. Examples of BMPs include sandbag barriers, geotextiles, storm drain inlet protection, sediment traps, rip rap soil stabilizers, sweep roadway from track-out, and rumble strips.

Under existing conditions, the Project Site drains in a northwesterly direction toward the Kaiser Permanente Hospital. The Proposed Project includes a storm water detention system with one underground bioretention basin with a capacity of 15,237 cubic feet (CF) that would be located on the northwest portion of the project Site and one vegetation swale located off site near the northeast corner of the Project, along Oliver Street (refer to Site Plan). To address potential

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water contaminants, the Project is required to comply with applicable federal, state, and local water quality regulations in accordance with the Project specific NPDES and SWPPP. Given compliance with all applicable federal, state, and local laws regulating surface water quality, the Proposed Project as designed would result in a less than significant impact. No mitigation is required.

Prior to the issuance of a grading permit, the Project applicant shall prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include a surface water control plan and erosion control plan citing specific measures to control on-site and off-site erosion during the entire grading and construction period. In addition, the SWPPP shall emphasize structural and nonstructural Best Management Practices (BMPs) to control sediment and non-visible discharges from the site. The SWPPP will include inspection forms for routine monitoring of the site during construction phase to ensure NPDES compliance and additional BMPs and erosion control measures will be documented in the SWPPP and utilized if necessary. The SWPPP shall address the potential for an extended and discontinuous construction period based on funding availability. The SWPPP will be kept on site for the entire duration of Project construction and will be available to the local RWQCB for inspection at any time. BMPs included in the SWPPP may include the following:

- Sediment discharges from the site may be controlled by the following: sandbags, silt fences, straw wattles, and temporary basins (if deemed necessary), and other discharge control devices. The construction and condition of the BMPs will be periodically inspected during construction and repairs will be made when necessary, as required by the SWPPP.
- Materials that have the potential to contribute to non-visible pollutants to storm water must not be placed in drainage ways and must be contained, elevated, and placed in temporary storage containment areas.
- All loose piles of soil, silt, clay, sand, debris, and other earthen material shall be protected in a reasonable manner to eliminate and discharge from the site. Stockpiles will be surrounded by silt fences and covered with plastic tarps.
- In addition, the construction contractor shall be responsible for performing and documenting the application of BMPs identified in the SWPPP. Weekly inspections shall be performed on sandbag barriers and other sediment control measures called for in the SWPPP. Monthly reports and inspection logs shall be maintained by the Contractor and reviewed by the City and the representatives of the State Water Resources Control Board. In the event that it is not feasible to implement specific BMPs, the City can make a determination that other BMPs will provide equivalent or superior treatment either on or off site.

The WQMP includes mandatory compliance of BMPs as well as compliance with NPDES Permit requirements. Review and approval of the WQMP by the City of Moreno Valley and the SWPPP by the Regional Water Quality Control Board would ensure that all potential pollutants of concern are minimized or otherwise appropriately treated prior to being discharged from the Project Site. Therefore, the Proposed Project would result in less than significant impacts..

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## Response: Less than Significant Impact

Groundwater in the Project Site area is managed and distributed by the Eastern Municipal Water District (EMWD) a regional water management and wholesale agency. The City of Moreno Valley is within the boundaries of the EMWD. The EMWD is required by state law (Urban Water Planning Management Act or AB 797 in 1983) to prepare an Urban Water Management Plan (UWMP) to identify its sources/supplies of potable water, its historical and projected consumption by its customers, and evaluate various mandated scenarios for water shortages (e.g., single dry year, and multiple dry years) to assure its customers and the state that it will have adequate water supplies now and in the future, even under expected drought conditions.

The 2020 UWMP concluded the City could supply water to its customers until at least 2040 under single dry and multiple drought year scenarios. The Project does not involve a General Plan Amendment or Zone Change, so the City in its UWMP has accounted for future water consumption of existing and planned land uses, including residential and commercial uses such as the Proposed Project.

The Project is also subject to NPDES requirements and will be designed and constructed to ensure compliance with the water quality standards and waste discharge requirements. Compliance with these regulations, along with all City water supply requirements, will ensure there will be no significant impacts related to groundwater supply or recharge resulting from the Proposed Project. A less than significant impact would occur related to this issue and no mitigation is required.
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
i) Result in substantial erosion or siltation on- or off-site?

## Response: Less than Significant Impact

Development of the Proposed Project's buildings and pavement will alter the amount of existing impervious surface area and the amount of generated storm water runoff. Currently, the site has a 4.4 percent slope and runoff generally drains from the southeast to the northwest. No streams, rivers, or other drainage features are located on site. The Proposed Project would implement structures and impervious surfaces that could potentially alter the current drainage pattern. Pursuant to the requirements of the NPDES permit, as discussed previously, excess flows and sediment would be captured by BMPs identified in the WQMP. The Proposed Project's WQMP is subject to review and approval by the City prior to issuance of grading permits. With implementation of required BMPs, the Proposed Project is not expected to result in substantial erosion or siltation. Therefore, impacts would be less than significant, and no mitigation is required.

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ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?
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Response: No Impact
No streams, rivers, or other drainage features are located on the Project Site. The Project proposes a storm water detention system with one underground bioretention basin with a capacity of 15,237 cubic feet (CF) that would be located on the northwest portion of the Project Site and one vegetation swale located off near the northeast corner of the Project Site, along Oliver Street (refer to Site Plan). The stormwater infiltration system would prevent flows that could result in on- or off-site flooding. Since the Proposed Project does not significantly increase storm water flows, no impact related to flooding would occur. No mitigation is warranted.
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?


## Response: Less than Significant Impact

The existing Project Site slopes down from the southeast to the northwest toward the Moreno Valley Hospital. The Project proposes a storm water detention system with one underground bioretention basin with a capacity of 15,237 cubic feet (CF) that would be located on the northwest portion of the Project Site and one vegetation swale located off near the northeast corner of the Proposed Project, along Oliver Street (refer to Site Plan). The nature of the proposed development would not generate flows previously unaccounted for in drainage plans. The Proposed Project will incorporate BMPs that will moderate flows into existing storm drain systems. As the Proposed Project would maintain drainage patterns and flow rates comparable to the existing condition, a less than significant impact would occur with the development of the Proposed Project, and no mitigation is warranted.
iv) Impede or redirect flood flows?

## Response: No Impact

The Project Site is not located within a 100-year flood hazard area and does not include the development of housing. Therefore, the Project would not place a structure within a 100-year flood hazard area that would impede or redirect flood flows. No impact would occur, and no mitigation is required.

Two locations of concern exist within the City of Moreno Valley: Poorman Reservoir (Pigeon Pass Reservoir) and Lake Perris. Dam failure at Portman's Reservoir could result in extensive flooding along the downstream watercourse. Dam failure at Lake Perris would only affect a very small area south of Nandina Avenue along the Perris Valley Storm Drain and the Mystic Lake area in the southeast corner of the City. However, according to the City's General Plan, the Project Site will not expose people or structures to a risk of loss, injury or death involving the failure of a levee or dam. Therefore, no impacts would occur, and no mitigation is required.

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## Response: No Impact

The Project Site is located approximately 2 miles north of Lake Perris. At this distance, the Project Site is not considered susceptible to seiche-related hazards originating at Lake Parris. Additionally, the Upland Game Hunting Area is located between the Project Site and Lake Perris, initially creating a buffer from the Project Site and the waterbody. The Project Site and Lake Perris have an elevation of approximately 1560 feet above mean sea level (amsl) while the Upland Game Hunting Area hills are approximately 1813 feet amsl which approximately 253 feet above the Project Site. The Project Site is at an elevation of approximately 1,560 feet amsl and is located approximately 42 miles northeast of the Pacific Ocean. Therefore, the Proposed Project is not subject to flood hazards, tsunami threats, or seiche zones, and no impact would occur.
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?
Response: Less than Significant Impact with Mitigation Incorporated
The Proposed Project would be required to comply with the Regional Water Quality Control Board's Santa Ana River Basin Water Quality Control Program, which includes the requirement to complete and submit a SWPPP for construction related activities. The Proposed Project is in a developed urban setting and through adherence to the City of Moreno Valley's water quality regulations it would not substantially degrade water quality. Therefore, a less than significant impact would occur with implementation of the recommended mitigation measures. No additional mitigation measures are required.

## Sources:

1. Preliminary Hydrology Study and WQMP. Blue Engineering and Consulting, Inc. May 2, 2023.
2. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 6 - Safety Element - Section 6.7 - Water Quality
- Figure 6-4 - Flood Hazards
- Chapter 7 - Conservation Element - Section 7.5 - Water Resources

Figure 7-1 Water Purveyor Service Area Map
3. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021

- Section 5.5 - Hazards and Hazardous Materials
- Figure 5.5-2 - Floodplains and High Fire Hazard Areas
- Section 5.7 - Hydrology and Water Quality
- Figure 5.7-1 - Storm Water Flows and Major Drainage Facilities
- Figure 5.7-2 - Groundwater Basins

4. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code

- Section 9.10.080 - Liquid and Solid Waste

5. Moreno Valley Municipal Code Chapter 8.12 - Flood Damage Prevention

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6. Moreno Valley Municipal Code Chapter 8.21 - Grading Regulations
7. Eastern Municipal Water District (EMWD) Groundwater Reliability Plus, http://gwrplus.org/
8. Eastern Municipal Water District (EMWD) 2015 Urban Water Management Plan

## XI. LAND USE AND PLANNING - Would the project:

a) Physically divide an established community?

## Response: No Impact

The physical division of an established community is typically associated with construction of a linear feature, such as a major highway or railroad tracks, or the removal of a means of access, such as a local road or bridge, which would impair mobility in an existing community or between a community and outlying area.

The Project proposes the development of a Beyond Food Mart on land designated as Downtown Center (DC). To the north and west is vacant land and the Kaiser Permanente Moreno Valley Hospital while residential communities are located to the south and east. The Project would not introduce linear features such as highways or transit lines that would divide an established community. Therefore, no impact regarding dividing an established neighborhood would occur, and no mitigation is required.
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

## Response: Less than Significant Impact

The Project Site is currently undeveloped, and the General Plan designates the site as Downtown Center (DC), which allows for commercial uses. The City's General Plan contains goals and objectives that are applicable to the Proposed Project and the DC land use designation. Additionally, the Proposed Project is located within the Multiple Species Habitat Conservation Plan (MSHCP) Moreno Valley Area Plan; however, the Proposed Project is not located in a criteria cell and is not adjacent to Public/Quasi-Public or Conservation Land. The Project is located within the MSHCP survey area for burrowing owl. Because the Proposed Project is not located within a Criteria Cell, it is not subject to possible land conservation requirement under the MSHCP. Therefore, development of the Proposed Project would have a less than significant impact related to an applicable land use plan, policy, regulation, or habitat conservation plan and no mitigation is required.

Table 8, General Plan Consistency Analysis provides a consistency analysis of the Proposed Project to the applicable General Plan goals and objectives, which identifies that the Project would not result in a conflict with any applicable General Plan goals and objectives.

Table 8
General Plan Consistency Analysis

| Goal/Policy No. | General Plan Goal and Objectives | Project Consistency |
| :---: | :---: | :---: |
| Land Use Element |  |  |
| Goal LCC-1 | Establish an identifiable city structure and a flexible land use framework that accommodates growth and development over the planning horizon. | Consistent. The Proposed Project would provide a mix of commercial related uses that supports the Downtown Center. |
| Goal LCC. 1-4 | Focus new development in centers and corridors so as to support the vitality of existing businesses, optimize the use of utility infrastructure, and reduce vehicle trip frequency, length, and associated emissions. | Consistent. The Proposed Project would develop a vacant lot in the Downtown Center zone. The new development would benefit local residence by providing fuel and convenience goods, which would minimize vehicle trips to further destinations. |
| Goal LCC. 1-5 | Encourage mixed use development in either a vertical or horizontal configuration in the Downtown Center, the Moreno Valley Mall/Towngate Center area, and at key intersection along major transit routes. | Consistent. The Proposed Project would support the Downtown Center urbanization by promoting local community commercial uses such as a convenience store, car wash, and fueling stations |

## Circulation Element

| Goal C. 1-1 | Support regional <br> infrastructure investments for <br> all modes to relieve <br> congestion and support <br> healthy communities in the <br> City of Moreno Valley. |
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N/A. The Proposed Project does not provide for regional infrastructure.

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|  |  | subjected to seismic activity, in accordance with the California Building Code. | prevent future seismic hazards. |  |
|  | Goal S. 1-12 | Work to prevent wildland fire and to protect lives, property, and watersheds from fire dangers. | Consistent. The Project Site is not within Wildfire Hazard Severity Zone, but is within a Local Response Area. County Fire Department 91 will respond to any potential wildfire threats. The Proposed Project would add impervious surfaces and maintained landscape areas across the site. |  |
|  | Goal S. 1-25 | Consistent with State regulations, require proper storage and disposal of hazardous materials to reduce the likelihood of leakage, explosions, of fire, and to properly contain potential spills from leaving the site. | Consistent. The Proposed Project will adhere to the Storm Water Pollution Prevention Plan (SWPPP), the National Pollutant Discharge Elimination System (NPDES), and the California Building Code to prevent any potential spills from leaving the site. |  |
|  | Noise Element |  |  |  |
|  | Goal N-1 | Design for a pleasant, healthy sound environment conducive to living and working. | The Proposed Project will adhere to the City's noise thresholds and Municipal Code Standards. |  |
|  | Environmental Justice Element |  |  |  |
|  | Goal EJ-1 | Reduce pollution exposure and improve community health. | The Proposed Project would be an acceptable use within the City Air Quality Standards. |  |
|  | Open Space and Resource Conservation Element |  |  |  |
|  | Goal OSRC-1 | Preserve, protect, and enhance natural resources, habitats, and watersheds in Moreno Valley and the surrounding area, promoting responsible management practices. | (Not sure if this is needed, could put N/A) |  |
|  | Goal OSRC. 1-7 | Require that grading plans include appropriate and feasible measures to minimize erosion, sedimentation, wind erosion, and fugitive dust. Particularly in hillside areas, new roadways, and trails should follow natural contours to minimize grading. | Consistent. According to the LHMP Moreno Valley Slope Analysis, the Project Site and its surrounding land uses do not have any significant slope. Additionally, grading plans will include appropriate erosion mitigation measures. |  |

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Zoning for the Project Site is Downtown Center (DC) which allows up to 20 DU/AC on the Project Site on the periphery of the DC (CMVMC 9.07.010B). The Project proposes commercial uses which would be consistent with the DC land use designation. Therefore, the Proposed Project is consistent with the General Plan's goals and policy's and will not significantly detriment the Project Site's environment or surrounding land uses.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021
2. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021

- Section 5.12 - Population and Housing


## XII. MINERAL RESOURCES - Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

## Response: No Impact

The Project Site is vacant and undeveloped. The mineral resources known to occur within the City of Moreno Valley include sand, gravel and rock used in making concrete and as road base. According to the City's General Plan, one recently active sand and gravel quarry is known to occur within the City's sphere of influence: the Jack Rabbit Canyon Quarry. The Jack Rabbit Canyon Quarry was inactive as of 2001 and is located in a drainage course at the northeast corner of Jack Rabbit Trail and Gilman Springs Road approximately 6.5 miles west of the Project Site. According to the Department of Conservation Mineral Lands Classification interactive map and General Plan, the Project Site is located within an area classified as MRZ-3. MRZ-3 areas are considered to have a moderate potential for the discovery of economic mineral deposits. The Project Site has a current General Plan land use designation of Commercial and zoning of Downtown Center (DC). Mineral resource mining would not be compatible with the surrounding land uses and the General Plan designation for the Project Site. Moreover, the Proposed Project's demand for mineral resources will be considered less than significant due to the readily available aggregate resources in the Southern California region. Therefore, no significant adverse impacts are identified or anticipated, and no mitigation measures are required.
b) Result in the loss of availability of a locallyimportant mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

## Response: No Impact

As discussed previously, there are no significant mineral resources or mineral extraction process facilities on or near the site. The City previously planned for development of the Project Site and a Downtown Center Concept Area. Implementation of the Proposed Project would not result in the loss of availability of a known locally significant mineral resource. Therefore, no significant adverse impacts are identified or anticipated, and no mitigation measures are required.

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## Sources:

1. Department of Conservation Mineral Lands Classification, https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc
2. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 7 - Conservation Element - Section 7.9 - Mineral Resources

3. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021

- Section 4.12 - Mineral Resources


## XIII. NOISE - Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

## Response: Less than Significant Impact

A Noise Impact Analysis prepared by Ganddini Group Inc. was completed on July 7, 2023 (see Appendix H). The Noise Study determines the noise exposure and the necessary noise mitigation measures for the Proposed Project. The noise study was prepared to satisfy applicable City of Moreno Valley noise standards and significance criteria based on Appendix G of the CEQA Guidelines. The Noise Study is available for review at the City of Moreno Valley Community Development Department and results of the study are summarized herein.

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used metric is the equivalent level (Leq). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A- weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

## Construction Noise

Construction noise is regulated within Sections 8.14.040 and 11.80.030(D)(7) of the City of Moreno Valley Municipal Code (see Regulatory Setting section of the Noise Report). Accordingly, the project would result in a significant impact if:

- Project construction occurs outside the hours of 7:00 AM to 7:00 PM Monday through Friday, excluding holidays, and from 8:00 AM to 4:00 PM on Saturday; or,
- Project construction occurs within the hours of 8:00 PM and 7:00 AM the following day such that the sound there from creates a noise disturbance; or,
- Project construction noise exceeds 80 dBA Leq for an 8-hour period at residential uses and 85 dBA Leq for an 8 -hour period at commercial uses.


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Project construction noise levels at nearby sensitive receptors were calculated using the FTA methodology. Construction noise modeling worksheets for each phase are provided in Appendix H Anticipated noise levels during each construction phase are presented in Table 10 of the Noise Study.

Table 10 of the Noise Study (referenced in Appendix H, shows that modeled construction noise levels reach up to 59 dBA Leq at the nearest school property line to the northeast, 74.1 dBA Leq at the nearest residential property line to the east, 70.8 dBA Leq at the nearest residential property line to the south, 65.8 dBA Leq at the nearest hospital property line to the west, and 66.7 dBA Leq at the nearest medical office property line to the northwest of the Project Site.

Based on the modeled construction noise levels (, construction noise levels are estimated to reach up to 74.1 dBA Leq at the nearest receptor. Therefore, the Proposed Project would not exceed City-established standards relating to construction noise of 80 dBA Leq at residential uses and 85 dBA Leq at commercial uses. Construction-related noise impacts are less than significant and no mitigation is required.

## Stationary Source Noise

Stationary noise source standards are established within Section 11.80.030-2 of the City of Moreno Valley Municipal Code. Accordingly, the project would result in a significant impact if:

- The project operational noise exceeds the City-established noise standards that apply to project. Project generated on-site noise may not 60 dBA Leq during the daytime (8:00 AM to 10:00 PM) and 55 dBA Leq during nighttime hours (10:01 PM to 7:59 AM) at residential land uses; or exceed 65 dBA Leq during the daytime (8:00 AM to 10:00 PM) and 60 dBA Leq during nighttime hours (10:01 PM to 7:59 AM) at commercial land uses (City of Moreno Municipal Code 11.80.030).

Noise levels at nearby sensitive receptors were determined based on the SoundPLAN acoustical model developed for the project. SoundPLAN modeling worksheets are provided in the Noise Impact Analysis.

The project will not exceed City-established daytime noise standards at the existing residential lots but would exceed nighttime noise standards at residential lots located south of the project site if the car wash is operated during nighttime hours. Impacts will be less than significant by limiting hours of operation of the proposed car wash and associated vacuums. The car wash shall not be in operation between 10:00 PM and 8:00 AM.

## Mobile Source Noise

## Project Operational Mobile Source Noise

Roadway noise levels were calculated at roadways included in the Beyond Food Mart (Oliver and Iris) Traffic Impact Analysis (Ganddini Group, Inc., April 14, 2023) and based on the FHWA Traffic Noise Prediction Model methodology. During operation, with incorporation of pass-by trip reductions, the proposed project is expected to generate approximately 4,346 average daily trips with 155 trips during the AM peak-hour and 185 trips during the PM peak-hour. Roadway noise levels were calculated for the following scenarios:

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- Existing (without Project): This scenario refers to existing year traffic noise conditions.
- Existing Plus Project: This scenario refers to existing year plus project traffic noise conditions.

Table 11 of the Noise Study (referenced in Appendix H) shows the change in existing roadway noise levels with the addition of project-generated operational trips.

Modeled existing traffic noise levels range between 58-76 dBA CNEL and the modeled Existing Plus Project traffic noise levels range between 59-76 dBA CNEL at the right-of-way of each study roadway segment. All the modeled roadway segments, other than John F Kennedy Way east of Moreno Beach Drive, are below the lowest threshold of a 1.5 dB increase. The modeled existing noise level along the roadway segment of John F Kennedy Way east of Moreno Beach Drive is 64.5 dBA CNEL and the project generated vehicle trips are anticipated to increase the noise level along this roadway segment by approximately 1.7 dBA CNEL. Therefore, the appropriate threshold for this roadway segment is an increase of 3 dB . The approximately 1.7 dB increase along John F Kennedy Way is below the 3 dB increase threshold.

The addition of project trips is not expected to change noise levels in excess of the applicable threshold at any of the study roadway segments. The project impact is less than significant; no mitigation is required.

## Construction Mobile Source Noise

Construction truck trips would occur throughout the construction period. Given the project site's proximity to the 215 Freeway and State Route 60, it is anticipated that vendor and/or haul truck traffic would take the most direct route to the appropriate freeway ramps.

Iris Avenue currently handles approximately 16,000 average daily vehicle trips and Oliver Street currently handles approximately 2,300 average daily vehicle trips in the vicinity of the project site. 8 According to the CaIEEMod modeling in the Air Quality Study prepared for the Proposed Project (Lilburn, 2023), the greatest number of construction-related vehicle trips per day would be during the demolition and paving phases of construction at up to 13 vehicle trips per day ( 12.5 worker trips per day for both demolition and paving). Therefore, vehicle traffic generated during project construction is nominal relative to existing roadway volumes and would not result in the doubling of traffic volume necessary to increase noise levels by 3 dBA . The Proposed Project would have a less than significant; no mitigation is required.
b) Generation of excessive groundborne vibration or groundborne noise levels?
Response: Less than Significant Impact
In relation to the Environmental Checklist noise issue "b", the City of Moreno Valley has not established thresholds of significance concerning groundborne vibration. In the absence of City-established thresholds, groundborne vibration impacts are based on guidance from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (FTA, September 2018) (see Regulatory Setting section). Accordingly, the project would result in a significant impact if:

- Groundborne vibration levels generated by the project have the potential to cause architectural damage at nearby buildings by exceeding the following PPV:

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- $0.10 \mathrm{in} / \mathrm{sec}$ at buildings extremely susceptible to vibration damage
- $0.20 \mathrm{in} / \mathrm{sec}$ at non-engineered timber and masonry buildings
- $0.30 \mathrm{in} / \mathrm{sec}$ at engineered concrete and masonry (no plaster) buildings
- $0.50 \mathrm{in} / \mathrm{sec}$ at reinforced-concrete, steel or timber (no plaster) buildings
- Groundborne vibration levels generated by the project have the potential to cause annoyance at sensitive receptors by exceeding 72 VdB .

Based on the groundborne vibration modeling, use of a vibratory roller is expected to generate a PPV of $0.021 \mathrm{in} / \mathrm{sec}$ and use of a bulldozer is expected to generate a PPV of $0.009 \mathrm{in} / \mathrm{sec}$ at the closest off-site building, a residential use located approximately 115 feet east of the Project Site. Other equipment anticipated to be used during project construction generate lower PPV. Therefore, groundborne vibration generated by project construction would not exceed the levels necessary to cause architectural damage. Use of vibratory rollers could theoretically exceed the threshold for annoyance due to vibration ( 72 VdB at offsite residential sensitive uses) at the existing residential receptor to the east of the project site, and residents may be temporarily annoyed. However, perceptibility of construction vibration would be temporary and would only occur while vibratory equipment is utilized within 21 feet of the project property lines in proximity of the residential use to the east. Furthermore, this impact would only occur during daytime hours. The most substantial sources of groundborne vibration during post-construction project operations will include the movement of passenger vehicles and trucks on paved and generally smooth surfaces. Loaded trucks generally have a PPV of 0.076 at a distance of 25 feet (Caltrans 2020), which is a substantially lower PPV than that of a vibratory roller ( $0.210 \mathrm{in} / \mathrm{sec}$ PPV at 25 feet). Therefore, groundborne vibration levels generated by project operation would not exceed those modeled for project construction and the Proposed Project would result in a less than significant impact. No mitigation is required.
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

## Response: No Impact

The closest airport to the Project Site is the March Air Reserve Base/Inland Port Airport, with airport runways located as close as approximately 2.26 miles to the west/southwest of the Project Site. The City of Moreno Valley 2040 General Plan Map S-7, Airport Land Use Compatibility Zones and the Riverside County Airport Land Use Commission March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan Map MA-1 (ALUCP 2014), show that the Project Site is outside of both the airport influence areas as well as the airport's compatibility zones. Therefore, the Proposed Project would not expose people residing or working in the area to excessive noise levels. There is no impact, and no mitigation is required.

## Sources:



1. Noise Impact Analysis. Ganddini Group Inc. July 7, 2023.
2. Moreno Valley General Plan, adopted June 15, 2021
3. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021

## ISSUES \& SUPPORTING <br> INFORMATION SOURCES:

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4. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code

- Section 9.10.140 Noise and Sound

5. Moreno Valley Municipal Code Chapter 11.80 Noise Regulations

## XIV. POPULATION AND HOUSING - Would the project:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of road or other infrastructure)?

## Response: Less than Significant Impact

During the construction process, the Proposed Project would create short-term construction jobs and are anticipated to be filled primarily by workers who reside in the Project vicinity. The Proposed Project would generate a maximum of 12 employees. New employment opportunities are projected to be filled by local residents who reside in or near the City of Moreno Valley. The current city unemployment rate is $4.8 \% .^{3}$ A large influx of new residents to the City due to the Proposed Project is not expected.

The Proposed Project will not have a direct effect on population growth within the City. The Proposed Project would generate employment opportunities but is not expected to induce substantial growth in the City or region beyond the growth forecasts detailed in the City's General Plan or SCAG's regional growth forecasts since the Proposed Project is consistent with the existing land use and zoning designations (i.e., Commercial). Therefore, a less than significant impact related to this issue, and no mitigation is required.
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

## Response: No Impact

The Proposed Site is currently vacant and does not contain any residences that would be removed as a result of the Proposed Project. Therefore, the Proposed Project would not displace a substantial number of existing housing or residences so as to necessitate the construction of replacement of housing. No impact would occur with respect to the displacement of existing housing, and no mitigation is required.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 2 - Community Development Element - Section 2.1 - Land Use
- Chapter 8-2014-2021 Housing Element

2. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021

- Section 5.12 - Population and Housing

3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
4. U.S. Bureau of Labor Statistics. bls.gov , accessed July 19, 2023.
${ }^{3}$ U.S. Bureau of Labor Statistics. bls.gov, accessed July 19, 2023.

## ISSUES \& SUPPORTING <br> INFORMATION SOURCES:

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| Impact | Impact |

## XV. PUBLIC SERVICES - Would the project:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
i) Fire protection?

Response: Less than Significant Impact
The Proposed Project would place a Beyond Food Mart on undeveloped land. The City of Moreno Valley Fire Service contracts with the Riverside County Fire Department Services. Fire Station 91 (College Park) is the closest station to the site located at 16110 Lasselle Street approximately 1.4 miles southwest. Fire Station 91 houses one 75 -foot ladder truck, one second line engine and a breathing support. Because the Project proposes a fueling station, fire services may be needed at a quick response time. According to the City's General Plan, a fiveminute response time is considered to be the maximum time standard for serving urban and suburban uses. However, the need for fire services to the Project Site is considered unlikely. Considering this, the Proposed Project will have a less than significant impact on fire protection. No mitigation is required.
ii) Police protection?

## Response: Less than Significant Impact

The Project includes the development of a Beyond Food Mart on the northwest corner of Iris Avenue and Oliver Street. Police services are provided by the Moreno Valley Police Department (MVPD) which has 162 sworn officers and a current officer to population ration of 0.9 officers per 1,000 populations. The nearest police station is located at 22850 Calle San Juan De Los Lagos approximately 4.8 miles west northwest of the project site. The Project could introduce a maximum of 12 new employees to the City, which would incrementally increase the need for police. Therefore, development of the Proposed Project would have a less than significant impact on police protection. No mitigation is required.
iii) Schools?

## Response: No Impact

The Project Site is located within the boundaries of Moreno Valley Unified School District (MVUSD) and is near several schools. The closest school is Landmark Middle School is located four tenths (0.4) of a mile northeast of the Project Site, at the intersection of Oliver Street and John F Kennedy Drive. Other school establishments located near the Project Site are La Jolla Elementary School, Moreno Valley College, Ridge Crest Elementary School, Valley Christian Academy, and Vista del Lago High School.

The increase in employment from the Proposed Project is anticipated to be fulfilled by the local, existing population. Additionally, the Beyond Food Mart development would not generate school aged children. Therefore, no impact would occur related to this issue and no mitigation is required.

## ISSUES \& SUPPORTING <br> INFORMATION SOURCES:

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## Response: No Impacts

The City of Moreno Valley currently operates approximately 482 acres of parks within the City boundaries. The City has established a park service standard of 3.0 acres of parkland per 1,000 residents to ensure that access to parks is adequate and commensurate with the size of the community. The nearest parks to the Project Site are Celebration Park and Fairway Park, both being approximately half (0.5) a mile northeast of the Project Site. Implementation of the Proposed project would not induce residential development and would not significantly increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of any facilities would result. Therefore, no significant adverse impacts are identified or anticipated, and no mitigation measures are required.
v) Other public facilities?

## Response: Less than Significant Impact

Implementation of the Proposed Project would not induce population growth in the City of Moreno Valley or adversely affect other public facilities or require the construction of new or modified facilities. The Proposed Project is not expected to have a significant impact on public facilities or services, such as libraries, community recreation centers, and/or animal shelters. The Proposed Project would introduce a maximum of 12 employees into the City. Because the Proposed Project would not introduce a substantial amount of population into the City of Moreno Valley, development of the Proposed Project would have a less than significant impact. No mitigation is required.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021
2. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021
3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
4. City of Moreno Valley Police Department. https://moval.gov/departments/police/dept-zone-policing.html
5. Moreno Valley Unified School District. DIF. https://www.mvusd.net/apps/pages/index.jsp?uREC ID=786774\&type=d\&pREC ID=1 181763

## XVI. RECREATION - Would the project:

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

## Response: No Impact

The Proposed Project includes the construction of a Beyond Food Mart on the corner of Iris Avenue and Oliver Street. The Project would generate a maximum of 12 employees and may contribute to residents working and living in the City of Moreno Valley. The closest parks to the Proposed Project are the Fairway Park and Celebration Park approximately half a mile (0.5)

## ISSUES \& SUPPORTING INFORMATION SOURCES:

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mile north of the Project Site. The Project would be required to pay development fees to offset the impact to parks and recreation. Therefore, with the development of the Proposed Project, it will not create a significant increase in the use of existing neighborhood, regional parks, or other recreational facilities, with a less than significant impact related to this issue. No mitigation is required.
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which have an adverse physical effect on the environment?

## Response: No Impact

The Proposed Project does not include any recreational facilities or parkland. Furthermore, the Project does not include any residential development and will not directly increase population associated with the Proposed Project. The Project will also be required to pay applicable development fees to offset the impact to parks and recreation. Therefore, the construction or expansion of recreational facilities in the absence of a population increase is not necessary. No impact would occur regarding this issue. No mitigation is required.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021
2. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021
3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code

## XVII.TRANSPORTATION - Would the project:

a) Conflict with program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

## Response: Less than Significant Impact

A Traffic Impact Analysis (TIA) dated May 12, 2023 (see Appendix I), and a Vehicle Miles Traveled (VMT) Screening Assessment dated April 11, 2023 (see Appendix J) was orchestrated by Ganddini Group, Inc. and is available for review at City offices. The TIA and VMT Assessment analyzed the Site Plan, which is a 1.31 -acre lot to be developed with a $7,460 \mathrm{sf}$ convenience store, an eight island fueling station with a 5,979 sf canopy, and a sf drive-thru car wash. As detailed in Table 9 below, the Proposed Project is forecast to generate 4,346 daily trips, including 155 trips occurring during the a.m. peak hour and 185 trips occurring during the p.m. peak hour (see Appendix J).

Table 9
Project Trip Generation

| Land Use | Units |  | A.M. Peak Hour |  |  | P.M. Peak Hour |  |  | Daily Trips |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | n | Out | Total | In | Out | Total |  |  |
| Gasoline Station with <br> Convenience Market and <br> Car Wash | 16 Fueling <br> Stations | 78 | 77 | 155 | 93 | 92 | 185 | 4,346 |  |
| Trip Generation |  |  |  |  |  |  |  |  |  |

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Regional access to the Project Site is provided by State Route 60 approximately 3.0 miles to the north and Interstate 215 approximately 5.0 miles to the west of the Project Site. Local northsouth circulation is provided by Nasson Street, Oliver Street, Via Del Lago, and Moreno Beach Drive; and east-west circulation is provided by Iris Avenue and John f Kennedy Drive.

Nasson Street: This four-lane divided roadway trends in a north-south direction and is classified as a Divided Arterial (four-lane divided roadway with 8 -foot shoulders) on the City of Moreno Valley circulation system in the study area. On-street parking appears to be restricted in the Project vicinity. Class II bike lanes are on both sides of the roadway in the Project vicinity. Sidewalks are provided on the east side of the roadway in the Project vicinity.

Oliver Street: This two-lane undivided to four-lane undivided to four-lane divided roadway trends in a north-south direction and is classified as a Minor Arterial (four-lane divided or undivided roadway with 5 to 8 -foot shoulders) a on the City of Moreno Valley General Plan Circulation Element in the project vicinity north of Iris Avenue and is unclassified south of Iris Avenue. On-street parking does not appear restricted in the study area, except at the Landmark Middle School bus loading zone. Currently, there are no designated bicycle facilities in the project vicinity; however, marked Class II bike lanes are proposed for this roadway on the master plan. Sidewalks are provided on both sides of the roadway in the Project vicinity.

Via Del Lago: This four-lane divided roadway trends in a north-south direction and is unclassified on the City of Moreno Valley General Plan Circulation Element in the study area. On-street parking is restricted in the Project vicinity. A Class II bike lane is on the west side of the roadway in the Project vicinity, and a marked shared bike-auto lane is on the east side of the roadway. Sidewalks are not provided on either side of the roadway.

Moreno Beach Drive: This six-lane divided roadway trends in an east-west direction and is classified as a Divided Major Arterial (six-lane divided roadway with 8-foot shoulders) on the City of Moreno Valley General Plan Circulation Element in the study area. On-street parking appears to be restricted in the Project vicinity. Class II bike lanes are on both sides of the roadway in the Project vicinity. Sidewalks are provided on both sides of the roadway.

Iris Avenue: This six-lane divided roadway trends in an east-west direction and is classified as a Divided Major Arterial (six-lane divided roadway with 8 -foot shoulders) on the City of Moreno Valley General Plan Circulation Element in the study area. On-street parking appears to be restricted in the Project vicinity. Class II bike lanes are on both sides of the roadway in the Project vicinity.

John F Kennedy Drive: This two-lane divided to four-lane undivided roadway trends in an east-west direction and is classified as a Minor Arterial (four-lane divided or undivided roadway with 5 to 8 -foot shoulders) a on the City of Moreno Valley General Plan Circulation Element in the study area. On-street parking appears to be restricted in the Project vicinity. Currently, Class II bike lanes are west of Moreno Beach Drive and Class III bike routes are east of Moreno Beach Drive. Sidewalks are provided on both sides of the roadway.

## Transit Facilities:

Route 20 runs along Iris Avenue and Moreno Beach Drive. The closest bus stop to the Project is at the northwest corner of Iris Avenue in front of the Project location.

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Bicycle Facilities Master Plan:
According to the General Plan Bicycle Master Plan, there are proposed bike facilities on Oliver Street and existing bike lanes on Iris Avenue, Nasson Street, Via Del Lago, Moreno Beach Drive, and John F Kennedy Drive.

## Designated Truck Routes:

There are no designated truck routes encompassing the Project Site.

## Pedestrian Facilities:

Currently, there are no sidewalks or other pedestrian accessible amenities surrounding the Project Site. However, the Proposed Project site plan includes an approximate six-foot-wide sidewalk on the south an eastern portion of the Project Site.

The TIA states the study intersections are forecast to operate within acceptable Levels of Service (C or better) during the peak hours for all analysis scenarios. Therefore, the Proposed Project is forecast to result in no substantial transportation effects relating to Level of Service operations for all analysis scenarios.

The Proposed Project would not impede the implementation of City programs supporting walking, bicycling, and use of buses. Therefore, the Proposed Project would not conflict with any adopted transportation policies, no impact associated with this issue would occur and no mitigation is required.
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

## Response: Less than Significant Impact

The Proposed Project is forecast to generate a total of approximately 4,346 new daily trips, including 155 new trips during the AM peak hour and 185 new trips during the PM peak hour. Project design features involve improvements necessary to provide Project Site access. To maintain sufficient storage capacity for the eastbound left-turn lane at the Oliver Street/lris Avenue intersection, it is recommended that the raised median on the eastbound Iris Avenue approaching Oliver Street be modified to provide a minimum of 285 feet of storage for the leftturn pocket.. Additionally, the Vehicle Miles Traveled Screening Analysis, completed April 11, 2023, concludes that the Proposed Project satisfies the City-established VMT screening criteria as adopted by the City of Moreno Valley and is anticipated to result in a less than significant VMT impact.

Therefore, the Proposed Project is presumed to have a less than significant impact on VMT and no additional VMT modeling or mitigation measures are required. As such, the Proposed Project shall not conflict or be inconsistent with the CEQA Guidelines Section 15064.3, subdivision (b).
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

## Response: Less than Significant Impact

The Project is on a 1.31-acre vacant lot located on one corner of a major intersection with no long roadway segments within the property. The design of roadways must provide adequate

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sight distance and traffic control measures. This provision is normally realized through roadway design to facilitate roadway traffic flows. Roadway improvements in and around the Project Site would be designed and constructed to satisfy all City requirements for street widths, corner radii, intersection control as well as incorporate design standards tailored specifically to site access requirements. Adherence to applicable City requirements would ensure the proposed development would not include any sharp curves or dangerous intersections. Therefore, no substantial increase in hazards due to a design feature would occur, resulting in a less than significant impact. No mitigation is required.
d) Result in inadequate emergency access?

## Response: No Impact

The Moreno Valley Police Service (located at 22850 Calle San Juan De Los Lagos) is approximately 4.8 miles northwest of the Project Site, and the Moreno Valley Fire Department Station 74 (located at 16110 Lasselle Street) is approximately 1.4 miles southwest of the Project Site. Traffic associated with Project construction may have a temporary effect on existing traffic circulation patterns. The Proposed Project is in an urban setting and direct access to the site will be available via Iris Avenue and Oliver Street which would also accommodate emergency services and evacuation routes. Additionally, the I-60 and I-215, are both within five miles of the Project Site, should the area need to be evacuated. Due to the proximity of emergency services, the urban setting, and availability of access to the site, impacts to emergency access will be less than significant. The Proposed Project will also comply with all of the City's requirements for emergency access. Therefore, there no significant impacts would occur and no mitigation is required.

## Sources:

1. Traffic Impact Analysis Ganddini Group Inc. May 2023.
2. Vehicle Miles Traveled Screening Assessment. Ganddini Group Inc. April 2023.
3. Moreno Valley General Plan, adopted June 15, 2021

- Chapter 5 Circulation Element

4. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021

- Section 5.2 - Traffic/Circulation

5. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
6. Moreno Valley Municipal Code Chapter 3.18 Special Gas Tax Street Improvement Fund
7. Moreno Valley Master Bike Plan, adopted January 2015
8. Riverside County Transportation Commission, Congestion Management Program, December 14, 2011

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## XVIII. TRIBAL CULTURAL RESOURCES - Would the project:

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or

## Response: Less than Significant with Mitigation Incorporated

California Assembly Bill 52 (AB52) was approved by Governor Brown on September25, 2014. AB52 specifies that CEQA projects with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource may have a significant effect on the environment. As such, the bill requires lead agency consultation with California Native American tribes traditionally and culturally affiliated with the geographic area of a proposed project, if the tribe requested to the lead agency, in writing, to be informed of proposed projects in that geographic area. The legislation further requires that the tribe-requested consultation be completed prior to determining whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project.

A Phase I Cultural Resources Assessment of Master Plot Plan No. PEN22-0238 and Conditional Use Permit No. PEN 22-0176, dated April 2023, was conducted by a Cultural Resources Consultant, Jean A. Keller. The investigation confirmed that the Project Site does not contain any features or resources listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources. The Project Site is located in a well-studied area with 11 previous cultural resource studies have been conducted within a one-mile radius, and 22 cultural resource properties been recorded, one of which is located on the Project Site (see Section V). The remaining 21 resource properties encompassing the Project Site are Native American milling locations, including one site having a small rock shelter and midden. Five sites only have a single milling slick, indicating the use by an individual in processing plant food (seed) resources. The remainder have multiple milling features, generally indicating that a small group worked together processing resources or that these were site visited over several seasons and used by a multiple of individuals.

A Sacred Land File report was conducted February 14, 2023, by the Native American Heritage Commission (NAHC). Based on the provided USGS quadrangle information, the search had negative results.

During $A B 52$ consultation with the City of Moreno Valley, seven tribes were contacted concerning the development of the Proposed Project. The Aqua Caliente Band of Mission Indians and the San Manuel Band of Mission Indians contacted the City regarding the Proposed Project. The Agua Caliente Band of Cahuilla Indians determined that their concerns had been addressed. The San Manuel Band of Mission Indians (SMBMI) determined that the Project Site is outside of Serrano ancestral territory

Therefore, the implementation of Mitigation Measures CUL-1, would reduce impacts to Tribal Cultural Resources defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, to less than significant.

## ISSUES \& SUPPORTING <br> INFORMATION SOURCES:

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## Response: Less than Significant with Mitigation Incorporated

A Sacred Land File report was conducted February 14, 2023, by the Native American Heritage Commission (NAHC). Based on the provided USGS quadrangle information, the search had negative results.

During AB 52 consultation with the City of Moreno Valley, the Agua Caliente Band of Cahuilla Indians determined that their concerns had been addressed. The San Manuel Band of Mission Indians (SMBMI) determined that the Project Site is outside of Serrano ancestral territory. However, to ensure no significant impacts to Tribal Cultural Resources occur, implementation of Mitigation Measures CUL-1 will be required.

## Sources:

1. Moreno Valley General Plan, adopted July 11, 2006
2. Final Environmental Impact Report City of Moreno Valley General Plan, certified May 20, 2021
3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
4. Moreno Valley Municipal Code Title 7 - Cultural Preservation
5. Cultural Resources Inventory for the City of Moreno Valley, Riverside County, California, prepared by Daniel F. McCarthy, Archaeological Research Unit, University of California, Riverside, October 1987 (This document cannot be provided to the public due to the inclusion of confidential information pursuant to Government Code Section 6254.10.)

## XIX. UTILITIES AND SERVICE SYSTEMS - Would the project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

## Response: Less than Significant Impact

## Water Infrastructure

Less Than Significant Impact: Water demand for the Proposed Project would be met by the existing Eastern Municipal Water District (EMWD) water distribution system. The project would connect to an existing water line located on Iris Avenue. The EMWD has provided a will serve letter dated November 14,2022 stating it has the capability to provide water service for the

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Proposed Project. ${ }^{4}$ Therefore, development of the Project would not result in the relocation or construction of new or expanded water facilities that would impact the environment, resulting in a less than significant impact; no mitigation is required.

## Wastewater

Less Than Significant Impact: Wastewater collection and treatment would be provided by EMWD. The District is responsible for the collection, transmission, treatment, reclamation, and disposal of wastewater within its service area, which includes the City of Moreno Valley. Wastewater from the Proposed Project would discharge to the existing sewer lines in Iris Avenue. EMWD operates and maintains four Publicly Owned Treatment Works (POTWs) located in San Jacinto, Moreno Valley, Temecula, and Perris. The Moreno Valley Regional Water Reclamation Facility provides service for the area of the Project Site. The plant treats approximately 11.5 Million Gallons Per Day (MGD), has a current capacity of 16 MGD, with an ultimate capacity of 18 MGD. Sufficient capacity exists to meet demands of the Proposed Project; a Will Serve letter from EMWD is on-file with the City. ${ }^{5}$ Impacts would be less than significant impact, and no mitigation is required.

## Storm Drainage

Less Than Significant Impact: Within the Project Site, the highest point is along the southerly property line closest to the southeast corner and the existing low point is along the northern property line, close to the northeast corner. The commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the off-site storm drain system. Development of the Proposed Project would result in new impervious surfaces on-site. The Proposed Project will include an underground infiltration basin with a retention volume of 15,237 CF, located in the northwest side of the Project Site. Additionally, proposed storm drain laterals will collect water from the landscape swale. Proposed storm drain lines will run along the drive aisles and drain northwest toward the proposed underground infiltration chambers. As such, direct infiltration of storm water from impervious surfaces would be captured and would allow for groundwater recharge.

Therefore impacts would be less than significant related to storm water runoff or storm drain systems and no mitigation is required.

## Electric Power

Less Than Significant Impact: In 2001, the Moreno Valley City Council established the Moreno Valley Utility (MVU). The utility served its first customers on February 6, 2004 in the Promontory Park subdivision at Cactus Avenue and Moreno Beach Drive. MVU serves over 6,500 customers within its service area. The Project would connect to the existing Moreno Valley Utility (MVU) electrical distribution facilities that are adjacent to the Project Site and would not require the construction of new electrical facilities resulting in a less than significant impact, and no mitigation is required.

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Mitigation

## Natural Gas

Less Than Significant Impact: Southern California Gas Company (SoCalGas) provides natural gas service to the vicinity and the Project Site. Therefore, the Proposed Project will receive natural gas from SoCalGas by connecting to the existing line along Iris Avenue, south of the Project Site. The existing SoCalGas facilities are expected to sufficiently serve the increased demand of natural gas. In 2021, the Commercial sector of the Southern California Gas Company planning area consumed 98.293612 million therms of natural gas. Based on the CalEEMod emission output tables for the Proposed Project, the estimated natural gas demand is $1,552.59$ therms of natural gas per year. The Proposed Project's estimated annual natural gas consumption compared to the 2020 annual natural gas consumption of the overall Industry Sector in the Southern California Gas Company Planning Area would account for approximately 0.0015795 percent of total natural gas consumption. Therefore, the natural gas demand from the Proposed Project would represent an insignificant percentage to the overall demand in SoCalGas' service area, and no mitigation is required.

## Telecommunications

Less Than Significant Impact: Development of the Project would require a connection to telecommunication services for internet service and phone service. Connection to existing services is available adjacent to the Project Site at Iris Avenue. The Proposed Project's demand for services is anticipated to be minimal based on the uses proposed. Therefore, development of the Project would not require the relocation or construction of new communications facilities resulting in a less than significant impact, and no mitigation is required.

The Proposed Project would be an acceptable use within the Commercial land use category. Therefore, the Proposed Project is not anticipated to require or result in the relocation or construction of new expanded water, wastewater treatment, storm water drainage, electrical power, natural gas, or telecommunications facilities; the construction or relocation of which could cause significant environmental effects. No significant adverse impacts are identified or anticipated, and no mitigation measures are required.
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

## Response: Less than Significant Impact

According to the Eastern Municipal Water District's Urban Water Management Plan (UWMP) prepared by Water Systems Consulting, Inc. in 2021, EMWD has a diverse portfolio of local and imported water supplies. Local supplies include recycled water, potable groundwater, and desalinated water. Additionally, the EMWD receives imported water from the Metropolitan Water District of Southern California. During a multiple dry-year period, the EMWD's total water supply is projected to be 184,700 acre-feet (AF) by 2040, while the total water demand is projected to be 184,700 AF in the same year, resulting in neither surplus nor deficit. The Proposed Project is an acceptable use within the Planned Commercial land use area. As identified in the UWMP, the EMWD has the ability to meet current and projected water demands through 2040 during normal, historic single-dry and historic multiple-dry year periods using imported water from Metropolitan Water District (MWD) with existing supply resources. Additionally, the anticipated available water supply within EMWD's service area would be

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greater than the demand for water in the future, which indicates that EMWD has available capacity to serve the Project without requiring the construction of new water facilities beyond those that would be developed within the Project site to serve the future residences.

Therefore, because the Proposed Project has sufficient water sources, and will not significantly impact the City of Moreno Valley's water supply, impacts are considered less than significant, and no mitigation measures are required.
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

## Response: Less than Significant Impact

Wastewater flows from the Project Site would be collected and treated by EMWD and would be conveyed to the Moreno Valley Regional Water Reclamation Facility (MVRWRF) located in the southwestern portion of the City. EMWD has provided a Will Serve letter dated November 14, 2022 indicating it is willing to provide water and sewer service to the Proposed Project. The Proposed Project would not require the construction of a new water or wastewater treatment facilities or expansion of existing facilities, which could cause significant environmental effects; and impacts related to this issue would be considered less than significant. No mitigation is required.
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?


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regional, and state programs that mandate recycling, organic waste diversion, and other practices result in reduced waste generation. With the passage of AB 341, each jurisdiction in California is required to meet the mandatory state diversion goal of $75 \%$ by and after the year 2020.

In addition, the City's Building Code requires the Project Applicant to complete and submit a Waste Management and Recycling Plan for approval prior to issuance of building permits. This Waste Management and Recycling Plan would identify the Project type and would estimate the amount of materials to be recycled during construction. Set forth in Section 5.408.1 of the California Green Code, it is required that demolition and construction activities recycle or reuse a minimum of 65 percent of the nonhazardous construction and demolition waste.

Additionally, the Proposed Project would be required to complete a Diversion Report for review by the City's Building Department to demonstrate that the required recycling minimum percent of its construction waste. All development within the City is required to comply with applicable elements of AB 1383, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991), Title 8.80 Recycling and Diversion of Construction and Demolition Waste of the City Municipal Code, AB 341 establishing a 75\% diversion goal statewide, and other local, state, and federal solid waste disposal standards, thereby ensuring that the solid waste stream to the waste disposal facilities is reduced in accordance with existing regulations. Therefore, the Proposed Project would be required to comply with all regulations related to solid waste under federal, state, and local statutes resulting in no impact.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021.
2. Final Environmental Impact Report City of Moreno Valley General Plan, certified July 11, 2006
3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
4. Moreno Valley Municipal Code Chapter 8.10 Stormwater/Urban Runoff Management and Discharge Controls
5. Moreno Valley Municipal Code Section 8.21.170 National Pollutant Discharge Elimination System (NPDES).
6. Moreno Valley Municipal Code Chapter 8.80 - Recycling and Diversion of Construction and Demolition Waste
7. California Department of Conservation, CalRecycle Database.
8. Eastern Municipal Water District. Public Map Portal. https://mapportal.emwd.org/
9. Eastern Municipal Water District "Will Serve" Letter dated November 14, 2022
10. Eastern Municipal Water District Urban Water Management Plan. July 1, 2021
11. Riverside County. Gas Transmission Pipeline Interactive Map. https://socalgas.maps.arcgis.com/apps/webappviewer/index.html?id=aaebac8286ea4e 4b8e425e47771b8138

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XX. WILDFIRE - If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?


## Response: No Impact

The Project Site is not located within a Fire Hazard Severity Zone, as identified by the Moreno Valley General Plan, Map S-5: Fire Hazard Severity Zones. The nearest fire hazard zone to the Project Site is located approximately 0.3 miles southeast of the site in the Bernasconi Hills. The Moreno Valley Local Hazard Mitigation Plan (LHMP) (Figure 12-2) identifies that Iris Avenue and Oliver Street are both Primary Evacuation Routes. Additionally, The General Plan states that I-215 and SR-60 are both major roadways that would constitute evacuation routes in the event of an emergency. The Project Site is located within a Local Response Area (LRA) and surrounded by developed property (residential) to the southeast with vacant property routinely disked for weed abatement to the northwest. ${ }^{6}$ Due to the site being surrounded by developed property and vacant property devoid of native vegetation (i.e., fuel), there is a significantly minimized threat of wildfires occurring in the surrounding area. In addition, Riverside County Fire Department 91 is located at 16110 Lasselle Street, approximately 1.35 miles from the Project Site provides urban fire response. Therefore, development of the Proposed Project would not substantially impair an adopted emergency response plan or emergency evacuation plan in the case of a wildfire, and the Project would not have a significant effect on any emergency response or evacuation procedures; no mitigation measure are required.
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

## Response: No Impact

The Project Site is not located within a Fire Hazard Severity Zone. The Project Site is primarily flat, and construction of the Proposed Project would include pre-construction grading. Additionally, the site is located within a predominately developed region with no wildlands located on or adjacent to the Project Site. Typically, wildland fire hazards are of concern where development is adjacent to wildland areas, otherwise known as Wildland Urban Interface. The Project Site is not within any Wildland Urban Interface areas, as identified in the California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP). Therefore, the Project would not exacerbate wildfire risks, thereby exposing Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire, and no impacts would occur.

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## ISSUES \& SUPPORTING <br> INFORMATION SOURCES:

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## Response: No Impact

The Project Site is currently vacant and consists of a mix-ruderal plant community. Implementation of the Proposed Project would eliminate the existing vegetation on-site and provide a paved foundation, thereby reducing the risk of wildfire. Per the General Plan, the Proposed Project is required to be consistent with the California Building Code Chapter 7A, the International Wildland-Urban Interface Code, and the Moreno Valley Municipal Code Chapter 8.36: California Fire Code. None of the Proposed Project improvements would require the installation of any new infrastructure thereby exacerbating fire risk No impact would occur.
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

## Response: No Impact

The Project Site is not located on or near hilly terrain and is not located in a FEMA 100- or 500year floodplain. The Project Site is located in Class V (Moderate Risk) of the Landslide Susceptibility Classes, as shown in the General Plan, Map S-3: Landslide Hazards. The majority of the Project Site's surrounding land uses are primarily flat and graded towards the southeast. Additionally, the Moreno Valley LHMP Slope Analysis does not identify the Project Site or its surrounding land uses in having any significant sloping elevation. Therefore, the Proposed Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire stability, or drainage change and no impact would occur.

## Sources:

1. Moreno Valley General Plan, adopted June 15, 2021.
2. Final Environmental Impact Report City of Moreno Valley General Plan, certified July 11, 2006
3. Title 9 - Planning and Zoning of the Moreno Valley Municipal Code
4. Moreno Valley Local Hazard Mitigation Plan, City of Moreno Valley Fire Department, adopted October 4, 2011, amended 2022, http://www.moval.org/city hall/departments/fire/pdfs/haz-mit-plan.pdf
5. Emergency Operations Plan, City of Moreno Valley, March 2009, http://www.moval.org/city hall/departments/fire/pdfs/mv-eop-0309.pdf
6. CALFIRE FHSZ Viewer: https://egis.fire.ca.gov/FHSZ/

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## XXI. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?
Response: Less than Significant with Mitigation Incorporated
Based on a Biological Resources Assessment (BRA), Jurisdictional Delineation, and MSHCP Consistency Analysis prepared by Jennings Environmental, LLC in February 2023, portions of the Project Site and the immediate surrounding area do provide suitable habitat for nesting birds. There are mature trees in the adjacent neighborhoods and the vacant lands provide suitable habitat for other ground nesting species (i.e. killdeer (Charadrius vociferus)). Therefore, possible significant adverse impacts have been identified or are anticipated and Mitigation Measure BIO-1 is required as a condition of project approval to reduce these impacts to a level below significant. The Proposed Project would not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or a wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, and reduce the number or restrict the range of a rare or endangered plant or animal with implementation of Mitigation Measure BIO-1. No additional mitigation is warranted.

A Phase I Cultural Resources Assessment of Master Plot Plan No. PEN22-0238 and Conditional Use Permit No. PEN 22-0176, dated April 2023, was conducted by a Cultural Resources Consultant, Jean A. Keller. A records search was also conducted by staff at the Eastern Information Center on March 29, 2023, indicated that the subject property had been involved in one previous cultural resources study, conducted in 2017 by LSA. Entitled "Cultural Resources Assessment, Sater Arco Project, City of Moreno Valley, Riverside County, California" (RI- 10128), the study included the entirety of what is now PEN22-0238 and PEN220176. During the course of the field survey, a single isolated artifact of historical origin, P-33027260, was recorded approximately 130 feet northwest of the intersection of Iris Avenue and Oliver Road. The artifact was a fragment of a pre-WWII riveted steel irrigation pipe. The report determined that isolated artifacts, particularly those of historic-period origin that have no specific association are generally considered not significant and therefore, are not "historical resources" under the California Environmental Quality Act (CEQA). The artifact was left in situ, or its original place and no further research was recommended.

The Project Site is located in a well-studied area, with 11 previous cultural resources studies having been conducted within a one-mile radius, most of which have large acreage. During the course of these studies, 22 cultural resources properties have been recorded, one of which was located on the Project Site. With the exception of the isolated historical-era artifact found on the Project Site, all of the remaining sites are Native American bedrock milling sites, although one site also has a small rock shelter and midden. No significant archaeological sites have been recorded in less than a one-half mile radius of the subject property. However, due to the existence of a historical artifact on the Project Site, the presence of another irrigation feature off property, and the number of Native American milling sites within a one mile radius, LSA recommended part-time archaeological monitoring of grading, which would be addressed with

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Mitigation Measure CUL-1. Therefore, with the adherence to Mitigation Measure CUL-1, the Proposed Project will have a less than significant impact on historic or archaeological resources within the Project Site and surrounding land uses.
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current project, and the effects of probable future projects.)?

## Response: Less than Significant Impact

Cumulative impacts are defined as two or more individual affects that, when considered together, are considerable or that compound or increase other environmental impacts. The cumulative impact from several Projects is the change in the environment that results from the incremental impact of the development when added to the impacts of other closely related past, present, and reasonably foreseeable or probable future developments. Cumulative impacts can result from individually minor, but collectively significant, developments taking place over a period. The CEQA Guidelines, Section 15130 (a) and (b), states:
(a) Cumulative impacts shall be discussed when the Project's incremental effect is cumulatively considerable.
(b) The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided of the effects attributable to the Project. The discussion should be guided by the standards of practicality and reasonableness.

No potential impacts associated with the Proposed Project would be considered individually adverse or unfavorable. The Proposed Project is a compatible use identified in and previously evaluated as part of the City of Moreno Valley's General Plan and Municipal Code. No additional potential cumulative adverse impacts are identified or are anticipated, and no additional mitigation measures are required.
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

## Response: Less than Significant Impact

Incorporation of mitigation measures, City of Moreno Valley's policies, standards, and guidelines would ensure that the Proposed Project would have no substantial adverse effects on human beings, either directly or indirectly on an individual or cumulative basis. Therefore, a less than significant impact is anticipated.

## Exhibit B

MITIGATION MONITORING AND REPORTING PROGRAM

## Mitigation Monitoring and Reporting Program

## Introduction

The California Environmental Quality Act (CEQA) requires a lead or public agency that approves or carries out a project for which an Mitigated Negative Declaration has been certified which identifies one or more significant adverse environmental effects and where findings with respect to changes or alterations in the project have been made, to adopt a "...reporting or monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment" (CEQA, Public Resources Code Sections 21081, 21081.6).

A Mitigation Monitoring and Reporting Program (MMRP) is required to ensure that adopted mitigation measures are successfully implemented. The City of Moreno Valley is the Lead Agency for the project and is responsible for implementation of the MMRP. Table 1 of this report describes the MMRP for the Project and identifies the parties that will be responsible for monitoring implementation of the individual mitigation measures in the MMRP. This report also describes existing Plans, Programs, or Policies (PPPs) that apply to the project in Table 2.

## Mitigation Monitoring and Reporting Program

The MMRP for the Project will be active through all phases of the Project, including design, construction, and operation. The attached table identifies the mitigation program required to be implemented by the City for the Project. The table identifies mitigation measures required by the City to mitigate or avoid significant impacts associated with the implementation of the Project, the timing of implementation, and the responsible party or parties for monitoring compliance.

The MMRP also includes a column that will be used by the compliance monitor (individual responsible for monitoring compliance) to document when implementation of the measure is completed. As individual Plan, Program, Policies; and mitigation measures are completed, the compliance monitor will sign and date the MMRP, indicating that the required actions have been completed.

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TABLE 1: MITIGATION MONITORING AND REPORTING PROGRAM

| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
| :---: | :---: | :---: | :---: |
| Air Quality |  |  |  |
| MM AQ-1: Compliance with SCAQMD Rules 402 and 403. The <br> Project Proponent would be required to comply with Rules 402 nuisance, and 403 fugitive dust, which require the implementation of Best Available Control Measures (BACMs) for each fugitive dust source, and the AQMP, which identifies Best Available Control Technologies (BACTs) for area sources and point sources. The BACMs and BACTs would include, but not be limited to the following: <br> 1. The Project Proponent shall ensure that any portion of the site to be graded shall be pre-watered prior to the onset of grading activities (see Figures 4 and 6). <br> a) The Project Proponent shall ensure that watering of the site or other soil stabilization method shall be employed on an on-going basis after the initiation of any grading activity on the site. Portions of the site that are actively being graded shall be watered regularly ( $3 x$ daily) to ensure that a crust is formed on the ground surface and shall be watered at the end of each workday. <br> b) The Project Proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed upon. <br> c) The Project Proponent shall ensure that landscaped areas are installed as soon as possible to reduce the potential for wind erosion. <br> d) The Project Proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when winds exceed 25 miles per hour. <br> During construction, exhaust emissions from construction vehicles and equipment and fugitive dust generated by | In Construction Plans and Specifications Prior to Demolition, Grading and Building Permits | City of Moreno Valley Building and Safety Division |  |


| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
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| equipment traveling over exposed surfaces would increase $\mathrm{NO}_{x}$ and $\mathrm{PM}_{10}$ levels in the area. Although the Proposed Project does not exceed SCAQMD thresholds during construction, the Applicant/Contractor would be required to implement the following conditions as required by SCAQMD: <br> 1. To reduce emissions, all equipment used in grading and construction must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel. <br> 2. The Project Proponent shall ensure that existing power sources are utilized where feasible via temporary power poles to avoid on-site power generation during construction. <br> 3. The Project Proponent shall ensure that construction personnel are informed of ride sharing and transit opportunities. <br> 4. All buildings on the Project Site shall conform to energy use guidelines in Title 24 of the California Administrative Code. <br> 5. The operator shall maintain and effectively utilize and schedule on-site equipment in order to minimize exhaust emissions from truck idling. <br> 6. The operator shall comply with all existing and future California Air Resources Board (CARB) and SCAQMD regulations related to diesel-fueled trucks, which may include among others: (1) meeting more stringent emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low sulfur fuel; and (4) use of alternative fuels or equipment. |  |  |  |


| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
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| Biological Resources |  |  |  |
| MM BIO-1: Migratory Bird Treaty Act. Nesting bird nesting season generally extends from February 1 through September 15 in southern California and specifically, March 15 through August 31 for migratory passerine birds. To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist will conduct pre-construction Nesting Bird Surveys (NBS) prior to Project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist will set appropriate no-work buffers around the nest which will be based upon the nesting species, its sensitivity to disturbance, nesting stage, and expected types, intensity, and duration of the disturbance. The nests and buffer zones shall be field-checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity shall commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive. | Surveys to be conducted if construction occurs during the nesting period of February 1 through September 15. | City of Moreno Valley Community Development Department |  |
| Cultural Resources |  |  |  |
| MM CR-1: Archaeological Monitoring. Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated | Confirmation of professional archaeologist retention/ongoing/monitoring/submittal of Report of Findings. Prior to issuance of Grading Permit and during subsurface excavation. | City of Moreno Valley Community Development Department |  |


| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
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| the $A B 52$ tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include: <br> a. Project grading and development scheduling; <br> b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as needed basis; <br> c. The protocols and stipulations that the contractor, City, Consulting Tribe(s), and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, include any newly discovered cultural resource deposits that shall be subject to a cultural resource evaluation. |  |  |  |


| MITIGATION MEASURE | ACTION AND TIMING | Responsible for ENSURING COMPLIANCE / VERIFICATION | DATE COMPLETED AND INITIALS |
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| Geology and Soils |  |  |  |
| MM GEO-1: Paleontological Resources. A paleontologist selected from the roll of qualified paleontologists maintained by the City shall be retained to provide spot-check monitoring services for the project. The paleontologist shall develop a Paleontological Resources Impact Mitigation Plan (PRIMP) to mitigate the potential impacts to unknown buried paleontological resources that may exist onsite. The PRIMP shall require that the paleontologist be present at the pre-grading conference to establish procedures for paleontological resource surveillance. The PRIMP shall require paleontological spot-check monitoring of excavation that exceeds depths of 5 feet. The PRIMP shall state that the project paleontologist shall reevaluate the necessity for paleontological monitoring after 50 percent or greater of the excavations deeper than 5 feet have been completed. <br> In the event that paleontological resources are encountered, ground-disturbing activity within 50 feet of the area of the discovery shall cease. The paleontologist shall examine the materials encountered, assess the nature and extent of the find, and recommend a course of action to further investigate and protect or recover and salvage those resources that have been encountered. <br> Criteria for discard of specific fossil specimens will be made explicit. If a qualified paleontologist determines that impacts to a sample containing significant paleontological resources cannot be avoided by project planning, then recovery may be applied. Actions may include recovering a sample of the fossiliferous material prior to construction, monitoring work and halting construction if an important fossil needs to be recovered, and/or cleaning, identifying, and cataloging specimens for curation and research purposes. Recovery, salvage and treatment shall be | Confirmation of professional paleontologist retention/ongoing/monitoring/submittal of Paleontological Resources Impact Mitigation Plan (PRIMP). Prior to issuance of Grading Permit and during subsurface excavation. | City of Moreno Valley Community Development Department |  |


| MITIGATION MEASURE |  | Responsible for <br> ENSURING COMPLIANCE <br> /VERIFICATION |
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| done at the applicant's expense. All recovered and salvaged <br> resources shall be prepared to the point of identification and <br> permanent preservation by the paleontologist. Resources shall <br> be identified and curated into an established accredited <br> professional repository. The paleontologist shall have a <br> repository agreement in hand prior to initiating recovery of the <br> resource. |  |  |
| ACTION AND TIMING |  |  |


| TABLE 2: EXISTING PLANS, PROGRAMS, OR POLICIES |  |  |  |
| :---: | :---: | :---: | :---: |
| PPP | Action and Timing | Responsible for Ensuring Compliance / Verification | Date Completed and Initials |
| AIR QUALITY |  |  |  |
| PPP AQ-1: Rule 402. The project is required to comply with the provisions of South Coast Air Quality Management District (SCAQMD) Rule 402. The project shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. | Compliance with Rule 402. Construction. | City of Moreno Valley Community Development Department |  |
| PPP AQ-2: Rule 403. The project is required to comply with the provisions of South Coast Air Quality Management District (SCAQMD) Rule 403, which includes the following: <br> - All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions. <br> - The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the project are watered, with complete coverage of disturbed areas, at least 3 times daily during dry weather; preferably in the mid-morning, afternoon, and after work is done for the day. <br> - The contractor shall ensure that traffic speeds on unpaved roads and project site areas are reduced to 15 miles per hour or less. | Compliance with Rule 403. Construction. | City of Moreno Valley Community Development Department |  |
| PPP AQ-3: Rule 1113. The project is required to comply with the provisions of South Coast Air Quality Management District Rule (SCAQMD) Rule 1113. Only | Compliance with Rule 1113. Construction. | City of Moreno Valley Community Development Department |  |


| "Low-Volatile Organic Compounds" paints (no more than 50 gram/liter of VOC) and/or High Pressure Low Volume (HPLV) applications shall be used. |  |  |  |
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| BIOLOGICAL RESOURCES |  |  |  |
| PPP BIO-1: MSHCP Development Impact Fees. Prior to issuance of a grading or building permit, the project applicant will be required to pay relevant City of Moreno Valley mitigation fees to the City. | Pay MSHCP fee. <br> Prior to Grading Permit. | City of Moreno Valley Community Development Department |  |
| GEOLOGY |  |  |  |
| PPP GEO-1: California Building Code. The Project is required to comply with the California Building Code as included in the City's Municipal Code Chapter 8.20 to preclude significant adverse effects associated with seismic hazards. California Building Code related and geologist and/or civil engineer specifications for the Project are required to be incorporated into grading plans and specifications as a condition of Project approval. | Comply with California Building Cod. Prior to Grading Permit. | City of Moreno Valley Community Development Department |  |
| GREENHOUSE GAS EMISSIONS |  |  |  |
| PPP GHG-1: CalGreen Compliance. The project is required to comply with the CalGreen Building Code as included in the City's Municipal Code to ensure efficient use of energy. CalGreen specifications are required to be incorporated into building plans as a condition of building permit approval. | Comply with CalGreen efficient energy specifications. Prior to building permit. | City of Moreno Valley Community Development Department |  |
| PUBLIC SERVICES |  |  |  |
| PPP PS-1: The project will be required to pay applicable development fees levied by the Moreno Valley Unified School District pursuant to the School Facilities Act (Senate Bill [SB] 50, Stats. 1998, c.827) to offset any effects on school facilities resulting from new development. | Pay SB 50 school fees. Prior to building permits. | City of Moreno Valley Community Development Department |  |


| PPP PS-2: Park Fees. As a condition of the approval of a residential development, the project shall pay applicable park related fees and/or dedicate parkland pursuant to Municipal Code Section 3.38.080 and Chapter 3.40. | Pay applicable park fees. <br> Prior to building permits. | City of Moreno Valley Community Development Department |  |
| :---: | :---: | :---: | :---: |
| WATER QUALITY |  |  |  |
| PPP WQ-1: Stormwater Pollution Prevention Plan. Prior to grading permit issuance, the project developer shall have a Stormwater Pollution Prevention Plan (SWPPP) prepared by a Qualified SWPPP Developer (QSD) in accordance with the City's Municipal Code Chapter 8.10 and the Santa Ana Regional Water Quality Control Board National Pollution Discharge Elimination System (NPDES) Storm Water Permit Order No. R4-2012-0175 (MS4 Permit). The SWPPP shall incorporate all necessary Best Management Practices (BMPs) and other NPDES regulations to limit the potential of erosion and polluted runoff during construction activities. Project contractors shall be required to ensure compliance with the SWPPP and permit periodic inspection of the construction site by the City of Moreno Valley staff or its designee to confirm compliance. | Review and approval of SWPPP. Prior to Grading Permit. | City of Moreno Valley Community Development Department |  |
| PPP WQ-2: Water Quality Management Plan, Prior to grading permit issuance, the project applicant shall have a Water Quality Management Plan (WQMP) approved by the City for implementation. The project shall comply with the City's Municipal Chapter 8.10 and the Municipal Separate Storm Sewer System (MS4) permit requirements in effect for the Regional Water Quality Control Board (RWQCB) at the time of grading permit to control discharges of sediments and other pollutants during operations of the project. | Review and approval of WQMP. Prior to Grading Permit. | City of Moreno Valley Community Development Department |  |

## Exhibit C

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

## CITY OF MORENO VALLEY NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

NOTICE IS HEREBY GIVEN that the City of Moreno Valley is considering a recommendation that the project herein identified will have no significant environmental impact in compliance with Section 15070 of the CEQA guidelines. A copy of the MITIGATED NEGATIVE DECLARATION and the ENVIRONMENTAL CHECKLIST, which supports the proposed findings, are on file at the City of Moreno Valley.

## Project:

Applicant:
Owner:
Representative:
Location:
Proposal:

## Council District:

This Notice of Intent has been prepared to notify agencies and interested parties that the City of Moreno Valley, as the Lead Agency, has prepared an Initial Study/Mitigated Negative Declaration pursuant to the requirements of the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts associated with construction and operation of the project as described below.

Project Description: The Proposed Project consists of a proposal for a Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176) that provides for the development and operation of an eight (8) island fueling station, six (6) vehicle charging stations, a 7,400 square foot convenience store, and a 1,790 square foot drive-thru carwash on a site containing 1.31 acres within the Downtown Center (DC) zone. The Proposed Project design also includes auto parking areas, landscaping, lighting, and off-site improvements.

The Project Site is not included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Document Availability: The Initial Study/Mitigated Negative Declaration and all documents incorporated and/or referenced therein can be reviewed during normal business hours (7:30 a.m. to 5:30 p.m., Monday through Thursday and Friday, 7:30 a.m. to $4: 30$ p.m.) at the City of Moreno Valley Planning Division counter, located at 14177 Frederick Street, Moreno Valley, CA 92553. The documents may also be reviewed on the City's website at http://www.moreno-valley.ca.us/cdd/documents/about-projects.html

Potential Environmental Impacts: The City of Moreno Valley has prepared an Initial Study to determine the environmental effects associated with the above actions and finds the issuance of a Mitigated Negative Declaration is the appropriate level of environmental review. The Initial Study/Mitigated Negative Declaration concludes that all potentially significant impacts of the Project would be mitigated to a less than significant level.

Comment Deadline: Pursuant to Section 15105(b) of the CEQA Guidelines, the City has established a 20 -day public review period for the Initial Study/Mitigated Negative Declaration, which begins on October 13, 2023, and ends November 2, 2023. Written comments on the Initial Study/Mitigated Negative Declaration must be received at the City of Moreno Valley Community Development Department by no later than the conclusion of the 20-day review period, 5:30 p.m. on November 1, 2023. Written comments on the Initial Study/Mitigated Negative Declaration should be addressed to:

> Oliver Mujica, Contract Planner
> 14177 Frederick Street
> Post Office Box 88005
> Moreno Valley, California 92552 Phone: (951) 413-3215
> Email: planningnotices@moval.org

Press-Enterprise
October 13, 2023
Sean Kelleher
Newspaper
Date of Publication
Community Development Director
Community Development Department

## RESOLUTION NUMBER 2023-XX

## A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING A MASTER PLOT PLAN (PEN220238) AND CONDITIONAL USE PERMIT (PEN22-0176) FOR THE BEYOND FOOD MART LOCATED ON THE NORTHWEST CORNER OF IRIS AVENUE AND OLIVER STREET (APN: 486-310-038)

WHEREAS, the City of Moreno Valley ("City") is a general law city and a municipal corporation of the State of California, and

WHEREAS, Beyond Food Mart, Inc. ("Applicant") has submitted applications for a Master Plot Plan (PEN22-0238) for a 1.31-acre commercial development ( 57,063 square feet); and a Conditional Use Permit (PEN22-0176) for the operation of an eight (8) island fueling station, six (6) vehicle charging stations, market (7,400 square feet), and drivethru carwash (1,790 square feet) ("Proposed Project"), located at the northwest corner of Iris Avenue and Oliver Street (APN: 486-310-038), within the Downtown Center (DC) District ("Project Site"); and

WHEREAS, the applications for the Proposed Project have been evaluated in accordance with Section 9.02.070 (Plot Plans) and 9.02.060 (Conditional Use Permits), respectively, of the Municipal Code with consideration given to the City's General Plan, Zoning Ordinance, and other applicable laws and regulations; and

WHEREAS, Section 9.02 .070 (Plot Plans) of the Municipal Code imposes conditions of approval upon projects for which a Plot Plan is required, which conditions may be imposed by the Planning Commission or City Council, when jurisdiction is assumed, to address on-site improvements, off-site improvements, the manner in which the site is used and any other conditions as may be deemed necessary to protect the public health, safety and welfare and ensure that the Proposed Project will be developed in accordance with the purpose and intent of Title 9 ("Planning and Zoning") of the Municipal Code; and

WHEREAS, Section 9.02.020 (Permitted Uses) provides that Auto Service Stations with accessory uses including vehicle charging stations, markets, and drive-thru carwashes are allowed within the Downtown Center (DC) District, with a properly secured Conditional Use Permit approved by the Planning Commission or City Council, when jurisdiction is assumed, when the use is located 300 feet or less from a residential zone or use; and

WHEREAS, the parcels to the east of the Project Site across Oliver Street are within 300 feet and developed with single-family residences within the Residential Medium Low (ML) District of the Moreno Valley Ranch Specific Plan (SP193), and the parcels to the south of the Project Site across Iris Avenue are also within 300 feet and developed with single-family residences within the Residential Medium Low (ML) District of the Moreno Valley Ranch Specific Plan (SP193); and

WHEREAS, Section 9.02.060 (Conditional Use Permits) of the Moreno Valley Municipal Code acknowledges that the purpose of Conditional Use Permits is to allow the establishment of uses that may have special impacts or uniqueness such that their effect on the surrounding environment cannot be determined in advance of the use being proposed for a particular location and that the Conditional Use Permit application process involves the review of location, design, and configuration of improvements related to the project, and the potential impact of the project on the surrounding area based on fixed and established standards; and

WHEREAS, Section 9.02.060 (Conditional Use Permits) of the Municipal Code imposes conditions of approval upon projects for which a Conditional Use Permit is required, which conditions may be imposed by the Planning Commission or City Council, when jurisdiction is assumed, to address on-site improvements, off-site improvements, the manner in which the site is used, and any other conditions as may be deemed necessary to protect the public health, safety and welfare to ensure that the proposed Project will be developed in accordance with the purpose and intent of Title 9 (Planning and Zoning) of the Municipal Code; and

WHEREAS, consistent with the requirements of Section 9.02.060 (Conditional Use Permits) of the Municipal Code, at the public hearing the Planning Commission or City Council, when jurisdiction is assumed, considered Conditions of Approval to be imposed upon Conditional Use Permit (PEN22-0176), which conditions were prepared by Planning Division staff who deemed said conditions to be necessary to protect the public health, safety, and welfare and to ensure the Proposed Project will be developed in accordance with the purpose and intent of Title 9 ("Planning and Zoning") of the Municipal Code; and

WHEREAS, consistent with the requirements of Section 9.02.070 (Plot Plans) of the Municipal Code, at the public hearing, the City Council considered Conditions of Approval to be imposed upon Master Plot Plan (PEN22-0238), which conditions were prepared by Planning Division staff who deemed said conditions to be necessary to protect the public health, safety, and welfare and to ensure the Proposed Project will be developed in accordance with the purpose and intent of Title 9 (Planning and Zoning) of the Municipal Code; and

WHEREAS, on November 9, 2023, a hearing was conducted by the Planning Commission whereby the Planning Commission voted unanimously 7-0 to adopt Planning Commission Resolution No. 2023-47 adopting the MND and the MMRP for the Proposed Project, and adopt Planning Commission Resolution 2023-48 approving the Proposed Project; and

WHEREAS, pursuant to the provisions of Section 9.02.200 (Public Hearing and Notification Procedures) of the Municipal Code, a public hearing was scheduled for December 19, 2023, and notice thereof was duly published, posted, and mailed to all property owners of record within 600 feet of the Project Site; and

WHEREAS, on December 19, 2023, the public hearing to consider the Proposed Project was duly conducted by the City Council, at which time all interested persons were provided with an opportunity to testify and present evidence; and

WHEREAS, at the public hearing, the City Council considered whether each of the requisite findings specified in Section 9.02 .070 (Plot Plans) of the Municipal Code and set forth herein could be made concerning the Proposed Project as conditioned by Conditions of Approval; and

WHEREAS, at the public hearing, the City Council considered whether each of the requisite findings specified in Section 9.02 .060 (Conditional Use Permits) of the Municipal Code and set forth herein could be made concerning the Proposed Project as conditioned by Conditions of Approval; and

WHEREAS, on December 19, 2023, in accordance with the provisions of the California Environmental Quality Act (CEQA ${ }^{1}$ ) and CEQA Guidelines ${ }^{2}$, the City Council adopted Resolution No. 2023-XX, adopting a Mitigated Negative Declaration and approving the Mitigation Monitoring and Reporting Program for the Proposed Project.

## NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

## Section 1. Recitals and Exhibits

That the foregoing Recitals and attached exhibits are true and correct and are hereby incorporated by this reference.

## Section 2. Notice

That pursuant to Government Code Section 66020(d)(1), notice is hereby given that the Proposed Project is subject to certain fees, dedications, reservations, and other exactions as provided herein, in the staff report and conditions of approval (collectively, "Conditions"); and these Conditions constitute written notice of a statement of the amount of such fees, and a description of the dedications, reservations, and other exactions. You are hereby further notified that the ninety-day approval period in which you may protest these fees, dedications, reservations, and other exactions, pursuant to Government Code Section 66020(a), has begun.

## Section 3. Evidence

That the City Council has considered all evidence submitted into the Administrative Record for the Proposed Project, including, but not limited to, the following:
(a) Moreno Valley General Plan and all other relevant provisions contained therein;

[^26](b) Title 9 (Planning and Zoning) of the Moreno Valley Municipal Code and all other relevant provisions referenced therein;
(c) Application for Master Plot Plan (PEN22-0238), including Resolution No. 2023-XX and all documents, records, and references contained therein;
(d) Conditions of Approval for Master Plot Plan (PEN22-0238), attached hereto as Exhibit A;
(e) Application for the approval of Conditional Use Permit (PEN22-0176), including Resolution No. 2023-XX and all documents, records, and references contained therein;
(f) Conditions of Approval for Conditional Use Permit (PEN22-0176), attached hereto as Exhibit B;
(g) Staff Report and Resolutions prepared for the Planning Commission's consideration and all documents, records, and references related thereto, and Staff's presentation at the public hearing; and
(h) Testimony, comments, and correspondence from all persons that were provided at, or prior to, the November 9, 2023, Planning Commission public hearing; and
(i) Planning Division Staff Report prepared for the City Council's consideration and all documents, records, and references related thereto, and Planning Division Staff's presentation at the public hearing; and
(j) Testimony, and/or comments from Applicant and its representatives during the public hearing; and
(k) Testimony and/or comments from all persons provided in written format or correspondence, at, or prior to, the public hearing.

## Section 4. Findings

That based on the foregoing Recitals and the Evidence contained in the Administrative Record as set forth above, the City Council makes the following findings in approving the Proposed Project:
a. The Proposed Project is consistent with the goals, objectives, policies and programs of the General Plan;
b. The Proposed Project complies with all applicable zoning and other regulations;
c. The Proposed Project will not be detrimental to the public health, safety or welfare or materially injurious to properties or improvements in the vicinity;
d. The location, design and operation of the Proposed Project will be compatible with existing and planned land uses in the vicinity.

## Section 5. Approval

That based on the foregoing Recitals, Evidence contained in the Administrative Record and Findings, as set forth herein, the City Council hereby approves the Proposed Project subject to the Conditions of Approval for the Master Plot Plan (PEN22-0238), attached hereto as Exhibit A, and Conditions of Approval for the Conditional Use Permit (PEN22-0176), attached hereto as Exhibit B.

## Section 6. Repeal of Conflicting Provisions

That all the provisions heretofore adopted by the City Council that are in conflict with the provisions of this Resolution are hereby repealed.

## Section 7. Severability

That the City Council declares that, should any provision, section, paragraph, sentence, or word of this Resolution be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this Resolution as hereby adopted shall remain in full force and effect.

## Section 8. Effective Date

That this Resolution shall take effect immediately upon the date of adoption.

## Section 9. Certification

That the City Clerk for the City Council shall certify to the passage of this Resolution.
[Remainder of Page Intentionally Left Blank]

## PASSED AND ADOPTED THIS 19 th DAY OF DECEMBER 2023.

## CITY OF MORENO VALLEY CITY COUNCIL

Ulises Cabrera,
Mayor of the City of Moreno Valley

## ATTEST:

Jane Halstead,
City Clerk

APPROVED AS TO FORM:

Steven B. Quintanilla,
City Attorney
Exhibits:
Exhibit A: Master Plot Plan (PEN22-0238), Conditions of Approval
Exhibit B: Conditional Use Permit (PEN22-0176), Conditions of Approval

## Exhibit A

Master Plot Plan (PEN22-0238) Conditions of Approval

Community Development Department
Planning Division
14177 Frederick Street
P. O. Box 88005

Moreno Valley CA 92552-0805
Telephone: 951.413.3206

CITY OF MORENO VALLEY<br>PROBABLE CONDITIONS OF APPROVAL<br>Plot Plan (PEN22-0238)

## COMMUNITY DEVELOPMENT DEPARTMENT

## Planning Division

1. A change or modification to the land use or the approved site plans may require a separate approval. Prior to any change or modification, the property owner shall contact the City of Moreno Valley Community Development Department to determine if a separate approval is required.
2. In accordance with the Developer's obligation to defend, indemnify and hold harmless the City, including but not limited to as set forth in more detail in the Project's Conditions of Approval, Moreno Valley Municipal Code Section 9.02.310 (Indemnification of City for Discretionary Approvals), and the Project application, Developer shall enter into an Advanced Funding Agreement with the City no later than ten (10) calendar days from Planning Commission's approval of the Project. A copy of said Agreement is on file with the Community Development Director.
3. Any expansion to this use or exterior alterations will require the submittal of a separate application(s) and shall be reviewed and approved under separate permit(s). (MC 9.02.080)
4. The developer, or the developer's successor-in-interest, shall be responsible for maintaining any undeveloped portion of the site in a manner that provides for the control of weeds, erosion and dust. (MC 9.02.030)
5. The expiration date of this modification does not extend the expiration of any related project or activity.
6. This approval shall expire three years after the approval date of this project unless used or extended as provided for by the City of Moreno Valley Municipal Code; otherwise it shall become null and void and of no effect whatsoever. Use means the beginning of substantial construction contemplated by this approval within the three-year period, which is thereafter pursued to completion, or the beginning of substantial utilization contemplated by this approval. (MC 9.02.230)
7. In the event the use hereby permitted ceases operation for a period of one (1) year
or more, or as defined in the current Municipal Code, this permit may be revoked in accordance with provisions of the Municipal Code. (applicable to CUP's)
8. The Developer shall defend, indemnify and hold harmless the City, city council, commissions, boards, subcommittees and the City's elected and appointed officials, commissioners, board members, officers, agents, consultants and employees ("City Parties") from and against any and all liabilities, demands, claims, actions or proceedings and costs and expenses incidental thereto (including costs of defense, settlement and reasonable attorneys' fees), which any or all of them may suffer, incur, be responsible for or pay out as a result of or in connection with any challenge to the legality, validity or adequacy of any of the following items: (i) any prior or current agreements by and among the City and the Developer; (ii) the current, concurrent and subsequent permits, licenses and entitlements approved by the City; (iii) any environmental determination made by the City in connection with the Project Site and the Project; and (iv) any proceedings or other actions undertaken by the City in connection with the adoption or approval of any of the above. In the event of any administrative, legal, equitable action or other proceeding instituted by any third party (including without limitation a governmental entity or official) challenging the legality, validity or adequacy of any of the above items or any portion thereof, the Parties shall mutually cooperate with each other in defense of said action or proceeding. Notwithstanding the above, the City, at its sole option, may tender the complete defense of any third party challenge as described herein. In the event the City elects to contract with special counsel to provide for such a defense, the City shall meet and confer with the Developer regarding the selection of counsel, and the Developer shall pay all costs related to retention of such counsel by the City.
9. All landscaped areas shall be maintained in a healthy and thriving condition, free from weeds, trash and debris. (MC 9.02.030)
10. The site shall be developed in accordance with the approved plans on file in the Community Development Department - Planning Division, the Municipal Code regulations, General Plan, and the conditions contained herein. Prior to any use of the project site or business activity being commenced thereon, all Conditions of Approval shall be completed to the satisfaction of the Planning Official. (MC 9.14.020)
11. Any signs indicated on the submitted plans are not included with this approval. Any signs, whether permanent (e.g. wall, monument) or temporary (e.g. banner, flag), require separate application and approval by the Planning Division. No signs are permitted in the public right of way. (MC 9.12)
12. All site plans, grading plans, landscape and irrigation plans, fence/wall plans, lighting plans and street improvement plans shall be coordinated for consistency with this approval.

## Special Conditions

13. The site has been approved for a Master Plot Plan (PEN22-0238) and Conditional

Use Permit (PEN22-0176) for a commercial development comprised of an eight (8) island fueling station, six (6) vehicle charging stations, 7,400 square foot market, and a 1,790 square foot drive-thru carwash, including a state-of-the-art security system with alarms, surveillance cameras and security lighting, and the prohibition of alcohol beverage sales, on a 1.31-acre site. A change or modification shall require separate approval. For a Conditional Use Permit, violation may result in revocation of the Conditional Use Permit.
14. Prior to the start of any construction, temporary security fencing shall be erected. The fencing shall be a minimum of six (6) feet high with locking, gated access and shall remain through the duration of construction. Security shall remain in place until the project is completed or the above conditions no longer exist. (Security fencing is required if there is: construction, unsecured structures, unenclosed storage of materials and/or equipment, and/or the condition of the site constitutes a public hazard).
15. Drive-through speaker system for the carwash shall not be detectable above daytime ambient noise levels beyond the property line boundaries, and shall not exceed fifty-five (55) dBA at any one time beyond the boundaries of the property line. (MC9.09.080 C. 6 and 9.10.140)
16. The use of the carwash and vacuum stations shall be limited to the operating hours of 8:00 a.m. and 10:00 p.m. The use of the carwash and vacuum stations shall be prohibited between 10:00 p.m. and 8:00 a.m.
17. The owner or owner's representative shall establish and maintain a relationship with the City of Moreno Valley and cooperate with the Problem Oriented Policing (POP) program, or its successors.
18. One outdoor trash receptacle shall be provided shall be provided for every ten (10) required parking spaces, with a minimum of one receptacle provided to be located front portion of the site for use by patrons. (MC 9.09.080 C 5.)
19. Prior to approval of any grading permit, the tree plan shall be submitted to and approved by the Panning Division. The plan shall identify all mature trees (4 inch trunk diameter or larger) on the subject property and City right-of-way. Using the grading plan as a base, the plan shall indicate trees to be relocated, retained, and removed. Replacement trees shall be shown on the plan, be a minimum size of 24 inch box, and meet a ratio of three replacement trees for each mature tree removed or as approved by the Planning Official. (GP Objective 4.4, 4.5, DG)

## Prior to Building Permit

20. Prior to issuance of any building permit, all Conditions of Approval, and Mitigation Measures shall be printed on the building plans.
21. Prior to the issuance of building permits, the developer shall provide documentation that contact was made to the U.S. Postal Service to determine the appropriate type and location of mailboxes.
22. Prior to issuance of any building permits, final landscaping and irrigation plans shall be submitted for review and approved by the Planning Division. After the third plan check review for landscape plans, an additional plan check fee shall apply. The plans shall be prepared in accordance with the City's Landscape Requirements and shall include:
a. A three (3) foot high decorative wall, solid hedge or berm shall be placed in any setback areas between a public right of way and a parking lot for screening.
b. Finger and end planters with required step outs and curbing shall be provided every 12 parking stalls as well as at the terminus of each aisle.
c. Drought tolerant landscape shall be used. Sod shall be limited to gathering areas. (or No sod shall be installed)
d. Street trees shall be provided every 40 feet on center in the right of way.
e. On-site trees shall be planted at an equivalent of one (1) tree per thirty (30) linear feet of the perimeter of a parking lot and per thirty linear feet of a building dimension for the portions of the building visible from a parking lot or right of way. Trees may be massed for pleasing aesthetic effects.
f. Enhanced landscaping shall be provided at all driveway entries and street corner locations The review of all utility boxes, transformers etc. shall be coordinated to provide adequate screening from public view.
g. Landscaping on three sides of any trash enclosure.
h. All site perimeter and parking lot landscape and irrigation shall be installed prior to the release of certificate of any occupancy permits for the site or pad in question (master plot plan). [only include items above that apply to the project]
23. Prior to issuance of building permits, the Planning Division shall review and approve the location and method of enclosure or screening of transformer cabinets, commercial gas meters and back flow preventers as shown on the final working drawings. Location and screening shall comply with the following criteria: transformer cabinets and commercial gas meters shall not be located within required setbacks and shall be screened from public view either by architectural treatment or landscaping; multiple electrical meters shall be fully enclosed and incorporated into the overall architectural design of the building(s); back-flow preventers shall be screened by landscaping. (GP Objective 43.30)
24. Prior to issuance of a building permit, the developer/property owner or developer's successor-in-interest shall pay all applicable impact fees due at permit issuance, including but not limited to Multi-species Habitat Conservation Plan (MSHCP) mitigation fees. (Ord)
25. Prior to building final, the developer/owner or developer's/owner's
successor-in-interest shall pay all applicable impact fees, including but not limited to Transportation Uniform Mitigation fees (TUMF), and the City's adopted Development Impact Fees. (Ord)
26. Prior to issuance of building permits, proposed covered trash enclosure(s) shall be included in the Planning review of the Fence and Wall plans. The trash enclosure (s), including the roof materials, shall be compatible with the architecture, color and materials of the building(s) design. Trash enclosure areas shall include landscaping on three sides unless located within the truck loading area. Approved design plans shall be included in a Building submittal (Fence and walls or building design plans). (GP Objective 43.6, DG)
27. Prior to the issuance of grading permits, a temporary project identification sign shall be erected on the site in a secure and visible manner. The sign shall be conspicuously posted at the site and remain in place until occupancy of the project. The sign shall include the following:
a. The name (if applicable) and address of the development.
b. The developer's name, address, and a 24-hour emergency telephone number.
28. Prior to issuance of grading permits, the location of the trash enclosure shall be included on the plans.
29. Prior to approval of any grading permit, the tree plan shall be submitted to and approved by the Planning Division. The plan shall identify all mature trees (4 inch trunk diameter or larger) on the subject property and City right-of-way. Using the grading plan as a base, the plan shall indicate trees to be relocated, retained, and removed. Replacement trees shall be shown on the plan, be a minimum size of 24 inch box, and meet a ratio of three replacement trees for each mature tree removed or as approved by the Planning Official. (GP Objective 4.4, 4.5, DG)
30. At least thirty days prior to issuance of any grading permit, the developer shall retain a qualified archaeologist, provide a letter identifying the name and qualifications of the archaeologist to the Planning Division for approval, to monitor all ground disturbing activities in an effort to identify any unknown archaeological resources and to evaluate and recommend appropriate actions for any archaeological deposits exposed by construction activity.

At least thirty days prior to issuance of a grading permit, the applicant shall provide evidence that contact has been established with the appropriate Native American Tribe(s), providing notification of grading, excavation and the proposed monitoring program and to coordinate with the City and Tribe(s) to develop a cultural resources treatment and monitoring agreement. The agreement shall address treatment of known cultural resources, the designation, responsibilities and participation of Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

A report documenting the proposed methodology for grading monitoring shall be submitted to and approved by the Planning Division prior to issuance of any grading permit. The monitoring archaeologist shall be empowered to stop and redirect grading in the vicinity of an exposed archaeological deposit until that deposit can be fully evaluated. The archaeologist shall consult with affected Tribe(s) to evaluate any archaeological resources discovered on the project site. Tribal monitors shall be allowed to monitor all grading, excavation and groundbreaking activities, and shall also have authority to stop and redirect grading activities in consultation with the project archaeologist.

The property owner shall relinquish ownership to the Tribe(s) of all Native American cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project site for proper treatment and disposition. All sacred sites, should they be encountered with the project site, shall be avoided and preserved as the preferred mitigation.

If any inadvertent discoveries of subsurface archaeological or cultural resources occur during grading, the applicant, project archaeologist, and Tribe(s) shall assess the significance of such resources and shall meet and confer regarding mitigation of such resources. Avoidance is the preferred method of preservation of archaeological resources. If the applicant, project archaeologist and Tribe(s) cannot agree on the significance or mitigation for such resources, the issue(s) will be presented to the Planning Official with adequate documentation. The Official shall make a determination based on the provisions of CEQA and consideration of the religious beliefs, customs and practices of the Tribe(s).
31. Prior to issuance of any grading permit, all Conditions of Approval, and Mitigation Measures shall be printed on the grading plans.
32. Prior to issuance of any grading permits, mitigation measures contained in the Mitigation Monitoring Program approved with this project shall be implemented as provided therein. A mitigation monitoring fee, as provided by City ordinance, shall be paid by the applicant within 30 days of project approval. No City permit or approval shall be issued until such fee is paid. (CEQA)
33. If potential historic, archaeological, Native American cultural resources or paleontological resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person (meeting the Secretary of the Interior's standards (36CFR61)) shall be consulted by the applicant to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, prehistoric, or paleontological resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all affected Native American Tribes before any further work commences in the affected area.

If human remains are discovered during grading and other construction excavation, no further disturbance shall occur until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 5 -days of the published finding to be given a reasonable opportunity to identify the "most likely descendant." The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).
34. Prior to issuance of grading permits, the developer shall submit wall/fence plans to the Building and Safety Division for review and approval by the Planning Division as follows:
a. A maximum 6-foot high solid decorative block perimeter wall with pilasters and a cap shall be required adjacent to all residential zoned areas.
b. 3-foot high decorative wall, solid hedge, or berm shall be placed in any setback areas between a public right of way and a parking lot for screening.
c. Any proposed retaining walls shall also be decorative in nature, while the combination of retaining and other walls on top shall not exceed the height requirement.
d. Proposed screening walls for truck loading areas and required loading docks shall also include decorative block walls with pilasters with a height of up to fourteen (14) feet to fully screen trucks (industrial and some situations with commercial uses).
e. Walls and fences for visual screening are required when there are adjacent residential uses or residentially zone property. The height, placement, and design will be based on a site-specific review of the project. All walls are subject to the approval of the Planning Official. (MC 9.08.070) [select those that apply]

## Prior to Building Final or Occupancy

35. Prior to building final, all required landscaping and irrigation shall be installed per plan, certified by the Landscape Architect and inspected by the Planning Division. (MC 9.03.040, MC 9.17).
36. Prior to building final, Planning approved/stamped landscape plans shall be provided to the Community Development Department - Planning Division on a CD disk.
37. Prior to building final, all required and proposed fences and walls shall be constructed according to the approved plans on file in the Planning Division. (MC 9.080.070).
38. Prior to building final or Certificate of Occupancy, the owner or owner's representative shall provide documentation to the Planning Division that they have
contacted the Moreno Valley Police Department to establish and maintain a relationship with the City of Moreno Valley Police Department and cooperate with the Problem Oriented Policing (POP) program, or its successors. [multi-family, night clubs, liquor stores]

## Building Division

39. The proposed non-residential project shall comply with the latest Federal Law, Americans with Disabilities Act, and State Law, California Code of Regulations, Title 24, Chapter 11B for accessibility standards for the disabled including access to the site, exits, bathrooms, work spaces, etc.
40. Prior to submittal, all new development, including residential second units, are required to obtain a valid property address prior to permit application. Addresses can be obtained by contacting the Building Safety Division at 951.413.3350.
41. Contact the Building Safety Division for permit application submittal requirements.
42. Any construction within the city shall only be completed between the hour of seven a.m. to seven p.m. Monday through Friday, excluding holidays and from eight a.m. to four p.m. on Saturday, unless written approval is obtained from the city building official or city engineer (Municipal Code Section 8.14.040.E).
43. Building plans submitted shall be signed and sealed by a California licensed design professional as required by the State Business and Professions Code.
44. The proposed development is subject to the payment of applicable processing fees as required by the City's current Fee Ordinance at the time a building permit application is submitted or prior to the issuance of permits as determined by the City.
45. The proposed project will be subject to approval by the Eastern Municipal Water District and all applicable fees and charges shall be paid prior to permit issuance. Contact the water district at 951.928 .3777 for specific details.
46. All new structures shall be designed in conformance to the latest design standards adopted by the State of California in the California Building Code, (CBC) Part 2, Title 24, California Code of Regulations including requirements for allowable area, occupancy separations, fire suppression systems, accessibility, etc.
47. The proposed non-residential project shall comply with California Green Building Standards Code, Section 5.106.5.3, mandatory requirements for Electric Vehicle Charging Station (EVCS).
48. The proposed project's occupancy shall be classified by the Building Official and must comply with exiting, occupancy separation(s) and minimum plumbing fixture requirements. Minimum plumbing fixtures shall be provided per the California Plumbing Code, Table 422.1. The occupant load and occupancy classification shall be determined in accordance with the California Building Code.
49. Prior to permit issuance, every applicant shall submit a properly completed Waste Management Plan (WMP), as a portion of the building or demolition permit process. (MC 8.80.030)
50. The appropriation from local tax from construction contracts to the local jurisdiction of the specific construction job site is hereby required. This is accomplished by a contractor or subcontractor obtaining a construction site sub-permit for the job site. The contractors, or subcontracts, that have individual contracts with a value of $\$ 5$ million or more are subject to this condition.
The qualifying contract price applies to each contract or subcontract for work performed at the jobsite, and not to the total value of the prime contract. In order to obtain a jobsite sub-permit, the contractor or subcontractor must meet the following criteria:
a) have an active permit with the California Department of Tax and Fee Administration (CDTFA),
b) must be registered as a retailer, not consumer, of materials, and
c) have an executed contract over $\$ 5$ million to install materials at the jobsite.

The Prime Contractor will require that the subcontractors or other contractors exercise their option to obtain a California Department of Tax \& Fee Administration construction site sub-permit for the jobsite and allocate all eligible use tax payments to the City of Moreno Valley. Prior to any Notice to Proceed(s), the Prime Contractor shall provide the City of Moreno Valley Finance and Management Services Department with a list of subcontractors associated with the project along with a copy of their sub-permit that shows their CDTFA account number or a signed statement that sales and use tax does not apply to their portion of the project.

## FIRE DEPARTMENT

## Fire Prevention Bureau

51. All Fire Department access roads or driveways shall not exceed 12 percent grade. (CFC 503.2.7 and MVMC 8.36.060[G])
52. The Fire Department emergency vehicular access road shall be (all weather surface) capable of sustaining an imposed load of $80,000 \mathrm{lbs}$. GVW, based on street standards approved by the Public Works Director and the Fire Prevention Bureau. The approved fire access road shall be in place during the time of construction. Temporary fire access roads shall be approved by the Fire Prevention Bureau. (CFC 501.4, and MV City Standard Engineering Plan 108d)
53. The angle of approach and departure for any means of Fire Department access shall not exceed 1 ft drop in 20 ft ( 0.3 m drop in 6 m ), and the design limitations of the fire apparatus of the Fire Department shall be subject to approval by the AHJ. (CFC 503 and MVMC 8.36.060)
54. Prior to construction, all locations where structures are to be built shall have an approved Fire Department access based on street standards approved by the Public Works Director and the Fire Prevention Bureau. (CFC 501.4)
55. Prior to issuance of Building Permits, the applicant/developer shall provide the Fire Prevention Bureau with an approved site plan for Fire Lanes and signage. (CFC 501.3)
56. Prior to issuance of Certificate of Occupancy or Building Final, "Blue Reflective Markers" shall be installed to identify fire hydrant locations in accordance with City specifications. (CFC 509.1 and MVLT 440A-0 through MVLT 440C-0)
57. Prior to issuance of Certificate of Occupancy or Building Final, all commercial buildings shall display street numbers in a prominent location on the street side and rear access locations. The numerals shall be a minimum of twelve inches in height. (CFC 505.1, MVMC 8.36.060[1])
58. Prior to issuance of Certificate of Occupancy, approval shall be required from the County of Riverside Community Health Agency (Department of Environmental Health) and Moreno Valley Fire Prevention Bureau to maintain, store, use, handle materials, or conduct processes which produce conditions hazardous to life or property, and to install equipment used in connection with such activities. (CFC 105)
59. Existing fire hydrants on public streets are allowed to be considered available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads. (CFC 507, 501.3) a - After the local water company signs the plans, the originals shall be presented to the Fire Prevention Bureau for signatures. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.
60. Final fire and life safety conditions will be addressed when the Fire Prevention Bureau reviews building plans. These conditions will be based on occupancy, use, California Building Code (CBC), California Fire Code (CFC), and related codes, which are in effect at the time of building plan submittal.
61. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire alarm system monitored by an approved Underwriters Laboratory listed central station based on a requirement for monitoring the sprinkler system, occupancy or use. Fire alarm panel shall be accessible from exterior of building in an approved location. Plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9 and MVMC 8.36.100)
62. The Fire Code Official is authorized to enforce the fire safety during construction requirements of Chapter 33. (CFC Chapter 33 \& CBC Chapter 33)
63. Prior to issuance of Building Permits, the applicant/developer shall participate in the Fire Impact Mitigation Program. (Fee Resolution as adopted by City Council)
64. Fire lanes and fire apparatus access roads shall have an unobstructed width of not
less than twenty-four (24) feet and an unobstructed vertical clearance of not less the thirteen (13) feet six (6) inches. (CFC 503.2.1 and MVMC 8.36.060[E])
65. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire sprinkler system based on square footage and type of construction, occupancy or use. Fire sprinkler plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9, MVMC 8.36.100[D])
66. Prior to issuance of the building permit for development, independent paved access to the nearest paved road, maintained by the City shall be designed and constructed by the developer within the public right of way in accordance with City Standards. (MVMC 8.36.060, CFC 501.4)
67. Prior to issuance of a Certificate of Occupancy or Building Final, a "Knox Box Rapid Entry System" shall be provided. The Knox-Box shall be installed in an accessible location approved by the Fire Code Official. All exterior security emergency access gates shall be electronically operated and be provided with Knox key switches for access by emergency personnel. (CFC 506.1)
68. The minimum number of fire hydrants required, as well as the location and spacing of fire hydrants, shall comply with the C.F.C., MVMC, and NFPA 24. Fire hydrants shall be located no closer than 40 feet to a building. A fire hydrant shall be located within 50 feet of the fire department connection for buildings protected with a fire sprinkler system. The size and number of outlets required for the approved fire hydrants are ( $6 " \times 4 " \times 21 / 2^{\prime \prime} \times 21 / 2 "$ ) (CFC 507.5.1, 507.5.7, Appendix C, NFPA 24-7.2.3, MVMC 912.2.1)
69. Fire Department access driveways over 150 feet in length shall have a turn-around as determined by the Fire Prevention Bureau capable of accommodating fire apparatus. (CFC 503 and MVMC 8.36.060, CFC 501.4)
70. During phased construction, dead end roadways and streets which have not been completed shall have a turn-around capable of accommodating fire apparatus. (CFC 503.1 and 503.2.5)
71. If construction is phased, each phase shall provide an approved emergency vehicular access way for fire protection prior to any building construction. (CFC 501.4)
72. Plans for private water mains supplying fire sprinkler systems and/or private fire hydrants shall be submitted to the Fire Prevention Bureau for approval. (CFC 105 and CFC 3312.1)
73. The Fire Prevention Bureau is required to set a minimum fire flow for the remodel or construction of all commercial buildings per CFC Appendix B and Table B105.1. The applicant/developer shall provide documentation to show there exists a water system capable of delivering said waterflow for 2 hour(s) duration at $20-\mathrm{PSI}$ residual operating pressure. The required fire flow may be adjusted during the approval process to reflect changes in design, construction type, or automatic fire protection
measures as approved by the Fire Prevention Bureau. Specific requirements for the project will be determined at time of submittal. (CFC 507.3, Appendix B)
74. Dead-end streets and/or fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround for fire apparatus.
75. Prior to building construction, dead end roadways and streets which have not been completed shall have a turnaround capable of accommodating fire apparatus. (CFC 503.2.5)
76. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall be responsible for obtaining underground and/or above ground tank permits for the storage of combustible liquids, flammable liquids, or any other hazardous materials from both the County of Riverside Community Health Agency Department of Environmental Health and the Fire Prevention Bureau. (CFC 105)
77. Prior to issuance of Building Permits, the applicant/developer shall furnish one copy of the water system plans to the Fire Prevention Bureau for review. Plans shall: a. Be signed by a registered civil engineer or a certified fire protection engineer; b. Contain a Fire Prevention Bureau approval signature block; and c. Conform to hydrant type, location, spacing of new and existing hydrants and minimum fire flow required as determined by the Fire Prevention Bureau. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.

## FINANCIAL \& MANAGEMENT SERVICES DEPARTMENT

## Moreno Valley Utility

78. This project requires the installation of electric distribution facilities. A non-exclusive easement shall be provided to Moreno Valley Utility and shall include the rights of ingress and egress for the purpose of operation, maintenance, facility repair, and meter reading.
79. This project requires the installation of electric distribution facilities. The developer shall submit a detailed engineering plan showing design, location and schematics for the utility system to be approved by the City Engineer. In accordance with Government Code Section 66462, the Developer shall execute an agreement with the City providing for the installation, construction, improvement and dedication of the utility system following recordation of final map and concurrent with trenching operations and other improvements so long as said agreement incorporates the approved engineering plan and provides financial security to guarantee completion and dedication of the utility system.

The Developer shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to the City all utility infrastructure including but not limited to, conduit, equipment, vaults, ducts, wires (including fiber optic
cable), switches, conductors, transformers, and "bring-up" facilities including electrical capacity to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility - collectively referred to as "utility system" (to and through the development), along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "utility services" to and within the project. For purposes of this condition, "utility services" shall mean electric, cable television, telecommunication (including video, voice, and data) and other similar services designated by the City Engineer. "Utility services" shall not include sewer, water, and natural gas services, which are addressed by other conditions of approval.

The City, or the City's designee, shall utilize dedicated utility facilities to ensure safe, reliable, sustainable and cost effective delivery of utility services and maintain the integrity of streets and other public infrastructure. Developer shall, at developer's sole expense, install or cause the installation of such interconnection facilities as may be necessary to connect the electrical distribution infrastructure within the project to the Moreno Valley Utility owned and controlled electric distribution system.
80. Existing Moreno Valley Utility electrical infrastructure shall be preserved in place. The developer will be responsible, at developer's expense, for any and all costs associated with the relocation of any of Moreno Valley Utility's underground electrical distribution facilities, as determined by Moreno Valley Utility, which may be in conflict with any developer planned construction on the project site.
81. This project shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to the City fiber optic cable improvements consisting of fiber optic cable, splices and termination equipment to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "fiber optic services" to and within the project.
82. This project shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to Moreno Valley Utility fiber optic cable improvements consisting of conduit, and pull boxes to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "fiber optic services" to and within the project.
83. This project shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to Moreno Valley Utility electric streetlight improvements consisting of streetlight poles, mast-arms, fixtures conduit, wiring, terminations and pull boxes to serve the identified development and other adjoining, abutting, or benefiting projects as determined by the Land Development Department along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "street light services" to and within the project.

## PUBLIC WORKS DEPARTMENT

## Land Development

84. Aggregate slurry, as defined in Section 203-5 of Standard Specifications for Public Works Construction, shall be required prior to $90 \%$ security reduction or the end of the one-year warranty period of the public streets as approved by the City Engineer. If slurry is required, a slurry mix design shall be submitted for review and approved by the City Engineer. The latex additive shall be Ultra Pave 70 (for anionic) or Ultra Pave 65 K (for cationic) or an approved equal per the geotechnical report. The latex shall be added at the emulsion plant after weighing the asphalt and before the addition of mixing water. The latex shall be added at a rate of two to two-and-one-half ( 2 to $2 \frac{1}{2}$ ) parts to one-hundred (100) parts of emulsion by volume. Any existing striping shall be removed prior to slurry application and replaced per City standards.
85. The developer shall comply with all applicable City ordinances and resolutions including the City's Municipal Code (MC) and if subdividing land, the Government Code (GC) of the State of California, specifically Sections 66410 through 66499.58, said sections also referred to as the Subdivision Map Act (SMA). [MC 9.14.010]
86. The final approved conditions of approval (COAs) and any applicable Mitigation Measures issued by the Planning Division shall be photographically or electronically placed on mylar sheets and included in the Grading and Street Improvement plans.
87. The developer shall monitor, supervise and control all construction related activities, so as to prevent these activities from causing a public nuisance, including but not limited to, insuring strict adherence to the following:
(a) Removal of dirt, debris, or other construction material deposited on any public street no later than the end of each working day.
(b) Observance of working hours as stipulated on permits issued by the Land Development Division.
(c) The construction site shall accommodate the parking of all motor vehicles used by persons working at or providing deliveries to the site.
(d) All dust control measures per South Coast Air Quality Management District (SCAQMD) requirements during the grading operations.
Violation of any condition, restriction or prohibition set forth in these conditions shall subject the owner, applicant, developer or contractor(s) to remedy as noted in City Municipal Code 8.14.090. In addition, the City Engineer or Building Official may suspend all construction related activities for violation of any condition, restriction or prohibition set forth in these conditions until such time as it has been determined that all operations and activities are in conformance with these conditions.
88. Drainage facilities (e.g., catch basins, water quality basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.
89. In the event right-of-way or offsite easements are required to construct offsite
improvements necessary for the orderly development of the surrounding area to meet the public health and safety needs, the developer shall make a good faith effort to acquire the needed right-of-way in accordance with the Land Development Division's administrative policy. If unsuccessful, the Developer shall enter into an agreement with the City to acquire the necessary right-of-way or offsite easements and complete the improvements at such time the City acquires the right-of-way or offsite easements which will permit the improvements to be made. The developer shall be responsible for all costs associated with the right-of-way or easement acquisition. [GC 66462.5]
90. If improvements associated with this project are not initiated within two (2) years of the date of approval of the Public Improvement Agreement (PIA), the City Engineer may require that the engineer's estimate for improvements associated with the project be modified to reflect current City construction costs in effect at the time of request for an extension of time for the PIA or issuance of a permit. [MC 9.14.210(B)(C)]
91. The developer shall protect downstream properties from damage caused by alteration of drainage patterns (i.e. concentration or diversion of flow, etc). Protection shall be provided by constructing adequate drainage facilities, including, but not limited to, modifying existing facilities or by securing a drainage easement. [MC 9.14.110]
92. The maintenance responsibility of the proposed storm drain line shall be clearly identified. Storm drain lines within private property will be privately maintained and those within public streets will be publicly maintained.
93. The proposed private storm drain system shall connect to the onsite proposed underground basin and then discharge offsite through an outlet at the northwest corner of the parcel.
94. This project shall submit civil engineering design plans, reports and/or documents (prepared by a registered/licensed civil engineer) for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer. The submittal consists of, but is not limited to, the following:
a. Rough grading w/ erosion control plan (prior to grading permit issuance);
b. Precise grading w/ erosion control plan (prior to grading permit issuance);
c. Public improvement plan (e.g., street/storm drain with striping, sewer/water, etc.) (prior to encroachment permit issuance).
d. Final drainage study (prior to grading plan approval);
e. Final WQMP (prior to grading plan approval);
f. Easements, offers of dedication, etc. (prior to building permit issuance);
g. As-Built revision for all plans (prior to occupancy release).
95. Water quality best management practices (BMPs) designed to meet Water Quality Management Plan (WQMP) requirements for development shall not be used as a construction BMP. Water quality BMPs shall be maintained for the entire duration of the project construction and be used to treat runoff from those developed portions of the project. Water quality BMPs shall be protected from upstream construction
related runoff by having proper best management practices in place and maintained. Water quality BMPs shall be graded per the approved design plans and once landscaping and irrigation has been installed, it and its maintenance shall be turned over to the private owner association (POA) or responsible party for maintenance.
96. For non-subdivision projects, execution of a Public Improvement Agreement (PIA) and/or security (in the form of a cash deposit or other approved means) may be required as determined by the City Engineer. [MC 9.14.220]
97. Any work performed within public right-of-way requires an encroachment permit.

## Prior to Grading Plan Approval

98. Resolution of all drainage issues shall be as approved by the City Engineer.
99. A final detailed drainage study (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer. The study shall include, but not be limited to: existing and proposed hydrologic conditions as well as hydraulic calculations for all drainage control devices and storm drain lines. The study shall analyze 1, 3, 6 and 24-hour duration events for the 2, 5, 10 and 100-year storm events [MC 9.14.110(A.1)]. A digital (pdf) copy of the approved drainage study shall be submitted to the Land Development Division.
100. Emergency overflow areas shall be shown at all applicable drainage improvement locations in the event that the drainage improvement fails or exceeds full capacity.
101. A final project-specific Water Quality Management Plan (WQMP) shall be submitted for review and approved by the City Engineer, which:
a. Addresses Site Design Best Management Practices (BMPs) such as minimizing impervious areas, maximizing permeability, minimizes directly connected impervious areas to the City's street and storm drain systems, and conserves natural areas;
b. Incorporates Source Control BMPs and provides a detailed description of their implementation;
c. Describes the long-term operation and maintenance requirements for BMPs requiring maintenance; and
d. Describes the mechanism for funding the long-term operation and maintenance of the BMPs.
A copy of the final WQMP template can be obtained on the City's Website or by contacting the Land Development Division. A digital (pdf) copy of the approved final project-specific Water Quality Management Plan (WQMP) shall be submitted to the Land Development Division.
102. The final project-specific Water Quality Management Plan (WQMP) shall be consistent with the approved P-WQMP, as well as in full conformance with the document: "Water Quality Management Plan - A Guidance Document for the Santa Ana Region of Riverside County" dated October 22, 2012. The F-WQMP shall be submitted and approved prior to application for and issuance of grading permits. At
a minimum, the F-WQMP shall include the following: Site Design BMPs; Source Control BMPs, Treatment Control BMPs, Operation and Maintenance requirements for BMPs and sources of funding for BMP implementation.
a. The Applicant has proposed to incorporate the use of underground infiltration chambers, inlet filter inserts, and vegetated swale. Final design and sizing details of all BMPs must be provided in the first submittal of the F-WQMP. The Applicant acknowledges that more area than currently shown on the plans may be required to treat site runoff as required by the WQMP guidance document.
b. The Applicant shall substantiate the applicable Hydrologic Condition of Concerns (HCOC) in Section $F$ of the F-WQMP. The HCOC designates that the project will be exempt from mitigation requirements based on Exemption 3.
c. All proposed LID BMP's shall be designed in accordance with the RCFC\&WCD's Design Handbook for Low Impact Development Best Management Practices, dated September 2011.
d. The proposed LID BMP's as identified in the project-specific P-WQMP shall be incorporated into the Final WQMP.
e. The NPDES notes per City Standard Drawing No. MVFE-350-0 shall be included in the grading plans.
f. Post-construction treatment control BMPs, once placed into operation for post-construction water quality control, shall not be used to treat runoff from construction sites or unstabilized areas of the site.
g. Prior to precise grading plan approval, the grading plan shall show any proposed trash enclosure to include a cover (roof) and sufficient size for dual bin (1 for trash and 1 for recyclables). The architecture shall be approved by the Planning Division and
103. The developer shall ensure compliance with the City Grading ordinance, these Conditions of Approval and the following criteria:
a. The project street and lot grading shall be designed in a manner that perpetuates the existing natural drainage patterns with respect to tributary drainage area and outlet points. Unless otherwise approved by the City Engineer, lot lines shall be located at the top of slopes.
b. Any grading that creates cut or fill slopes adjacent to the street shall provide erosion control, sight distance control, and slope easements as approved by the City Engineer.
c. All improvement plans are substantially complete and appropriate clearance letters are provided to the City.
d. A soils/geotechnical report (addressing the soil's stability and geological conditions of the site) shall be submitted to the Land Development Division for review. A digital (pdf) copy of the soils/geotechnical report shall be submitted to the Land Development Division.
104. Grading plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
105. The developer shall select Low Impact Development (LID) Best Management Practices (BMPs) designed per the latest version of the Water Quality Management Plan (WQMP) - a guidance document for the Santa Ana region of Riverside County.
106. The developer shall submit recorded slope easements from adjacent property owners in all areas where grading resulting in slopes is proposed to take place outside of the project boundaries. For all other offsite grading, written permission from adjacent property owners shall be submitted.
107. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared in conformance with the State's current Construction Activities Storm Water General Permit. A copy of the current SWPPP shall be kept at the project site and be available for review upon request.
108. Any proposed trash enclosure shall include a solid cover (roof) and sufficient size for dual bin (one for trash and one for recyclables). The architecture shall be approved by the Planning Division and any structural approvals shall be made by the Building \& Safety Division.
109. For projects that will result in discharges of storm water associated with construction with a soil disturbance of one or more acres of land, the developer shall submit a Notice of Intent (NOI) and obtain a Waste Discharger's Identification number (WDID\#) from the State Water Quality Control Board (SWQCB) which shall be noted on the grading plans.

## Prior to Grading Permit

110. A receipt showing payment of the Area Drainage Plan (ADP) fee to Riverside County Flood Control and Water Conservation District shall be submitted. [MC 9.14.100(O)]
111. For non-subdivision projects, a copy of the Covenants, Conditions and Restrictions (CC\&Rs) shall be submitted for review by the City Engineer. The CC\&Rs shall include, but not be limited to, access easements, reciprocal access, private and/or public utility easements as may be relevant to the project.
112. If the developer chooses to construct the project in phases, a Construction Phasing Plan for the construction of on-site public or private improvements shall be submitted for review and approved by the City Engineer.
113. Security, in the form of a cash deposit (preferable), bond or letter of credit shall be submitted as a guarantee of the implementation and maintenance of erosion control measures. At least twenty-five (25) percent of the required security shall be in the form of a cash deposit with the City. [MC 8.21.160(H)]
114. Security, in the form of a cash deposit (preferable), bond or letter of credit shall be submitted as a guarantee of the completion of the grading operations for the project. [MC 8.21.070]

## Prior to Improvement Plan Approval

115. The developer is required to bring any existing access ramps adjacent to and
fronting the project to current ADA (Americans with Disabilities Act) requirements. However, when work is required in an intersection that involves or impacts existing access ramps, all access ramps in that intersection shall be retrofitted to comply with current ADA requirements, unless otherwise approved by the City Engineer.
116. The developer shall submit clearances from all applicable agencies, and pay all applicable plan check fees.
117. The street improvement plans shall comply with current City policies, plans and applicable City standards (i.e. MVSI-160 series, etc.) throughout this project.
118. Drainage facilities (i.e. catch basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.
119. The hydrology study shall be designed to accept and properly convey all off-site drainage flowing onto or through the site. In the event that the City Engineer permits the use of streets for drainage purposes, the provisions of current City standards shall apply. Should the quantities exceed the street capacity or the use of streets be prohibited for drainage purposes, as in the case where one travel lane in each direction shall not be used for drainage conveyance for emergency vehicle access on streets classified as minor arterials and greater, the developer shall provide adequate facilities as approved by the City Engineer. [MC 9.14.110 A.2]
120. All public improvement plans (prepared by a licensed/registered civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
121. Any missing or deficient existing improvements along the project frontage shall be constructed or secured for construction. The City Engineer may require the ultimate structural section for pavement to half-street width plus 18 feet or provide core test results confirming that existing pavement section is per current City Standards; additional signing \& striping to accommodate increased traffic imposed by the development, etc.
122. Prior to improvement plan approval, pavement core samples of existing pavement shall be taken and findings submitted to the City for review and consideration of pavement improvements. The City will determine the adequacy of the existing pavement structural section. If the existing pavement structural section is found to be adequate, the developer may still be required to perform a 2 inch grind and overlay or slurry seal, depending on the severity of existing pavement cracking, as required by the City Engineer. If the existing pavement section is found to be inadequate, the Developer shall replace the pavement to meet or exceed the City's pavement structural section standard.
123. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.
124. The plans shall indicate any restrictions on trench repair pavement cuts to reflect the

City's moratorium on disturbing newly-constructed pavement less than three (3) years old and recently slurry sealed streets less than one (1) year old. Pavement cuts may be allowed for emergency repairs or as specifically approved in writing by the City Engineer. Special requirements shall be imposed for repaving, limits to be determined by the City Engineer.
125. All dry and wet utilities shall be shown on the plans and any crossings shall be potholed to determine actual location and elevation. Any conflicts shall be identified and addressed on the plans. The pothole survey data shall be submitted to Land Development with the public improvement plans for reference purposes only. The developer is responsible to coordinate with all affected utility companies and bear all costs of any utility relocation.

## Prior to Building Permit

126. An engineered-fill certification, rough grade certification and compaction report shall be submitted for review and approved by the City Engineer. A digital (pdf) copy of the approved compaction report shall be submitted to the Land Development Division. All pads shall meet pad elevations per approved grading plans as noted by the setting of "blue-top" markers installed by a registered land surveyor or licensed civil engineer.
127. Prior to building permit issuance, the developer shall dedicate the following right of way to accommodate the required improvements:
(a) The necessary street right of way dedication on the west side of Oliver Street ( 88 ' R/W / 64' CC: Minor Arterial, City Standard No. MVSI-105A-2) along the project frontage.
(b) The necessary street right of way dedication on the north side of Iris Avenue (134' R/W / 110' CC: Divided Major Arterial, City Standard No. MVSI-101A-1) for transition, alignment, and/or drainage purposes.
(c) A 4 foot minimum pedestrian right of way dedication behind any driveway approach per City Standard No. MVSI-112C-0, as applicable.
(d) Corner cutback right of way dedication per City Standard No. MVSI-165-0 on all intersecting public streets, as directed by the City Engineer.
128. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.
129. A walk through with a Land Development Inspector shall be scheduled to inspect existing improvements within public right of way along project frontage. Any missing, damaged or substandard improvements including ADA access ramps that do not meet current City standards shall be required to be installed, replaced and/or repaired. The applicant shall post security to cover the cost of the repairs and complete the repairs within the time allowed in the public improvement agreement used to secure the improvements.
130. Certification to the line, grade, flow test and system invert elevations for the water quality control BMPs shall be submitted for review and approved by the City

Engineer.
131. All required as-built plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
132. The final/precise grade certification shall be submitted for review and approved by the City Engineer.
133. The developer shall complete all public improvements in conformance with current City standards, except as noted in the Special Conditions, including but not limited to the following:
a. Street improvements including, but not limited to: pavement, base, curb and/or gutter, cross gutters, spandrel, sidewalks, drive approaches, pedestrian ramps, street lights (MVU: SL-2), signing, striping, landscaping and irrigation, medians, and traffic control devices as appropriate.
b. Storm drain facilities including, but not limited to: storm drain pipe and storm drain laterals.
c. City-owned utilities.
d. Sewer and water systems including, but not limited to: sanitary sewer, potable water, and recycled water.
134. Prior to occupancy, the following improvements shall be completed:

Oliver Street (88' R/W / 64' CC: Minor Arterial, City Standard No. MVSI-105A-2) shall be constructed to achieve a half-width of 32 ' plus 18 ' beyond centerline, along the entire project's east frontage. Improvements shall consist of, but not be limited to, pavement, base, curb, gutter, sidewalk, driveway approaches, any necessary offsite joins to existing, pedestrian ramps, and dry and wet utilities. Any missing or deficient improvements along the project's east frontage shall be constructed.
Prior to improvement plan approval, the developer shall provide to the City Engineer the results of coring tests confirming that said existing pavement section has been constructed per City Standard No. MVSI-105A-2.
135. For commercial, industrial and multi-family projects, a "Stormwater Treatment Device and Control Measure Access and Maintenance Covenant", "Maintenance Agreement for Water Quality Improvements located in the public right-of-way" and a "Declaration of Restrictive Covenants (encroachment on City easement)" shall be recorded to provide public notice of the maintenance requirements to be implemented per the approved final project-specific WQMP. A boilerplate copy of the covenants and agreements can be obtained by contacting the Land Development Division.
136. The applicant shall ensure the following, pursuant to Section XII. I. of the 2010 NPDES Permit:
a. Field verification that structural Site Design, Source Control and Treatment Control BMPs are designed, constructed and functional in accordance with the approved Final Water Quality Management Plan (WQMP).
b. Certification of best management practices (BMPs) from a state licensed civil engineer. An original WQMP BMP Certification shall be submitted for review and approved by the City Engineer.
137. The Developer shall comply with the following water quality related items:
a. Notify the Land Development Division prior to construction and installation of all structural BMPs so that an inspection can be performed.
b. Demonstrate that all structural BMPs described in the approved final project-specific WQMP have been constructed and installed in conformance with the approved plans and specifications;
c. Demonstrate that Developer is prepared to implement all non-structural BMPs described in the approved final project-specific WQMP; and
d. Demonstrate that an adequate number of copies of the approved final project-specific WQMP are available for future owners/occupants.
e. Clean and repair the water quality BMP's, including re-grading to approved civil drawing if necessary.
f. Obtain approval and complete installation of the irrigation and landscaping.
138. Prior to occupancy, the following improvements shall be completed:

Iris Avenue (134' R/W / 110' CC: Divided Major Arterial, City Standard No. MVSI-101A-1) shall be constructed to achieve a half-width of $55^{\prime}$ along the entire project's south frontage. Improvements shall consist of, but not be limited to, pavement, base, curb, gutter, sidewalk, driveway approaches, any necessary offsite joins to existing, street lights, pedestrian ramps, and dry and wet utilities. Any missing or deficient improvements along the project's south frontage shall be constructed.
Prior to improvement plan approval, the developer shall provide to the City Engineer the results of coring tests confirming that said existing pavement section has been constructed per City Standard No. MVSI-101A-1. Any missing or deficient improvements along the project's south frontage shall be constructed prior to issuance of a certificate of occupancy.

## Special Districts Division

139. Street Light Coordination/Advanced Energy Fees. Prior to the issuance of the 1st Building Permit for this project, the Developer shall pay New Street Light Installation Fees for all street lights required to be installed for this development. Payment will be collected by the Land Development Division. Fees are based on the street light administration/coordination and advanced energy fees as set forth in the City Fees, Charges, and Rates as adopted by City Council and effective at the time of payment. Any change in the project which increases the number of street lights to be installed requires payment of the fees at the then current fee. Questions may be directed to the Special Districts Administration at 951.413.3470 or SDAdmin@moval.org.
140. CFD 2014-01. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee, form an association to fund the services or fund an endowment) to provide an ongoing funding source for Street Lighting Services for capital improvements, energy charges, and maintenance.

This condition must be fully satisfied prior to issuance of the 1st Certificate of

Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

Alternatively, the condition can be satisfied by the Developer forming a property owner association that will be responsible for the improvements and any and all operation and maintenance costs for the improvements o
141. Major Infrastructure SFD Major Infrastructure Financing District. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for the construction and maintenance of major infrastructure improvements, which may include but is not limited to thoroughfares, bridges, and certain flood control improvements. This condition will be applicable provided said district is under development at the time this project applies for the 1st Building Permit. This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings. An alternative to satisfying this condition will be identified at such time as a special
142. Park Maintenance Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or fund an endowment) to provide an ongoing funding source for the continued maintenance, enhancement, and/or retrofit of parks, open spaces, linear parks, and/or trails systems.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

Alternatively, the condition can be satisfied by the Developer funding an endowment in an amount sufficient to yield an annual revenue stream that meets the annual obligation, as calculated by Special Districts Admin staff. The Developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to satisfy this condition.
143. Maintenance Services Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for the operation and maintenance of public improvements and/or services associated with impacts of the development. This condition will only be applicable provided said district is under development at the time this project applies for the 1st Building Permit.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

An alternative to satisfying this funding source will be identified at such time as a special financing district has been established. At the time of development, the
developer must
144. Public Safety Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for Public Safety services, which may include but is not limited to Police, Fire Protection, Paramedic Services, Park Rangers, and Animal Control services. This condition will only be applicable provided said district is under development at the time this project applies for the 1st Building Permit.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

An alternative to satisfying this condition will be identified at such time as a special financing district has been established. At the time of dev
145. Maintenance Responsibility. The ongoing maintenance of any landscaping required to be installed behind the curb shall be the responsibility of the property owner.
146. Damage. Any damage to existing landscape areas maintained by the City of Moreno Valley due to project construction shall be repaired/replaced by the Developer, or Developer's successors in interest, at no cost to the City of Moreno Valley.
147. The ongoing maintenance of any water quality BMP (e.g. Bioswale) constructed in the public right of way shall be the responsibility of a property owner association or the property owner.
148. The existing parkway behind the curb will no longer be maintained by the City and will become the responsibility of the property owner. Please coordinate abandonment of existing City irrigation system with Landscape Services at 951-413-3480.

## Transportation Engineering Division

149. Conditions of approval may be modified or added if a phasing plan is submitted for
this development.
150. Project driveways shall conform to City of Moreno Valley Standard Plans No. MVSI-112C-0 for Commercial Driveway Approaches. Access at the project driveways shall be as follows:

- Iris Avenue: Right-Turn In/Out Only (Shared Access)
- Oliver Street: Right-Turn In/Out Only

151. Iris Avenue is classified as a Divided Major Arterial (134'RW/110'CC) per City Standard Plan No. MVSI-101A-1. Any improvement undertaken by this project shall be in conformance with City standards. Communication conduit shall be installed per City Standard Plan No. MVSI-186-0.
152. Oliver Street is classified as a Minor Arterial per City Standard Plan No. MVSI-105A-2. Any improvements undertaken by this project shall be in conformance with City standards.
153. Prior to final approval of any landscaping or monument sign plans, the project plans shall demonstrate that sight distance at the project driveways conforms to City Standard Plan No. MVSI-164A, B, C-0.
154. Prior to the final approval of the street improvement plans, a signing and striping plan shall be prepared per City of Moreno Valley Standard Plans - Section 4 for all streets within the project area.
155. Prior to the final approval of the street improvement plans, a bus turnout in the westbound direction along Iris Avenue, west of Oliver Street shall be designed per City Standard Plan No. MVSI-161-0. The bus turnout shall be designed to serve as a combination right turn lane/bus bay to the satisfaction of the City Engineer.
156. Prior to the final approval of the street improvement plans, the existing landscaped median on Iris Avenue along the project frontage shall be designed to extend the existing eastbound left-turn lane storage length to a minimum of 285 feet at the Iris Avenue/Oliver Street intersection. Median construction shall include but is not limited to, paving, concrete curbs, landscape, and signs. Exact requirements will be determined during the plan check process.
157. Prior to issuance of a certificate of occupancy, all approved street improvements including the median and bus turnout improvements shall be installed to the satisfaction of the City Engineer.
158. Driveway on Iris Avenue shall be shared driveway and shall be designed to the satisfaction of the City Engineer. An irrevocable shared access agreement shall be provided for APNs 486-310-039, 486-310-041, and 486-310-042 and shall be provided prior to issuance of a building permit.

## PARKS \& COMMUNITY SERVICES DEPARTMENT

159. This project is subject to current Development Impact Fees.

## Exhibit B

Conditional Use Permit (PEN22-0176) Conditions of Approval

Planning Division
14177 Frederick Street
P. O. Box 88005

Moreno Valley CA 92552-0805
Telephone: 951.413.3206

## CITY OF MORENO VALLEY <br> PROBABLE CONDITIONS OF APPROVAL <br> Conditional Use Permit (PEN22-0176)

## COMMUNITY DEVELOPMENT DEPARTMENT

## Planning Division

1. All landscaped areas shall be maintained in a healthy and thriving condition, free from weeds, trash and debris. (MC 9.02.030)
2. A change or modification to the land use or the approved site plans may require a separate approval. Prior to any change or modification, the property owner shall contact the City of Moreno Valley Community Development Department to determine if a separate approval is required.
3. In accordance with the Developer's obligation to defend, indemnify and hold harmless the City, including but not limited to as set forth in more detail in the Project's Conditions of Approval, Moreno Valley Municipal Code Section 9.02.310 (Indemnification of City for Discretionary Approvals), and the Project application, Developer shall enter into an Advanced Funding Agreement with the City no later than ten (10) calendar days from Planning Commission's approval of the Project. A copy of said Agreement is on file with the Community Development Director.
4. Any expansion to this use or exterior alterations will require the submittal of a separate application(s) and shall be reviewed and approved under separate permit(s). (MC 9.02.080)
5. The developer, or the developer's successor-in-interest, shall be responsible for maintaining any undeveloped portion of the site in a manner that provides for the control of weeds, erosion and dust. (MC 9.02.030)
6. The expiration date of this modification does not extend the expiration of any related project or activity.
7. This approval shall expire three years after the approval date of this project unless used or extended as provided for by the City of Moreno Valley Municipal Code; otherwise it shall become null and void and of no effect whatsoever. Use means the beginning of substantial construction contemplated by this approval within the three-year period, which is thereafter pursued to completion, or the beginning of
substantial utilization contemplated by this approval. (MC 9.02.230)
8. In the event the use hereby permitted ceases operation for a period of one (1) year or more, or as defined in the current Municipal Code, this permit may be revoked in accordance with provisions of the Municipal Code. (applicable to CUP's)
9. The Developer shall defend, indemnify and hold harmless the City, city council, commissions, boards, subcommittees and the City's elected and appointed officials, commissioners, board members, officers, agents, consultants and employees ("City Parties") from and against any and all liabilities, demands, claims, actions or proceedings and costs and expenses incidental thereto (including costs of defense, settlement and reasonable attorneys' fees), which any or all of them may suffer, incur, be responsible for or pay out as a result of or in connection with any challenge to the legality, validity or adequacy of any of the following items: (i) any prior or current agreements by and among the City and the Developer; (ii) the current, concurrent and subsequent permits, licenses and entitlements approved by the City; (iii) any environmental determination made by the City in connection with the Project Site and the Project; and (iv) any proceedings or other actions undertaken by the City in connection with the adoption or approval of any of the above. In the event of any administrative, legal, equitable action or other proceeding instituted by any third party (including without limitation a governmental entity or official) challenging the legality, validity or adequacy of any of the above items or any portion thereof, the Parties shall mutually cooperate with each other in defense of said action or proceeding. Notwithstanding the above, the City, at its sole option, may tender the complete defense of any third party challenge as described herein. In the event the City elects to contract with special counsel to provide for such a defense, the City shall meet and confer with the Developer regarding the selection of counsel, and the Developer shall pay all costs related to retention of such counsel by the City.
10. The site shall be developed in accordance with the approved plans on file in the Community Development Department - Planning Division, the Municipal Code regulations, General Plan, and the conditions contained herein. Prior to any use of the project site or business activity being commenced thereon, all Conditions of Approval shall be completed to the satisfaction of the Planning Official. (MC 9.14.020)
11. Any signs indicated on the submitted plans are not included with this approval. Any signs, whether permanent (e.g. wall, monument) or temporary (e.g. banner, flag), require separate application and approval by the Planning Division. No signs are permitted in the public right of way. (MC 9.12)
12. All site plans, grading plans, landscape and irrigation plans, fence/wall plans, lighting plans and street improvement plans shall be coordinated for consistency with this approval.

## Special Conditions

13. The owner or owner's representative shall establish and maintain a relationship with
the City of Moreno Valley and cooperate with the Problem Oriented Policing (POP) program, or its successors.
14. Drive-through speaker system for the carwash shall not be detectable above daytime ambient noise levels beyond the property line boundaries, and shall not exceed fifty-five (55) dBA at any one time beyond the boundaries of the property line. (MC9.09.080 C. 6 and 9.10.140)
15. The use of the carwash and vacuum stations shall be limited to the operating hours of $8: 00 \mathrm{a} . \mathrm{m}$. and $10: 00 \mathrm{p} . \mathrm{m}$. The use of the carwash and vacuum stations shall be prohibited between 10:00 p.m. and 8:00 a.m.
16. The site has been approved for a Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176) for a commercial development comprised of an eight (8) island fueling station, six (6) vehicle charging stations, 7,400 square foot market, and a 1,790 square foot drive-thru carwash, including a state-of-the-art security system with alarms, surveillance cameras and security lighting, and the prohibition of alcohol beverage sales, on a 1.31-acre site. A change or modification shall require separate approval. For a Conditional Use Permit, violation may result in revocation of the Conditional Use Permit.
17. Prior to the start of any construction, temporary security fencing shall be erected. The fencing shall be a minimum of six (6) feet high with locking, gated access and shall remain through the duration of construction. Security shall remain in place until the project is completed or the above conditions no longer exist. (Security fencing is required if there is: construction, unsecured structures, unenclosed storage of materials and/or equipment, and/or the condition of the site constitutes a public hazard).
18. One outdoor trash receptacle shall be provided shall be provided for every ten (10) required parking spaces, with a minimum of one receptacle provided to be located front portion of the site for use by patrons. (MC 9.09.080 C 5.)
19. Prior to approval of any grading permit, the tree plan shall be submitted to and approved by the Panning Division. The plan shall identify all mature trees (4 inch trunk diameter or larger) on the subject property and City right-of-way. Using the grading plan as a base, the plan shall indicate trees to be relocated, retained, and removed. Replacement trees shall be shown on the plan, be a minimum size of 24 inch box, and meet a ratio of three replacement trees for each mature tree removed or as approved by the Planning Official. (GP Objective 4.4, 4.5, DG)

## Prior to Building Permit

20. Prior to issuance of any building permit, all Conditions of Approval, and Mitigation Measures shall be printed on the building plans.
21. Prior to the issuance of building permits, the developer shall provide documentation that contact was made to the U.S. Postal Service to determine the appropriate type and location of mailboxes.
22. Prior to issuance of any building permits, final landscaping and irrigation plans shall be submitted for review and approved by the Planning Division. After the third plan check review for landscape plans, an additional plan check fee shall apply. The plans shall be prepared in accordance with the City's Landscape Requirements and shall include:
a. A three (3) foot high decorative wall, solid hedge or berm shall be placed in any setback areas between a public right of way and a parking lot for screening.
b. Finger and end planters with required step outs and curbing shall be provided every 12 parking stalls as well as at the terminus of each aisle.
c. Drought tolerant landscape shall be used. Sod shall be limited to gathering areas. (or No sod shall be installed).
d. Street trees shall be provided every 40 feet on center in the right of way.
e. On-site trees shall be planted at an equivalent of one (1) tree per thirty (30) linear feet of the perimeter of a parking lot and per thirty linear feet of a building dimension for the portions of the building visible from a parking lot or right of way. Trees may be massed for pleasing aesthetic effects.
f. Enhanced landscaping shall be provided at all driveway entries and street corner locations The review of all utility boxes, transformers etc. shall be coordinated to provide adequate screening from public view.
g. Landscaping on three sides of any trash enclosure.
h. All site perimeter and parking lot landscape and irrigation shall be installed prior to the release of certificate of any occupancy permits for the site or pad in question (master plot plan). [only include items above that apply to the project].
23. Prior to issuance of building permits, the Planning Division shall review and approve the location and method of enclosure or screening of transformer cabinets, commercial gas meters and back flow preventers as shown on the final working drawings. Location and screening shall comply with the following criteria: transformer cabinets and commercial gas meters shall not be located within required setbacks and shall be screened from public view either by architectural treatment or landscaping; multiple electrical meters shall be fully enclosed and incorporated into the overall architectural design of the building(s); back-flow preventers shall be screened by landscaping. (GP Objective 43.30)
24. Prior to issuance of a building permit, the developer/property owner or developer's successor-in-interest shall pay all applicable impact fees due at permit issuance, including but not limited to Multi-species Habitat Conservation Plan (MSHCP) mitigation fees. (Ord)
25. Prior to building final, the developer/owner or developer's/owner's successor-in-interest shall pay all applicable impact fees, including but not limited to Transportation Uniform Mitigation fees (TUMF), and the City's adopted Development Impact Fees. (Ord)
26. Prior to issuance of building permits, proposed covered trash enclosure(s) shall be included in the Planning review of the Fence and Wall plans. The trash enclosure (s), including the roof materials, shall be compatible with the architecture, color and materials of the building(s) design. Trash enclosure areas shall include landscaping on three sides unless located within the truck loading area. Approved design plans shall be included in a Building submittal (Fence and walls or building design plans). (GP Objective 43.6, DG)
27. At least thirty days prior to issuance of any grading permit, the developer shall retain a qualified archaeologist, provide a letter identifying the name and qualifications of the archaeologist to the Planning Division for approval, to monitor all ground disturbing activities in an effort to identify any unknown archaeological resources and to evaluate and recommend appropriate actions for any archaeological deposits exposed by construction activity.

At least thirty days prior to issuance of a grading permit, the applicant shall provide evidence that contact has been established with the appropriate Native American Tribe(s), providing notification of grading, excavation and the proposed monitoring program and to coordinate with the City and Tribe(s) to develop a cultural resources treatment and monitoring agreement. The agreement shall address treatment of known cultural resources, the designation, responsibilities and participation of Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

A report documenting the proposed methodology for grading monitoring shall be submitted to and approved by the Planning Division prior to issuance of any grading permit. The monitoring archaeologist shall be empowered to stop and redirect grading in the vicinity of an exposed archaeological deposit until that deposit can be fully evaluated. The archaeologist shall consult with affected Tribe(s) to evaluate any archaeological resources discovered on the project site. Tribal monitors shall be allowed to monitor all grading, excavation and groundbreaking activities, and shall also have authority to stop and redirect grading activities in consultation with the project archaeologist.

The property owner shall relinquish ownership to the Tribe(s) of all Native American cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project site for proper treatment and disposition. All sacred sites, should they be encountered with the project site, shall be avoided and preserved as the preferred mitigation.

If any inadvertent discoveries of subsurface archaeological or cultural resources occur during grading, the applicant, project archaeologist, and Tribe(s) shall assess
the significance of such resources and shall meet and confer regarding mitigation of such resources. Avoidance is the preferred method of preservation of archaeological resources. If the applicant, project archaeologist and Tribe(s) cannot agree on the significance or mitigation for such resources, the issue(s) will be presented to the Planning Official with adequate documentation. The Official shall make a determination based on the provisions of CEQA and consideration of the religious beliefs, customs and practices of the Tribe(s).
28. Prior to issuance of any grading permit, all Conditions of Approval, and Mitigation Measures shall be printed on the grading plans.
29. Prior to issuance of any grading permits, mitigation measures contained in the Mitigation Monitoring Program approved with this project shall be implemented as provided therein. A mitigation monitoring fee, as provided by City ordinance, shall be paid by the applicant within 30 days of project approval. No City permit or approval shall be issued until such fee is paid. (CEQA)
30. If potential historic, archaeological, Native American cultural resources or paleontological resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person (meeting the Secretary of the Interior's standards (36CFR61)) shall be consulted by the applicant to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, prehistoric, or paleontological resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all affected Native American Tribes before any further work commences in the affected area.

If human remains are discovered during grading and other construction excavation, no further disturbance shall occur until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 5-days of the published finding to be given a reasonable opportunity to identify the "most likely descendant." The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).
31. Prior to issuance of grading permits, the developer shall submit wall/fence plans to the Building and Safety Division for review and approval by the Planning Division as follows:
a. A maximum 6-foot high solid decorative block perimeter wall with pilasters and a cap shall be required adjacent to all residential zoned areas.
b. 3-foot high decorative wall, solid hedge, or berm shall be placed in any setback areas between a public right of way and a parking lot for screening.
c. Any proposed retaining walls shall also be decorative in nature, while the combination of retaining and other walls on top shall not exceed the height requirement.
d. Proposed screening walls for truck loading areas and required loading docks shall also include decorative block walls with pilasters with a height of up to fourteen (14) feet to fully screen trucks (industrial and some situations with commercial uses).
e. Walls and fences for visual screening are required when there are adjacent residential uses or residentially zone property. The height, placement, and design will be based on a site-specific review of the project. All walls are subject to the approval of the Planning Official. (MC 9.08.070) [select those that apply]
32. Prior to the issuance of grading permits, a temporary project identification sign shall be erected on the site in a secure and visible manner. The sign shall be conspicuously posted at the site and remain in place until occupancy of the project. The sign shall include the following:
a. The name (if applicable) and address of the development.
b. The developer's name, address, and a 24-hour emergency telephone number.
33. Prior to issuance of grading permits, the location of the trash enclosure shall be included on the plans.
34. Prior to approval of any grading permit, the tree plan shall be submitted to and approved by the Planning Division. The plan shall identify all mature trees ( 4 inch trunk diameter or larger) on the subject property and City right-of-way. Using the grading plan as a base, the plan shall indicate trees to be relocated, retained, and removed. Replacement trees shall be shown on the plan, be a minimum size of 24 inch box, and meet a ratio of three replacement trees for each mature tree removed or as approved by the Planning Official. (GP Objective 4.4, 4.5, DG)

## Prior to Building Final or Occupancy

35. Prior to building final, all required landscaping and irrigation shall be installed per plan, certified by the Landscape Architect and inspected by the Planning Division. (MC 9.03.040, MC 9.17).
36. Prior to building final, Planning approved/stamped landscape plans shall be provided to the Community Development Department - Planning Division on a CD disk.
37. Prior to building final, all required and proposed fences and walls shall be constructed according to the approved plans on file in the Planning Division. (MC 9.080 .070 ).
38. Prior to building final or Certificate of Occupancy, the owner or owner's
representative shall provide documentation to the Planning Division that they have contacted the Moreno Valley Police Department to establish and maintain a relationship with the City of Moreno Valley Police Department and cooperate with the Problem Oriented Policing (POP) program, or its successors. [multi-family, night clubs, liquor stores]

## Building Division

39. The proposed non-residential project shall comply with the latest Federal Law, Americans with Disabilities Act, and State Law, California Code of Regulations, Title 24, Chapter 11B for accessibility standards for the disabled including access to the site, exits, bathrooms, work spaces, etc.
40. Prior to submittal, all new development, including residential second units, are required to obtain a valid property address prior to permit application. Addresses can be obtained by contacting the Building Safety Division at 951.413.3350.
41. Contact the Building Safety Division for permit application submittal requirements.
42. Any construction within the city shall only be completed between the hour of seven a.m. to seven p.m. Monday through Friday, excluding holidays and from eight a.m. to four p.m. on Saturday, unless written approval is obtained from the city building official or city engineer (Municipal Code Section 8.14.040.E).
43. Building plans submitted shall be signed and sealed by a California licensed design professional as required by the State Business and Professions Code.
44. The proposed development is subject to the payment of applicable processing fees as required by the City's current Fee Ordinance at the time a building permit application is submitted or prior to the issuance of permits as determined by the City.
45. The proposed project will be subject to approval by the Eastern Municipal Water District and all applicable fees and charges shall be paid prior to permit issuance. Contact the water district at 951.928 .3777 for specific details.
46. All new structures shall be designed in conformance to the latest design standards adopted by the State of California in the California Building Code, (CBC) Part 2, Title 24, California Code of Regulations including requirements for allowable area, occupancy separations, fire suppression systems, accessibility, etc.
47. The proposed non-residential project shall comply with California Green Building Standards Code, Section 5.106.5.3, mandatory requirements for Electric Vehicle Charging Station (EVCS).
48. The proposed project's occupancy shall be classified by the Building Official and must comply with exiting, occupancy separation(s) and minimum plumbing fixture requirements. Minimum plumbing fixtures shall be provided per the California Plumbing Code, Table 422.1. The occupant load and occupancy classification shall be determined in accordance with the California Building Code.
49. Prior to permit issuance, every applicant shall submit a properly completed Waste Management Plan (WMP), as a portion of the building or demolition permit process. (MC 8.80.030)
50. The appropriation from local tax from construction contracts to the local jurisdiction of the specific construction job site is hereby required. This is accomplished by a contractor or subcontractor obtaining a construction site sub-permit for the job site. The contractors, or subcontracts, that have individual contracts with a value of $\$ 5$ million or more are subject to this condition.
The qualifying contract price applies to each contract or subcontract for work performed at the jobsite, and not to the total value of the prime contract. In order to obtain a jobsite sub-permit, the contractor or subcontractor must meet the following criteria:
a) have an active permit with the California Department of Tax and Fee Administration (CDTFA),
b) must be registered as a retailer, not consumer, of materials, and
c) have an executed contract over $\$ 5$ million to install materials at the jobsite.

The Prime Contractor will require that the subcontractors or other contractors exercise their option to obtain a California Department of Tax \& Fee Administration construction site sub-permit for the jobsite and allocate all eligible use tax payments to the City of Moreno Valley. Prior to any Notice to Proceed(s), the Prime Contractor shall provide the City of Moreno Valley Finance and Management Services Department with a list of subcontractors associated with the project along with a copy of their sub-permit that shows their CDTFA account number or a signed statement that sales and use tax does not apply to their portion of the project.

## FIRE DEPARTMENT

## Fire Prevention Bureau

51. All Fire Department access roads or driveways shall not exceed 12 percent grade. (CFC 503.2.7 and MVMC 8.36.060[G])
52. The Fire Department emergency vehicular access road shall be (all weather surface) capable of sustaining an imposed load of $80,000 \mathrm{lbs}$. GVW, based on street standards approved by the Public Works Director and the Fire Prevention Bureau. The approved fire access road shall be in place during the time of construction. Temporary fire access roads shall be approved by the Fire Prevention Bureau. (CFC 501.4, and MV City Standard Engineering Plan 108d)
53. The angle of approach and departure for any means of Fire Department access shall not exceed 1 ft drop in 20 ft ( 0.3 m drop in 6 m ), and the design limitations of the fire apparatus of the Fire Department shall be subject to approval by the AHJ. (CFC 503 and MVMC 8.36.060)
54. Prior to construction, all locations where structures are to be built shall have an approved Fire Department access based on street standards approved by the Public Works Director and the Fire Prevention Bureau. (CFC 501.4)
55. Prior to issuance of Building Permits, the applicant/developer shall provide the Fire Prevention Bureau with an approved site plan for Fire Lanes and signage. (CFC 501.3)
56. Prior to issuance of Certificate of Occupancy or Building Final, "Blue Reflective Markers" shall be installed to identify fire hydrant locations in accordance with City specifications. (CFC 509.1 and MVLT 440A-0 through MVLT 440C-0)
57. Prior to issuance of Certificate of Occupancy or Building Final, all commercial buildings shall display street numbers in a prominent location on the street side and rear access locations. The numerals shall be a minimum of twelve inches in height. (CFC 505.1, MVMC 8.36.060[I])
58. Existing fire hydrants on public streets are allowed to be considered available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads. (CFC 507, 501.3) a - After the local water company signs the plans, the originals shall be presented to the Fire Prevention Bureau for signatures. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.
59. Final fire and life safety conditions will be addressed when the Fire Prevention Bureau reviews building plans. These conditions will be based on occupancy, use, California Building Code (CBC), California Fire Code (CFC), and related codes, which are in effect at the time of building plan submittal.
60. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire alarm system monitored by an approved Underwriters Laboratory listed central station based on a requirement for monitoring the sprinkler system, occupancy or use. Fire alarm panel shall be accessible from exterior of building in an approved location. Plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9 and MVMC 8.36.100)
61. The Fire Code Official is authorized to enforce the fire safety during construction requirements of Chapter 33. (CFC Chapter 33 \& CBC Chapter 33)
62. Fire lanes and fire apparatus access roads shall have an unobstructed width of not less than twenty-four (24) feet and an unobstructed vertical clearance of not less the thirteen (13) feet six (6) inches. (CFC 503.2.1 and MVMC 8.36.060[E])
63. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire sprinkler system based on square footage and type of construction, occupancy or use. Fire sprinkler plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9, MVMC 8.36.100[D])
64. Prior to issuance of the building permit for development, independent paved access to the nearest paved road, maintained by the City shall be designed and constructed by the developer within the public right of way in accordance with City Standards. (MVMC 8.36.060, CFC 501.4)
65. Prior to issuance of a Certificate of Occupancy or Building Final, a "Knox Box Rapid Entry System" shall be provided. The Knox-Box shall be installed in an accessible location approved by the Fire Code Official. All exterior security emergency access gates shall be electronically operated and be provided with Knox key switches for access by emergency personnel. (CFC 506.1)
66. The minimum number of fire hydrants required, as well as the location and spacing of fire hydrants, shall comply with the C.F.C., MVMC, and NFPA 24. Fire hydrants shall be located no closer than 40 feet to a building. A fire hydrant shall be located within 50 feet of the fire department connection for buildings protected with a fire sprinkler system. The size and number of outlets required for the approved fire hydrants are ( $6 " \times 4 " \times 21 / 2^{\prime \prime} \times 21 / 2 "$ ) (CFC 507.5.1, 507.5.7, Appendix C, NFPA 24-7.2.3, MVMC 912.2.1)
67. During phased construction, dead end roadways and streets which have not been completed shall have a turn-around capable of accommodating fire apparatus. (CFC 503.1 and 503.2.5)
68. If construction is phased, each phase shall provide an approved emergency vehicular access way for fire protection prior to any building construction. (CFC 501.4)
69. Plans for private water mains supplying fire sprinkler systems and/or private fire hydrants shall be submitted to the Fire Prevention Bureau for approval. (CFC 105 and CFC 3312.1)
70. The Fire Prevention Bureau is required to set a minimum fire flow for the remodel or construction of all commercial buildings per CFC Appendix B and Table B105.1. The applicant/developer shall provide documentation to show there exists a water system capable of delivering said waterflow for 2 hour(s) duration at 20-PSI residual operating pressure. The required fire flow may be adjusted during the approval process to reflect changes in design, construction type, or automatic fire protection measures as approved by the Fire Prevention Bureau. Specific requirements for the project will be determined at time of submittal. (CFC 507.3, Appendix B)
71. Prior to building construction, dead end roadways and streets which have not been completed shall have a turnaround capable of accommodating fire apparatus. (CFC 503.2.5)
72. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall be responsible for obtaining underground and/or above ground tank permits for the storage of combustible liquids, flammable liquids, or any other hazardous materials from both the County of Riverside Community Health Agency Department of Environmental Health and the Fire Prevention Bureau. (CFC 105)
73. Prior to issuance of Building Permits, the applicant/developer shall furnish one copy of the water system plans to the Fire Prevention Bureau for review. Plans shall: a. Be signed by a registered civil engineer or a certified fire protection engineer; b. Contain a Fire Prevention Bureau approval signature block; and c. Conform to hydrant type, location, spacing of new and existing hydrants and minimum fire flow required as determined by the Fire Prevention Bureau. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.
74. Prior to issuance of Certificate of Occupancy, approval shall be required from the County of Riverside Community Health Agency (Department of Environmental Health) and Moreno Valley Fire Prevention Bureau to maintain, store, use, handle materials, or conduct processes which produce conditions hazardous to life or property, and to install equipment used in connection with such activities. (CFC 105)

## FINANCIAL \& MANAGEMENT SERVICES DEPARTMENT

## Moreno Valley Utility

75. This project requires the installation of electric distribution facilities. A non-exclusive easement shall be provided to Moreno Valley Utility and shall include the rights of ingress and egress for the purpose of operation, maintenance, facility repair, and meter reading.
76. This project requires the installation of electric distribution facilities. The developer shall submit a detailed engineering plan showing design, location and schematics for the utility system to be approved by the City Engineer. In accordance with Government Code Section 66462, the Developer shall execute an agreement with the City providing for the installation, construction, improvement and dedication of the utility system following recordation of final map and concurrent with trenching operations and other improvements so long as said agreement incorporates the approved engineering plan and provides financial security to guarantee completion and dedication of the utility system.

The Developer shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to the City all utility infrastructure including but not limited to, conduit, equipment, vaults, ducts, wires (including fiber optic cable), switches, conductors, transformers, and "bring-up" facilities including electrical capacity to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility - collectively referred to as "utility system" (to and through the development), along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "utility services" to and within the project. For purposes of this condition, "utility services" shall mean electric, cable television, telecommunication (including video, voice, and data) and other similar
services designated by the City Engineer. "Utility services" shall not include sewer, water, and natural gas services, which are addressed by other conditions of approval.

The City, or the City's designee, shall utilize dedicated utility facilities to ensure safe, reliable, sustainable and cost effective delivery of utility services and maintain the integrity of streets and other public infrastructure. Developer shall, at developer's sole expense, install or cause the installation of such interconnection facilities as may be necessary to connect the electrical distribution infrastructure within the project to the Moreno Valley Utility owned and controlled electric distribution system.
77. Existing Moreno Valley Utility electrical infrastructure shall be preserved in place. The developer will be responsible, at developer's expense, for any and all costs associated with the relocation of any of Moreno Valley Utility's underground electrical distribution facilities, as determined by Moreno Valley Utility, which may be in conflict with any developer planned construction on the project site.
78. This project shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to the City fiber optic cable improvements consisting of fiber optic cable, splices and termination equipment to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "fiber optic services" to and within the project.
79. This project shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to Moreno Valley Utility fiber optic cable improvements consisting of conduit, and pull boxes to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "fiber optic services" to and within the project.
80. This project shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to Moreno Valley Utility electric streetlight improvements consisting of streetlight poles, mast-arms, fixtures conduit, wiring, terminations and pull boxes to serve the identified development and other adjoining, abutting, or benefiting projects as determined by the Land Development Department along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "street light services" to and within the project.

## PUBLIC WORKS DEPARTMENT

## Land Development

81. For non-subdivision projects, execution of a Public Improvement Agreement (PIA) and/or security (in the form of a cash deposit or other approved means) may be required as determined by the City Engineer. [MC 9.14.220]
82. Any work performed within public right-of-way requires an encroachment permit.
83. Aggregate slurry, as defined in Section 203-5 of Standard Specifications for Public Works Construction, shall be required prior to $90 \%$ security reduction or the end of the one-year warranty period of the public streets as approved by the City Engineer. If slurry is required, a slurry mix design shall be submitted for review and approved by the City Engineer. The latex additive shall be Ultra Pave 70 (for anionic) or Ultra Pave 65 K (for cationic) or an approved equal per the geotechnical report. The latex shall be added at the emulsion plant after weighing the asphalt and before the addition of mixing water. The latex shall be added at a rate of two to two-and-one-half ( 2 to $2 \frac{1}{2}$ ) parts to one-hundred (100) parts of emulsion by volume. Any existing striping shall be removed prior to slurry application and replaced per City standards.
84. The developer shall comply with all applicable City ordinances and resolutions including the City's Municipal Code (MC) and if subdividing land, the Government Code (GC) of the State of California, specifically Sections 66410 through 66499.58, said sections also referred to as the Subdivision Map Act (SMA). [MC 9.14.010]
85. The final approved conditions of approval (COAs) and any applicable Mitigation Measures issued by the Planning Division shall be photographically or electronically placed on mylar sheets and included in the Grading and Street Improvement plans.
86. The developer shall monitor, supervise and control all construction related activities, so as to prevent these activities from causing a public nuisance, including but not limited to, insuring strict adherence to the following:
(a) Removal of dirt, debris, or other construction material deposited on any public street no later than the end of each working day.
(b) Observance of working hours as stipulated on permits issued by the Land Development Division.
(c) The construction site shall accommodate the parking of all motor vehicles used by persons working at or providing deliveries to the site.
(d) All dust control measures per South Coast Air Quality Management District (SCAQMD) requirements during the grading operations.
Violation of any condition, restriction or prohibition set forth in these conditions shall subject the owner, applicant, developer or contractor(s) to remedy as noted in City Municipal Code 8.14.090. In addition, the City Engineer or Building Official may suspend all construction related activities for violation of any condition, restriction or prohibition set forth in these conditions until such time as it has been determined that all operations and activities are in conformance with these conditions.
87. Drainage facilities (e.g., catch basins, water quality basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.
88. In the event right-of-way or offsite easements are required to construct offsite improvements necessary for the orderly development of the surrounding area to meet the public health and safety needs, the developer shall make a good faith effort to acquire the needed right-of-way in accordance with the Land Development

Division's administrative policy. If unsuccessful, the Developer shall enter into an agreement with the City to acquire the necessary right-of-way or offsite easements and complete the improvements at such time the City acquires the right-of-way or offsite easements which will permit the improvements to be made. The developer shall be responsible for all costs associated with the right-of-way or easement acquisition. [GC 66462.5]
89. If improvements associated with this project are not initiated within two (2) years of the date of approval of the Public Improvement Agreement (PIA), the City Engineer may require that the engineer's estimate for improvements associated with the project be modified to reflect current City construction costs in effect at the time of request for an extension of time for the PIA or issuance of a permit. [MC 9.14.210(B)(C)]
90. The developer shall protect downstream properties from damage caused by alteration of drainage patterns (i.e. concentration or diversion of flow, etc). Protection shall be provided by constructing adequate drainage facilities, including, but not limited to, modifying existing facilities or by securing a drainage easement. [MC 9.14.110]
91. The maintenance responsibility of the proposed storm drain line shall be clearly identified. Storm drain lines within private property will be privately maintained and those within public streets will be publicly maintained.
92. The proposed private storm drain system shall connect to the onsite proposed underground basin and then discharge offsite through an outlet at the northwest corner of the parcel.
93. This project shall submit civil engineering design plans, reports and/or documents (prepared by a registered/licensed civil engineer) for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer. The submittal consists of, but is not limited to, the following:
a. Rough grading w/ erosion control plan (prior to grading permit issuance);
b. Precise grading w/ erosion control plan (prior to grading permit issuance);
c. Public improvement plan (e.g., street/storm drain with striping, sewer/water, etc.) (prior to encroachment permit issuance).
d. Final drainage study (prior to grading plan approval);
e. Final WQMP (prior to grading plan approval);
f. Easements, offers of dedication, etc. (prior to building permit issuance);
g. As-Built revision for all plans (prior to occupancy release).
94. Water quality best management practices (BMPs) designed to meet Water Quality Management Plan (WQMP) requirements for development shall not be used as a construction BMP. Water quality BMPs shall be maintained for the entire duration of the project construction and be used to treat runoff from those developed portions of the project. Water quality BMPs shall be protected from upstream construction related runoff by having proper best management practices in place and maintained. Water quality BMPs shall be graded per the approved design plans and once landscaping and irrigation has been installed, it and its maintenance shall
be turned over to the private owner association (POA) or responsible party for maintenance.

## Prior to Grading Plan Approval

95. Resolution of all drainage issues shall be as approved by the City Engineer.
96. A final detailed drainage study (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer. The study shall include, but not be limited to: existing and proposed hydrologic conditions as well as hydraulic calculations for all drainage control devices and storm drain lines. The study shall analyze 1, 3, 6 and 24-hour duration events for the 2, 5, 10 and 100-year storm events [MC 9.14.110(A.1)]. A digital (pdf) copy of the approved drainage study shall be submitted to the Land Development Division.
97. Emergency overflow areas shall be shown at all applicable drainage improvement locations in the event that the drainage improvement fails or exceeds full capacity.
98. A final project-specific Water Quality Management Plan (WQMP) shall be submitted for review and approved by the City Engineer, which:
a. Addresses Site Design Best Management Practices (BMPs) such as minimizing impervious areas, maximizing permeability, minimizes directly connected impervious areas to the City's street and storm drain systems, and conserves natural areas;
b. Incorporates Source Control BMPs and provides a detailed description of their implementation;
c. Describes the long-term operation and maintenance requirements for BMPs requiring maintenance; and
d. Describes the mechanism for funding the long-term operation and maintenance of the BMPs.
A copy of the final WQMP template can be obtained on the City's Website or by contacting the Land Development Division. A digital (pdf) copy of the approved final project-specific Water Quality Management Plan (WQMP) shall be submitted to the Land Development Division.
99. The final project-specific Water Quality Management Plan (WQMP) shall be consistent with the approved P-WQMP, as well as in full conformance with the document: "Water Quality Management Plan - A Guidance Document for the Santa Ana Region of Riverside County" dated October 22, 2012. The F-WQMP shall be submitted and approved prior to application for and issuance of grading permits. At a minimum, the F-WQMP shall include the following: Site Design BMPs; Source Control BMPs, Treatment Control BMPs, Operation and Maintenance requirements for BMPs and sources of funding for BMP implementation.
a. The Applicant has proposed to incorporate the use of underground infiltration chambers, inlet filter inserts, and vegetated swale. Final design and sizing details of all BMPs must be provided in the first submittal of the F-WQMP. The Applicant acknowledges that more area than currently shown on the plans may be required to treat site runoff as required by the WQMP guidance document.
b. The Applicant shall substantiate the applicable Hydrologic Condition of

Concerns (HCOC) in Section F of the F-WQMP. The HCOC designates that the project will be exempt from mitigation requirements based on Exemption 3.
c. All proposed LID BMP's shall be designed in accordance with the RCFC\&WCD's Design Handbook for Low Impact Development Best Management Practices, dated September 2011.
d. The proposed LID BMP's as identified in the project-specific P-WQMP shall be incorporated into the Final WQMP.
e. The NPDES notes per City Standard Drawing No. MVFE-350-0 shall be included in the grading plans.
f. Post-construction treatment control BMPs, once placed into operation for post-construction water quality control, shall not be used to treat runoff from construction sites or unstabilized areas of the site.
g. Prior to precise grading plan approval, the grading plan shall show any proposed trash enclosure to include a cover (roof) and sufficient size for dual bin (1 for trash and 1 for recyclables). The architecture shall be approved by the Planning Division and any structural approvals shall be made by the Building and Safety Division.
100. The developer shall ensure compliance with the City Grading ordinance, these Conditions of Approval and the following criteria:
a. The project street and lot grading shall be designed in a manner that perpetuates the existing natural drainage patterns with respect to tributary drainage area and outlet points. Unless otherwise approved by the City Engineer, lot lines shall be located at the top of slopes.
b. Any grading that creates cut or fill slopes adjacent to the street shall provide erosion control, sight distance control, and slope easements as approved by the City Engineer.
c. All improvement plans are substantially complete and appropriate clearance letters are provided to the City.
d. A soils/geotechnical report (addressing the soil's stability and geological conditions of the site) shall be submitted to the Land Development Division for review. A digital (pdf) copy of the soils/geotechnical report shall be submitted to the Land Development Division.
101. Grading plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
102. The developer shall select Low Impact Development (LID) Best Management Practices (BMPs) designed per the latest version of the Water Quality Management Plan (WQMP) - a guidance document for the Santa Ana region of Riverside County.
103. The developer shall submit recorded slope easements from adjacent property owners in all areas where grading resulting in slopes is proposed to take place outside of the project boundaries. For all other offsite grading, written permission from adjacent property owners shall be submitted.
104. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared in conformance with the State's current Construction Activities Storm Water General

Permit. A copy of the current SWPPP shall be kept at the project site and be available for review upon request.
105. Any proposed trash enclosure shall include a solid cover (roof) and sufficient size for dual bin (one for trash and one for recyclables). The architecture shall be approved by the Planning Division and any structural approvals shall be made by the Building \& Safety Division.
106. For projects that will result in discharges of storm water associated with construction with a soil disturbance of one or more acres of land, the developer shall submit a Notice of Intent (NOI) and obtain a Waste Discharger's Identification number (WDID\#) from the State Water Quality Control Board (SWQCB) which shall be noted on the grading plans.

## Prior to Grading Permit

107. A receipt showing payment of the Area Drainage Plan (ADP) fee to Riverside County Flood Control and Water Conservation District shall be submitted. [MC 9.14.100(O)]
108. For non-subdivision projects, a copy of the Covenants, Conditions and Restrictions (CC\&Rs) shall be submitted for review by the City Engineer. The CC\&Rs shall include, but not be limited to, access easements, reciprocal access, private and/or public utility easements as may be relevant to the project.
109. If the developer chooses to construct the project in phases, a Construction Phasing Plan for the construction of on-site public or private improvements shall be submitted for review and approved by the City Engineer.
110. Security, in the form of a cash deposit (preferable), bond or letter of credit shall be submitted as a guarantee of the implementation and maintenance of erosion control measures. At least twenty-five (25) percent of the required security shall be in the form of a cash deposit with the City. [MC 8.21.160(H)]
111. Security, in the form of a cash deposit (preferable), bond or letter of credit shall be submitted as a guarantee of the completion of the grading operations for the project. [MC 8.21.070]

## Prior to Improvement Plan Approval

112. The developer is required to bring any existing access ramps adjacent to and fronting the project to current ADA (Americans with Disabilities Act) requirements. However, when work is required in an intersection that involves or impacts existing access ramps, all access ramps in that intersection shall be retrofitted to comply with current ADA requirements, unless otherwise approved by the City Engineer.
113. The developer shall submit clearances from all applicable agencies, and pay all applicable plan check fees.
114. The street improvement plans shall comply with current City policies, plans and applicable City standards (i.e. MVSI-160 series, etc.) throughout this project.
115. Drainage facilities (i.e. catch basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.
116. The hydrology study shall be designed to accept and properly convey all off-site drainage flowing onto or through the site. In the event that the City Engineer permits the use of streets for drainage purposes, the provisions of current City standards shall apply. Should the quantities exceed the street capacity or the use of streets be prohibited for drainage purposes, as in the case where one travel lane in each direction shall not be used for drainage conveyance for emergency vehicle access on streets classified as minor arterials and greater, the developer shall provide adequate facilities as approved by the City Engineer. [MC 9.14.110 A.2]
117. All public improvement plans (prepared by a licensed/registered civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
118. Any missing or deficient existing improvements along the project frontage shall be constructed or secured for construction. The City Engineer may require the ultimate structural section for pavement to half-street width plus 18 feet or provide core test results confirming that existing pavement section is per current City Standards; additional signing \& striping to accommodate increased traffic imposed by the development, etc.
119. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.
120. The plans shall indicate any restrictions on trench repair pavement cuts to reflect the City's moratorium on disturbing newly-constructed pavement less than three (3) years old and recently slurry sealed streets less than one (1) year old. Pavement cuts may be allowed for emergency repairs or as specifically approved in writing by the City Engineer. Special requirements shall be imposed for repaving, limits to be determined by the City Engineer.
121. All dry and wet utilities shall be shown on the plans and any crossings shall be potholed to determine actual location and elevation. Any conflicts shall be identified and addressed on the plans. The pothole survey data shall be submitted to Land Development with the public improvement plans for reference purposes only. The developer is responsible to coordinate with all affected utility companies and bear all costs of any utility relocation.
122. Prior to improvement plan approval, pavement core samples of existing pavement shall be taken and findings submitted to the City for review and consideration of pavement improvements. The City will determine the adequacy of the existing pavement structural section. If the existing pavement structural section is found to be adequate, the developer may still be required to perform a 2 inch grind and
overlay or slurry seal, depending on the severity of existing pavement cracking, as required by the City Engineer. If the existing pavement section is found to be inadequate, the Developer shall replace the pavement to meet or exceed the City's pavement structural section standard.

## Prior to Building Permit

123. An engineered-fill certification, rough grade certification and compaction report shall be submitted for review and approved by the City Engineer. A digital (pdf) copy of the approved compaction report shall be submitted to the Land Development Division. All pads shall meet pad elevations per approved grading plans as noted by the setting of "blue-top" markers installed by a registered land surveyor or licensed civil engineer.
124. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.
125. A walk through with a Land Development Inspector shall be scheduled to inspect existing improvements within public right of way along project frontage. Any missing, damaged or substandard improvements including ADA access ramps that do not meet current City standards shall be required to be installed, replaced and/or repaired. The applicant shall post security to cover the cost of the repairs and complete the repairs within the time allowed in the public improvement agreement used to secure the improvements.
126. Certification to the line, grade, flow test and system invert elevations for the water quality control BMPs shall be submitted for review and approved by the City Engineer.
127. All required as-built plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.
128. The final/precise grade certification shall be submitted for review and approved by the City Engineer.
129. The developer shall complete all public improvements in conformance with current City standards, except as noted in the Special Conditions, including but not limited to the following:
a. Street improvements including, but not limited to: pavement, base, curb and/or gutter, cross gutters, spandrel, sidewalks, drive approaches, pedestrian ramps, street lights (MVU: SL-2), signing, striping, landscaping and irrigation, medians, and traffic control devices as appropriate.
b. Storm drain facilities including, but not limited to: storm drain pipe and storm drain laterals.
c. City-owned utilities.
d. Sewer and water systems including, but not limited to: sanitary sewer, potable water, and recycled water.
130. For commercial, industrial and multi-family projects, a "Stormwater Treatment Device and Control Measure Access and Maintenance Covenant", "Maintenance Agreement for Water Quality Improvements located in the public right-of-way" and a "Declaration of Restrictive Covenants (encroachment on City easement)" shall be recorded to provide public notice of the maintenance requirements to be implemented per the approved final project-specific WQMP. A boilerplate copy of the covenants and agreements can be obtained by contacting the Land Development Division.
131. The applicant shall ensure the following, pursuant to Section XII. I. of the 2010 NPDES Permit:
a. Field verification that structural Site Design, Source Control and Treatment Control BMPs are designed, constructed and functional in accordance with the approved Final Water Quality Management Plan (WQMP).
b. Certification of best management practices (BMPs) from a state licensed civil engineer. An original WQMP BMP Certification shall be submitted for review and approved by the City Engineer.
132. The Developer shall comply with the following water quality related items:
a. Notify the Land Development Division prior to construction and installation of all structural BMPs so that an inspection can be performed.
b. Demonstrate that all structural BMPs described in the approved final project-specific WQMP have been constructed and installed in conformance with the approved plans and specifications;
c. Demonstrate that Developer is prepared to implement all non-structural BMPs described in the approved final project-specific WQMP; and
d. Demonstrate that an adequate number of copies of the approved final project-specific WQMP are available for future owners/occupants.
e. Clean and repair the water quality BMP's, including re-grading to approved civil drawing if necessary.
f. Obtain approval and complete installation of the irrigation and landscaping.
133. Prior to building permit issuance, the developer shall dedicate the following right of way to accommodate the required improvements:
(a) The necessary street right of way dedication on the west side of Oliver Street (88' R/W / 64' CC: Minor Arterial, City Standard No. MVSI-105A-2) along the project frontage.
(b) The necessary street right of way dedication on the north side of Iris Avenue (134' R/W / 110’ CC: Divided Major Arterial, City Standard No. MVSI-101A-1) for transition, alignment, and/or drainage purposes.
(c) A 4 foot minimum pedestrian right of way dedication behind any driveway approach per City Standard No. MVSI-112C-0, as applicable.
(d) Corner cutback right of way dedication per City Standard No. MVSI-165-0 on all intersecting public streets, as directed by the City Engineer.
134. Prior to occupancy, the following improvements shall be completed:

Oliver Street (88' R/W / 64' CC: Minor Arterial, City Standard No. MVSI-105A-2) shall be constructed to achieve a half-width of 32 ' plus 18' beyond centerline, along
the entire project's east frontage. Improvements shall consist of, but not be limited to, pavement, base, curb, gutter, sidewalk, driveway approaches, any necessary offsite joins to existing, pedestrian ramps, and dry and wet utilities. Any missing or deficient improvements along the project's east frontage shall be constructed.
Prior to improvement plan approval, the developer shall provide to the City Engineer the results of coring tests confirming that said existing pavement section has been constructed per City Standard No. MVSI-105A-2.
135. Prior to occupancy, the following improvements shall be completed:

Iris Avenue (134' R/W / 110' CC: Divided Major Arterial, City Standard No. MVSI-101A-1) shall be constructed to achieve a half-width of 55 ' along the entire project's south frontage. Improvements shall consist of, but not be limited to, pavement, base, curb, gutter, sidewalk, driveway approaches, any necessary offsite joins to existing, street lights, pedestrian ramps, and dry and wet utilities. Any missing or deficient improvements along the project's south frontage shall be constructed.
Prior to improvement plan approval, the developer shall provide to the City Engineer the results of coring tests confirming that said existing pavement section has been constructed per City Standard No. MVSI-101A-1. Any missing or deficient improvements along the project's south frontage shall be constructed prior to issuance of a certificate of occupancy.

## Special Districts Division

136. Street Light Coordination/Advanced Energy Fees. Prior to the issuance of the 1st Building Permit for this project, the Developer shall pay New Street Light Installation Fees for all street lights required to be installed for this development. Payment will be collected by the Land Development Division. Fees are based on the street light administration/coordination and advanced energy fees as set forth in the City Fees, Charges, and Rates as adopted by City Council and effective at the time of payment. Any change in the project which increases the number of street lights to be installed requires payment of the fees at the then current fee. Questions may be directed to the Special Districts Administration at 951.413.3470 or SDAdmin@moval.org.
137. CFD 2014-01. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee, form an association to fund the services or fund an endowment) to provide an ongoing funding source for Street Lighting Services for capital improvements.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or
formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

Alternatively, the condition can be satisfied by the Developer forming a property owner association that will be responsible for the improvements and any and all operation and maintenance costs for the improvements o
138. Major Infrastructure SFD Major Infrastructure Financing District. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for the construction and maintenance of major infrastructure improvements, which may include but is not limited to thoroughfares, bridges, and certain flood control improvements. This condition will be applicable provided said district is under development at the time this project applies for the 1st Building Permit. This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings. An alternative to satisfying this condition will be identified at such time as a special
139. Park Maintenance Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or fund an endowment) to provide an ongoing funding source for the continued maintenance, enhancement, and/or retrofit of parks, open spaces, linear parks, and/or trails systems.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the
project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

Alternatively, the condition can be satisfied by the Developer funding an endowment in an amount sufficient to yield an annual revenue stream that meets the annual obligation, as calculated by Special Districts Admin staff. The Developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to satisfy this condition.
140. Maintenance Services Funding. Prior to applying for the 1 st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for the operation and maintenance of public improvements and/or services associated with impacts of the development. This condition will only be applicable provided said district is under development at the time this project applies for the 1st Building Permit.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

An alternative to satisfying this funding source will be identified at such time as a special financing district has been established. At the time of development, the developer must
141. Public Safety Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for Public Safety services, which may include but is not limited to Police, Fire Protection, Paramedic Services, Park Rangers, and

Animal Control services. This condition will only be applicable provided said district is under development at the time this project applies for the 1st Building Permit.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

An alternative to satisfying this condition will be identified at such time as a special financing district has been established. At the time of dev
142. Maintenance Responsibility. The ongoing maintenance of any landscaping required to be installed behind the curb shall be the responsibility of the property owner.
143. Damage. Any damage to existing landscape areas maintained by the City of Moreno Valley due to project construction shall be repaired/replaced by the Developer, or Developer's successors in interest, at no cost to the City of Moreno Valley.
144. The existing parkway behind the curb will no longer be maintained by the City and will become the responsibility of the property owner. Please coordinate abandonment of existing City irrigation system with Landscape Services at 951-413-3480.
145. The ongoing maintenance of any water quality BMP (e.g. Bioswale) constructed in the public right of way shall be the responsibility of a property owner association or the property owner.

## Transportation Engineering Division

146. Conditions of approval may be modified or added if a phasing plan is submitted for this development.
147. Project driveways shall conform to City of Moreno Valley Standard Plans No. MVSI-112C-0 for Commercial Driveway Approaches. Access at the project driveways shall be as follows:

- Iris Avenue: Right-Turn In/Out Only (Shared Access)
- Oliver Street: Right-Turn In/Out Only

148. Iris Avenue is classified as a Divided Major Arterial (134'RW/110'CC) per City Standard Plan No. MVSI-101A-1. Any improvement undertaken by this project shall be in conformance with City standards. Communication conduit shall be installed per City Standard Plan No. MVSI-186-0.
149. Oliver Street is classified as a Minor Arterial per City Standard Plan No. MVSI-105A-2. Any improvements undertaken by this project shall be in conformance with City standards.
150. Prior to final approval of any landscaping or monument sign plans, the project plans shall demonstrate that sight distance at the project driveways conforms to City Standard Plan No. MVSI-164A, B, C-0.
151. Prior to the final approval of the street improvement plans, a signing and striping plan shall be prepared per City of Moreno Valley Standard Plans - Section 4 for all streets within the project area.
152. Prior to the final approval of the street improvement plans, a bus turnout in the westbound direction along Iris Avenue, west of Oliver Street shall be designed per City Standard Plan No. MVSI-161-0. The bus turnout shall be designed to serve as a combination right turn lane/bus bay to the satisfaction of the City Engineer.
153. Prior to the final approval of the street improvement plans, the existing landscaped median on Iris Avenue along the project frontage shall be designed to extend the existing eastbound left-turn lane storage length to a minimum of 285 feet at the Iris Avenue/Oliver Street intersection. Median construction shall include but is not limited to, paving, concrete curbs, landscape, and signs. Exact requirements will be determined during the plan check process.
154. Prior to issuance of a certificate of occupancy, all approved street improvements including the median and bus turnout improvements shall be installed to the satisfaction of the City Engineer.
155. Driveway on Iris Avenue shall be shared driveway and shall be designed to the satisfaction of the City Engineer. An irrevocable shared access agreement shall be provided for APNs 486-310-039, 486-310-041, and 486-310-042 and shall be provided prior to issuance of a building permit.

## PARKS \& COMMUNITY SERVICES DEPARTMENT

156. This project is subject to current Development Impact Fees.


















# ARCHITECTURAL LANDSCAPE PLANS NEW BEYOND MARKET\& CARWASH DEVE_OPMENT 

NWC IRIS AVE. \& OLIVER ST., MORENO VALLEY, CA

Reference Notes
$\square$ (E) Prooperit Lnes

3 (N) LaNoSCAPE
4 (N) HEALT TANK
5 (N) сомскете сиив
6 (N) CONCRETE SOEWMLK

8 (N) TRNNSFORMER PAD

TI (N) conner monment, sicn by Others, unoer sefarate
[120 (N) HCP Parking







[2] (N) FUEL-EFFFCENT CARPOOL ANO VANPOOL VEHCLE, PER

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(26) (E) RRE To Rewove
${ }^{26]}$ (E) RREE To ReG
(28) (E) REEE To REMOVE, SEE LANOSCAPE PLAN.

NOTES:
Maintenance of existing landscaping shall be the responsibility of the property owner. Coordinate with
Landscape Services at $951-413-3480$ or sdlandscape@moval.org for irrigation
repairs, relocation or abandonment of repairs, relocation or abandonment
City maintained irrigation system.



Packete Pg. 2714

PLANT LEGEND

| Srmbol | Botanical NaME | COMMON NAME | OTY | SIIE | Mucols ficior for | REMARKS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18 | Acer P. Adrian's Compact | Compoct J. Maple | 1 | $24^{\text {" box }}$ | $\llcorner$ | Muti-trunk |
|  | Porkinonic 'Desert Museum' | Palo verde | 4 | $24^{4}$ box | $\llcorner$ | Muti-trunk |
|  | Cercis o. 'Forest Ponsy' | Forest Ponsy | 12 | $24^{4}$ box | M | Stondord trunk |
|  | Logestroemia i. 'Tuscarora' | Crope Myrtle | 4 | $24^{4}$ box | M | Standard trunk |
|  | Lophostemon contertus | Brisbone box | 13 | $24^{44}$ box | $\cdots$ | Standard trunk |
|  | Plotanus $\times$ a. 'Blodgood' | London Plone Tree | 5 | $24^{4}$ box | M | Stondard trunk |
|  | Geijera panitiolia | Austraion Willow | 9 | ${ }^{244}$ box | $\llcorner$ | Stondard trin |
| Exising street trees to remain in place. |  |  |  |  |  |  |
|  | Sheubs |  |  |  |  |  |
|  | Agove ottenuoto Agove Blue Ciow |  | 48 36 | ${ }_{5}^{5}$ gol | ᄂ |  |
|  | Ligustrum j.'Texanum' | Texas Privet | 114 | 5 gal | L |  |
|  | Bougainvilleo 'Rospoery lce' | Rospberry lce Buagoinvilea | 37 | 5 gal | $\llcorner$ |  |
|  | Collistemon 'Little John' | Dworf Botterush | 113 | 5 gal | M |  |
|  | Westringia frutiosa 'smokey' | Dworf Cosstal Rosemary | 91 | 5 gol | $\llcorner$ |  |
|  | Westringia fruticosa 'Mundi' PERENNIALS | Mundi Coostal Rosemary | 75 | 5 gal | $\llcorner$ |  |
|  | Coree 0. 'Evergold' | Vor. Joponese Sedge |  |  |  |  |
| \% ${ }^{\circ}$ | Dianelo 'Cosso. Bue' | Casso Bue flox Liy | 55 <br> 16 | 1 gol | L |  |
| (2) | Kniphofia uvoria | Red Hot Poker | 37 | 1 gal | $\stackrel{1}{4}$ |  |
| $\bigcirc$ | Penstemon h.'Margarita BOP' Sesteria autumnalis | Margarita Bop Beardtongue Moor Grass | ${ }_{95}^{125}$ | $1{ }_{1}^{1} \mathrm{gal}$ | $\stackrel{\llcorner }{\llcorner }$ |  |
|  | Grounocover |  |  |  |  |  |
|  | Bacchoris p. 'coyote Bush' | Dworf Coyote Bush | 29 | 1 gol | $\llcorner$ | plont ${ }^{\text {a }} 3{ }^{\circ}$ |
|  | Corisso m. 'Emerald Blonker' | Emerald Blank | 77 | 1 gal | $\llcorner$ | Plont © 36" o.c. |
| $x \times x$ | cinolis | sema | 260 |  |  | plont © 36" |
|  |  |  |  |  |  |  |
|  | grove, Pal | ings Gold, detai L, |  |  |  |  |

Water Efficient Landscape Worksheet


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Packete Pg. 2716

IRRIGATION NOTES











 1. All irimgation equipment not othemise detailed or specified shall be instiled os per monutocturer's recommendotions

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|  | SYMBOL | MFG | model description | patn. | gPM Psinad |  |
|  | - | RAInBRD | 1400 SERIES BUBBLER MODEL:1402, 12" RISER | full | 0.530 |  |
|  | - | NETAFIM | MANUAL fiUSH Valve MODEL \#TLSOV | box |  |  |
|  | $\Delta$ | NTER | 1" QUICK COUPLER, MODE <br> INSTALL IN 6" VALVE BOX | -LRC |  |  |
|  | (C) | hunter |  |  |  |  |
|  | (-) | hunt | MODEL: SOLAR-SYNC-SEN, | $\begin{aligned} & \text { To Roo } \\ & \text { TOOAO } \end{aligned}$ | OF EAVE |  |
|  |  | anv Approved | PVC SCHEDULE 40 SLEEVVNG, (AT LEAST TWCE LINE SIZ) | UNDERG | GROUND |  |
|  |  | PPRoved | PVC SCHEDLLE 40 LATERAL SIZE AS INOICATED ON PLAN |  |  |  |
|  | --- | ant Approved | PVC SCHEDULE 40 MANN L NOTE: USE CLASS 315 PVC | AS Nol | $\begin{aligned} & \text { ATED ON PLAN } \\ & A D \end{aligned}$ |  |
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|  | -4 | nBCO | bRass ball valve, model LINE SIZE | P600A |  |  |
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| master Valve | 0 | HUNTER | BRASS INLINE VALVE, MODEL: NORMALLY OPEN, USE 10" V BRANDED FOR IDENTIFICATION |  | $\begin{aligned} & \mathrm{SIRE}=1.5^{\prime \prime} \\ & \text { NENTLY } \end{aligned}$ |  |
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All improvements are to be maintained by the property owner. NOTE: SEE SHEET L-5 FOR IRRIGATION DETAILS

| NOTE: " I have complied with applied them accordingly for the irrigation design plan." | a of the ordinance and nt use of water in the |
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| Thil Mau | 04-27 |

REVIIIONS




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LANDSCAPE | LANDSCAPE |
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| ARCHITECTURE |

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## Irrigation Schedule (Estabished - Mature Planting)





Packetepg. 2718




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| REVIEW BY CITY STAFF |  |  |  |  |  |  |  |  |  | CITY Of MORENO VALLEY APPRovals |  |  | CITY OF MORENO VALLEY |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  | DETAILS \& SECTIONS | sheet 2 of 5 |
|  |  |  |  |  |  |  |  |  |  |  |  |  | APN. 486-310-038 | alr in No |
|  |  |  | Wark | DATE | NTTAL | Descripton | Rec. | APPR | DATE |  |  |  | IRIS AVE AND OLIVER ST, MORENO VALLEY PRELIMINARY GRADING PLAN |  |






## PLANNING COMMISSION

## STAFF REPORT

Meeting Date: November 9, 2023
A PROPOSAL FOR THE DEVELOPMENT AND OPERATION OF AN ISLAND FUELING STATION, VEHICLE CHARGING STATIONS, CONVENIENCE STORE (BEYOND FOOD MART), AND DRIVE-THRU CARWASH

Case:

Applicant:
Property Owner: Tabel Center, LLC
Representative: Michael Ramirez
Project Site:

Case Planner: Oliver Mujica, Contract Planner
Council District: 4
Proposal:

CEQA:
Master Plot Plan (PEN22-0238)
Conditional Use Permit (PEN22-0176)
Beyond Food Mart, Inc.

Northwest corner of Iris Avenue and Oliver Street (APN: 486-310-038) and a drive-thru carwash.

The Applicant is requesting the approval of a 1.31 -acre Energy Center comprised of an eight (8) island fueling station, six (6) vehicle charging stations, a convenience store,

Adopt Initial Study/Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program.

## SUMMARY

Beyond Food Mart, Inc. ("Applicant") submitted applications for a Master Plot Plan (PEN22-0238) for a 1.31-acre commercial development and a Conditional Use Permit (PEN22-0176) for the operation of an eight (8) island fueling station, six (6) vehicle charging stations, 7,400 square foot convenience store, and drive-thru carwash, along with the associated landscaping, and on-site and off-site improvements. The proposed
development is located on the northwest corner of the intersection of Iris Avenue and Oliver Street (APN: 486-310-038) within the Downtown Center (DC) District (collectively, the "Proposed Project"). The Proposed Project, as designed and conditioned, is consistent with the goals, policies, and objectives of the City's General Plan and the requirements of the Downtown Center (DC) District and the City's Municipal Code.

## PROJECT DESCRIPTION

## Proposed Project

## Master Plot Plan

The Proposed Project consists of a Master Plot Plan for the development of the 1.31acre commercial site with eight (8) island fueling stations, six (6) vehicle charging stations, a 7,400 square foot convenience store, and a drive-thru carwash, along with the associated landscaping, and on-site and off-site improvements.

## Conditional Use Permit

Pursuant to the requirements of Section 9.02.060 (Conditional Use Permits) of the City's Planning and Zoning Code, approval of an auto service station with accessory uses including vehicle charging stations, convenience store, and drive-thru carwash located within 300 feet from a residential zone or use is permitted within the subject Downtown Center (DC) District subject to the approval of a Conditional Use Permit.

The proposed Beyond Food Mart project operation as an eight (8) island fueling station, six (6) vehicle charging stations, convenience store, and drive-thru carwash is consistent with and in compliance with the development standards, requirements, and regulations of the Municipal Code for a Conditional Use Permit, as well as the goals, policies, and objectives of the City's General Plan.

With the exception of the proposed drive-thru carwash, the proposed Beyond Food Mart project facilities will be open seven (7) days per week and twenty-four (24) hours per day. At this time, there will be a total of twelve (12) employees covering three (3) shifts with a minimum of three (3) employees per shift. Beyond Food Mart utilizes a state-of-the-art security system with alarms, surveillance cameras, and security lighting for security purposes. Additionally, the employees are trained and directed so that the property is walked hourly to ensure cleanliness and safety. The operating hours of the drive-thru carwash and vacuum stations will be from 8:00 a.m. to 10:00 p.m.

## Site and Surrounding Area

The Project Site is currently vacant and unimproved. The parcels directly to the north and west of the Project Site are within the Downtown Center (DC) District and are currently vacant and unimproved. The parcels to the east of the Project Site across Oliver Street are within 300 feet and developed with single-family residences within the Residential Medium Low (ML) District of the Moreno Valley Ranch Specific Plan (SP193). The parcels south of the Project Site across Iris Avenue are also within 300
feet and developed with single-family residences within the Residential Medium Low (ML) District of the Moreno Valley Ranch Specific Plan (SP193). The existing Kaiser Permanente Moreno Valley Medical Center is approximately 400 feet west of the Project Site.

## Access/Parking

The proposed Beyond Food Mart project provides direct access via two (2) primary entrances/exits, one (1) located along Iris Avenue and another on Oliver Street. Both driveways are restricted to "right-turn in" and "right-turn out" movements for public safety purposes. The internal site circulation has been designed to adequately accommodate on-site vehicular circulation including access to the island fueling stations, vehicle charging stations, convenience store, and drive-thru carwash tunnel and vacuum stations. Additionally, the carwash drive-thru lane has been designed to provide adequate stacking for the proposed use, not to impede internal vehicular circulation.

The Proposed Project provides 48 off-street parking spaces in compliance with Section 9.11.040 (Off-Street Parking Requirements) of the City's Planning and Zoning Code.

## Design/Landscaping

The architectural design is modern with varied rooflines and projections incorporated into the façade and varying paint colors and façade material schemes to create visual interest in the structures. Incorporating articulated wall surfaces and features, as well as the island fueling station canopy design, will enhance the visual aesthetics at this intersection.

The proposed landscaping plan provides for on-site landscaping along the perimeter of the Project Site. A combination of small and large trees, various shrubs, and ground cover will be utilized on the corner of the subject site along Iris Avenue and Oliver Street to enhance the Project Site and create pedestrian-friendly features.

As designed, the proposed Beyond Food Mart project conforms to the development standards of the Downtown Center (DC) District, the City's Landscaping Standards, and the design guidelines for commercial developments prescribed in the City's Municipal Code.

## REVIEW PROCESS

As part of the standard review process, all appropriate outside agencies have considered the Proposed Project. The Proposed Project was reviewed by the Project Review Staff Committee as required by the Municipal Code. Following subsequent revisions and staff review, the project was deemed complete.

## ENVIRONMENTAL

An Initial Study was prepared by EPD Solutions, Inc. and accepted by the Planning Division Staff in compliance with the requirements of the California Environmental Quality Act (CEQA) and its guidelines. The Initial Study examined the potential impacts of the proposed project on the environment. The Initial Study/ Mitigated Negative Declaration (IS/MND) serves as the appropriate CEQA documentation for the Proposed Project. With the implementation of the proposed mitigation measures, the Proposed Project will not have a significant effect on the environment. Technical studies prepared in support of the IS/MND include the following: Air Quality Analysis (CalEEMod 2022 Outputs); Health Risk Assessment; Biological Resources Assessment; Cultural Resources Assessment; Phase I Environmental Site Assessment; Preliminary Hydrology Report; Preliminary Water Quality Management Plan; Noise Impact Study; Traffic Impact Analysis; and Vehicle Miles Traveled Screening Analysis. Copies of the appendices to the IS/MND can be accessed from the link attached to this staff report. The documents can be reviewed at City Hall during operating hours, and online on the City's website.

Mitigation measures are recommended for the Proposed Project in the following areas: Air Quality, Biological Resources, and Tribal and Cultural Resources, all of which are incorporated into the Mitigation Monitoring and Report Program (MMRP). The cultural resources measures are intended to ensure that potential resources that might be discovered are protected. However, these measures are not required to address a known significant impact. Based on the Initial Study and with the implementation of the proposed mitigation measures, the Proposed Project will not cause any significant impacts to the environment.

The public comment period for the Notice of Availability of the Initial Study/Mitigated Negative Declaration began on October 13, 2023, and ended on November 2, 2023, (State Clearing House Number 2023100360) which satisfies the required 30-day review period required for this project. As of the preparation of this staff report, no comments have been received. Written comments received after the preparation of this staff report will be provided at the public hearing.

## NOTIFICATION

Consistent with the City Municipal Code provisions and applicable law, public notice was sent to all property owners of record within 600 feet of the Project Site, posted on the Project Site, and published in the Press Enterprise Newspaper. Public comments received prior to publication of the report have been attached to this report.

## REVIEW AGENCY COMMENTS

Staff has coordinated with outside agencies where applicable, as is the standard review process for these development applications.

## STAFF RECOMMENDATION

Staff recommends that the Planning Commission take the following actions:
A. ADOPT Resolution No. 2023-47, attached hereto, and thereby:

1. ADOPTING the Initial Study/Mitigated Negative Declaration prepared for Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176) on file with the Community Development Department, incorporated herein by this reference, which was completed in compliance with CEQA and the CEQA Guidelines, and reflects that the Planning Commission reviewed and considered the information contained in the Initial Study/Mitigated Negative Declaration, and exercised its independent judgment and analysis of the Proposed Project's potential environmental impacts; and
2. ADOPTING the Mitigation Monitoring and Reporting Program prepared for the Proposed Project, which consists of a Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176) pursuant to CEQA and the CEQA Guidelines.
B. ADOPT Resolution No. 2023-48, attached hereto, and thereby:
3. APPROVING Master Plot Plan (PEN22-0238) and Conditional Use Permit (PEN22-0176) based on the recitals, evidence contained in the administrative records, and findings as set forth in Resolution No. 2023-48.

Prepared by:
Oliver Mujica
Consultant

Approved by:
Sean P. Kelleher
Community Development Director

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

1. Resolution No. 2023-47
2. Exhibit A - Initial Study / Mitigated Negative Declaration
3. Appendix A-CaIEEMod 2022 Detailed Report
4. Appendix B - Health Risk Assessment
5. Appendix C-Biological Resources Assessment
6. Appendix D-Cultural Resources Assessment
7. Appendix E - Phase I Environmental Assessment Report
8. Appendix F - Preliminary Hydrology Study
9. Appendix G - Preliminary WQMP
10. Appendix H - Noise Impact Analysis
11. Appendix I - Traffic Impact Analysis
12. Appendix J - VMT Screening Analysis
13. Exhibit B - Mitigation Monitoring and Reporting Program
14. Exhibit C - Notice of Intent to Adopt Mitigated Negative Declaration
15. Resolution No. 2023-48
16. Location Map
17. Project Plans - Architectural
18. Project Plans - Conceptual Landscaping and Preliminary Grading
19. Comments Received for Notice of Intent

## Community Development Department Planning Division

## MEMORANDUM

To: Honorable Chair DeJohnette and Members of the Planning Commission
From: Oliver Mujica, Contract Planner
Date: November 09, 2023
Subject: Public Hearing Item \# 1 (Master Plot Plan (PEN22-0238) CUP (PEN22-0176))

After the publication of the agenda, City staff received the attached Public Comments.

# RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT 

November 1, 2023
City of Moreno Valley
Community Development Department Planning Division
Post Office Box 88005
Moreno Valley, CA 92552-0805
Attention: Oliver Mujica
Re: PEN 22-0238, PEN 22-0176 and
APN 486-310-038
The Riverside County Flood Control and Water Conservation District (District) does not normally recommend conditions for land divisions or other land use cases in incorporated cities. The District also does not plan check City land use cases or provide State Division of Real Estate letters or other flood hazard reports for such cases. District comments/recommendations for such cases are normally limited to items of specific interest to the District including District Master Drainage Plan facilities, other regional flood control and drainage facilities which could be considered a logical component or extension of a master plan system, and District Area Drainage Plan fees (development mitigation fees). In addition, information of a general nature is provided.

The District's review is based on the above-referenced project transmittal, received October 18, 2023. The District has not reviewed the proposed project in detail, and the following comments do not in any way constitute or imply District approval or endorsement of the proposed project with respect to flood hazard, public health and safety, or any other such issue:

This project would not be impacted by District Master Drainage Plan facilities, nor are other facilities of regional interest proposed.

This project involves District proposed Master Drainage Plan facilities, namely, $\qquad$ . The District will accept ownership of such facilities on written request by the City. The Project Applicant shall enter into a cooperative agreement establishing the terms and conditions of inspection, operation, and maintenance with the District and any other maintenance partners. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required. All regulatory permits (and all documents pertaining thereto, e.g., Habitat Mitigation and Monitoring Plans, Conservation Plans/Easements) that are to be secured by the Applicant for both facility construction and maintenance shall be submitted to the District for review. The regulatory permits' terms and conditions shall be approved by the District prior to improvement plan approval, map recordation, or finalization of the regulatory permits. There shall be no unreasonable constraint upon the District's ability to operate and maintain the flood control facility(ies) to protect public health and safety.

If this project proposes channels, storm drains larger than 36 inches in diameter, or other facilities that could be considered regional in nature and/or a logical extension a District's facility, the District would consider accepting ownership of such facilities on written request by the City. The Project Applicant shall enter into a cooperative agreement establishing the terms and conditions of inspection, operation, and maintenance with the District and any other maintenance partners. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required. The regulatory permits' terms and conditions shall be approved by the District prior to improvement plan approval, map recordation, or
finalization of the regulatory permits. There shall be no unreasonable constraint upon the District's ability to operate and maintain the flood control facility(ies) to protect public health and safety.

- This project is located within the limits of the District's Moreno Area Drainage Plan for which drainage fees have been adopted; applicable fees should be paid by cashier's check or money order only to the Flood Control District or City prior to issuance of grading permits. Fees to be paid should be at the rate in effect at the time of issuance of the actual permit.

An encroachment permit shall be obtained for any construction related activities occurring within District right of way or facilities, namely, $\qquad$ . If a proposed storm drain connection exceeds the hydraulic performance of the existing drainage facilities, mitigation will be required. For further information, contact the District's Encroachment Permit Section at 951.955.1266.
$\square \quad$ The District's previous comments are still valid.

## GENERAL INFORMATION

This project may require a National Pollutant Discharge Elimination System (NPDES) permit from the State Water Resources Control Board. Clearance for grading, recordation or other final approval should not be given until the City has determined that the project has been granted a permit or is shown to be exempt.

If this project involves a Federal Emergency Management Agency (FEMA) mapped floodplain, then the City should require the applicant to provide all studies, calculations, plans and other information required to meet FEMA requirements, and should further require that the applicant obtain a Conditional Letter of Map Revision (CLOMR) prior to grading, recordation or other final approval of the project, and a Letter of Map Revision (LOMR) prior to occupancy.

The project proponent shall bear the responsibility for complying with all applicable mitigation measures defined in the California Environmental Quality Act (CEQA) document (i.e., Negative Declaration, Mitigated Negative Declaration, Environmental Impact Report) and/or Mitigation Monitoring and Reporting Program, if a CEQA document was prepared for the project. The project proponent shall also bear the responsibility for complying with all other federal, state, and local environmental rules and regulations that may apply.

If a natural watercourse or mapped floodplain is impacted by this project, the City should require the applicant to obtain a Section 1602 Agreement from the California Department of Fish and Wildlife and a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers, or written correspondence from these agencies indicating the project is exempt from these requirements. A Clean Water Act Section 401 Water Quality Certification may be required from the local California Regional Water Quality Control Board prior to issuance of the Corps 404 permit.

Very truly yours,

EM:mm

| From: | John Stanton |
| :--- | :--- |
| To: | Plannina Notices DG |
| Cc: | Stantonli@aol.com |
| Subject: | Gas Station @ Iris \& Oliver |
| Date: | Monday, November 6, 2023 7:14:46 AM |

Warning: External Email - Watch for Email Red Flags!

## To: Oliver Mujica

From: John \& Laura Stanton
Regarding the proposal for a gas station on the northwest corner of Iris and Oliver, we say absolutely NOI There is already construction underway on the southwest corner, which is already creating problems. We already have gas stations nearby that are more than sufficient for the needs of the neighborhood. With the proposed new neighborhood being build on Nasson north of Iris, the traffic is going to get far heavier and worse than it already is. We DO NOI need the additional noise, even heavier traffic and the potential for the unwanted transient population to invade our community. So far we have been able to maintain a nice, quiet community, keeping the sirens at a distance. Do not invite crime and criminals into our neighborhood.

Respectfully,
John \& Laura Stanton
27330 Hammett Ct.
Moreno Valley, CA 92555
(951) 532-5549

| From: | tom cyfr.org |
| :--- | :--- |
| To: | Oliver Muiica |
| Cc: | Planning Notices DG; tom cufr.org |
| Subject: | CUP PEN22-0176-Beyond Food Mart Inc. |
| Date: | Thursday, November 9, 2023 11:30:22 AM |
| Attachments: | November 9 MVPC.Ddf |

## Warning: External Email - Watch for Email Red Flags!

Oliver,
Please find my comments for the abovementioned planning commission item for tonight's meeting.
If there are any questions please let me know.

If the applicant chooses to not integrate the comments attached, can the item

November 9, 2023

> To: Oliver Mujica, Contract Planner City of Moreno Valley
> Chairperson Alvin DeJohnette
> Vice-Chairperson Omar Cobian
> Planning Commission Members

> Re: Master Plot Plan (PEN22-0238)
> Conditional Use Permit (PEN22-0176)

> Mr. Mujica,
> I send this email to you and the Planning Commission in regards to the abovementioned project which is set to be heard at tonight's planning commission meeting. Unfortunately, due to work obligations I cannot attend in person to raise my concerns.

Hopefully the commission will consider my concerns for the project and integrate them into the approval process. Should there be any questions I will leave my contact information below.

Thank you for your time Mr. Mujica.

Thomas Ketcham
tom@cvfr.org
(951) 403-9900

Site Plan / Project Concerns

## 1 - Right Turns (staff packet pg192 \& 193)

The site plan and staff report state there is a "RIRO" (Right In / Right Out) on Oliver Street. Currently there is no center median to prevent "LILO" (Left In / Left Out) from the proposed project. Henceforth customers will be making left turns in and out. With no stripped median to allow customers to safely exit the travel lane and wait to turn they will be either be waiting in the lane of travel to turn left which will impact traffic traveling northbound on Oliver. This turning action can cause and accident for someone not paying attention to the person making a left turn into the location.

In order to help eliminate the possibility of "LILO's" I would encourage this commission to have the applicant add a "pork chop" which will then force traffic to reconsider their attempts to turn left into the location. It will not prevent $100 \%$, but the added raised pork chop will definitely help discourage LILO's into and out of the location. The cost is minimal and can be achieved easily.

## 2 - Design / Landscaping

The applicant should be required to utilize drought tolerant landscaping (desertscape) if possible and/or minimize the use of grass by adding more bark or desert gravel.

The applicant should be encouraged to utilize the earth tone range of colors which are consistent with the surrounding homes. The color pallet the applicant proposes is very bold and loud and will not be consistent with either the new addition to the Kaiser Hospital or surrounding community and local elementary schools.

Staff adds that trees which are being planted shall be 24 inch box size. These types of trees are actually very small in nature and the guide sticks which are used to
hold up the trees end up being bigger than the actual tree. Planning Commission should recommend the applicant to plant 60 inch box size trees. Planting a 24 -inch box tree is in actuality only planting a 15 gallon tree in a 24 inch box. Nurseries do this so that the roots can grow. So, naturally the trees will always be one size smaller than what is told. Example, a 36 -inch box is actually a 24 , a 48 -inch box is actually a 36 inch and so on.

## 3 -Notification

I believe the applicant should have done more than the "standard" city requirement of 600 feet. Although the applicant is not required to do so, it would have shown this commission and the neighborhoods adjacent that the applicant chose to go "above and beyond" city standards to ensure that the project would be a good neighbor to the residents in the area.

The standard mailing only provides 10 -day notice. The $4 \times 8$ posting on site can only be seen if you stop, exit your vehicle and go up to the sign to read it. The applicant DID NOT reach out to the community to hold community meetings with local residents or send a special mailer stating his project was coming forward (that I am aware of). Although this is not a city planning requirement, the applicant once again, could have shown their willingness to be a good neighbor by going above and beyond.

The applicant who is not a resident next to this location failed to take an extra step to ensure the community was aware. The local residents are good enough to be customers, but not be noticed? The applicant should have done more to be a good neighbor.

## 4 - Riverside Transit Agency (RTA) (staff packet pg193)

Currently there is a bus stop in front of the location. It is served by Route \#20. Applicant has proposed keeping the stop in the same location. This will require the bus to stop inside of the deceleration lane to pick up riders. But for customers who wish to enter the location, this will cause a safety concern, again causing
another point of conflict for both bus riders and drivers alike. The stop should either be moved to the west on the west side of the entrance to the project so as to not impact the customers who need to use the deceleration lane to enter the project and reducing yet another point of conflict for traffic.

Furthermore, there is another RTA stop approximately 300 feet to the west in front of Kaiser Hospital. Perhaps the applicant should contact RTA directly to see about removing the stop altogether? The second stop has an actual bus shelter which provides more security to ridership and shields them from the elements more than the actual bench at the current location.

Keeping the current stop and forcing the RTA bus to stop inside of the deceleration lane causes a point of conflict that I am sure the traffic department would like to alleviate. City Attorney might want to opine if the city would be liable for any damages should the planning commission approve such a hazard after knowingly being made aware of such an issue.

## 5-Community Services

Applicant's project should be annexed into the local Community Facilities District (CFD). As mentioned in the staff report (page 190 \& 191) "the condition can be satisfied by the Developer funding an endowment in an amount sufficient to yield an annual revenue stream that meets the annual obligation"

For years city staff have stated that the local CFD is deficient in funds to perform annual maintenance to the center landscaped medians and parkways. The applicant should be conditioned to join the CFD and provide a "one time" community benefit to help ensure the CFD is on good financial footing. A one-time community benefit in the amount of $\$ 50,000$ would go a long way in helping to maintain the local landscaping in and around the project which will undoubtedly add additional trash and illegal dumping to the community.

## 6 - Truck Deliveries (reference site plan)

The applicant chooses to utilize "doubles" for its truck fuel deliveries. Applicant should use the standard truck turning template to measure turning radius and
access to/from location. Applicants CANNOT guarantee their fuel deliveries will come in on a "doubles truck".

Applicant and Planning Commission should assume worst case scenario for turning radius and utilize standard truck turning template.

## 7 - Trash Enclosure (reference site plan)

Trash enclosures should be fully enclosed to prohibit local residents or customers from using the trash enclosure to illegally dump. Although applicant states his staff will be monitoring the grounds $24 / 7$ every hour, the applicant cannot guarantee this action. This failure to guarantee said action allows for the opportunity to illegally dump in the trash enclosure.

By screening / enclosing the trash enclosure applicant guarantees that unless the enclosure is left open by staff, no one can access the enclosure to illegally dump.

## 8-Car Wash (reference site plan)

Although the applicant has proposed the hours of operation of the car wash of 8 am-10pm the hours should be modified to reflect 8am-8pm by this commission. It will be very rare that someone will want to wash their car after 8 pm at night.

The noise level of the wash tube, which is directed at the homes to south, and elevated up above the project elevation will I'm sure cause angst for those residents. Reducing the operating hours by two hours will not cause the applicant to file for bankruptcy and will go a long way in being a good neighbor to the residents they hope will be their customers.

## 9-ADA Path of Travel (reference site plan)

In reviewing the site plans, I did not see an ADA Path of Travel (POT) from the sidewalks to the front of the c-store. Perhaps I missed it, but it is not clear on any of the site plan pages how someone gets from the sidewalk to the front of the store.

## 10 - Public Comments

It is very clear the applicant failed at obtaining public comments via outreach. There are no letters of support from either the Moreno Valley Unified School District (MVUSD) or Kaiser Permanente (KP) much less local residents.

Should the applicant decide, and this commission choose to not address any concerns stated herein, would there be a possibility of simply continuing the item for 60 days to allow for the applicant to do more outreach and/or come to some understanding on these comments?

Will there be an appeal process afforded to the residents?

| From: | Oliver Muica |
| :--- | :--- |
| To: | Rachel Ramirez; Patty Castreje; Sean P. Kelleher; Julia Descoteaux |
| Subject: | FW: Support Letter |
| Date: | Thursday, November 9, 2023 3:32:22 PM |

Oliver Mujica
Consultant - Planning - Romo Planning
Community Development
City of Moreno Valley
e: oliverm@moval.org w: www.moval.org
14177 Frederick St., Moreno Valley, CA, 92553
From: Marc Troast
Sent: Thursday, November 9, 2023 3:21 PM
To: Oliver Muiica
Cc: Bill Young
Subject: Support Letter
Warning: External Email - Watch for Email Red Flags!
Hi Oliver
On behalf of Bill Young please accept this support letter for the beyond food mart project in regardsto tonight's planning commission meeting.
Thanks!
Marc Troast
760-408-4876 c

November 9, 2023
Mr. Alvin DeJohnette, Chair
Moreno Valley Planning Commission
Dear Mr. DeJohnette,
I am writing this letter in strong support of Beyond Food Mart's application for a permit to operate a new gas and charging station with a convenience store at the corner of Iris Ave and Oliver Street. As a nearby resident, I believe that Beyond Food Mart's proposal aligns perfectly with our community's needs and values, and I wish to express my enthusiastic endorsement for this project.

Beyond Food Mart is a reputable and community-oriented company that has consistently demonstrated a strong commitment to quality, service and safety. The addition of a gas and charging station, along with a convenience store, will undoubtedly offer several benefits to our neighborhood including: 1. Safety and Security: Beyond Food Mart has a stellar track record of maintaining a secure and welcoming environment for its patrons. The
installation of a gas and charging station under their management will only enhance safety standards, ensuring that our community members can refuel and recharge their vehicles with peace of mind.
2. Convenience: As our neighborhood continues to grow, the convenience of having a nearby gas station and charging station is essential. Beyond Food Mart will provide residents with a convenient one-stop solution for their fuel and shopping needs, reducing travel times and congestion on our roads.
3. Local Employment Opportunities: Beyond Food Mart has a history of creating job opportunities within the community. The proposed gas and charging station will generate new employment opportunities for our neighbors, contributing to local economic growth.
4. Environmental Responsibility: In an era when environmental sustainability is of utmost importance, Beyond Food Mart's commitment to offering charging stations for electric vehicles aligns with our community's values. This will encourage the use of clean energy alternatives, promoting a greener and healthier environment.
5. Community Involvement: Beyond Food Mart has a strong tradition of actively engaging with the local community, participating in events, and supporting charitable causes. Their presence in our neighborhood will further enhance our sense of community and cooperation.

I kindly request that you consider Beyond Food Mart's permit application, and I hope you will support this project to enhance the quality of life in our neighborhood.

Thank you for your time and consideration.
Sincerely,
Bill Young

## Patty Castreje

| From: | Susan Guillermo [jguillermo2142@yahoo.com](mailto:jguillermo2142@yahoo.com) |
| :--- | :--- |
| Sent: | Thursday, November 9, 2023 4:13 PM |
| To: | Planning Email_DG |
| Subject: | New gas station at Iris Ave and Oliver St. |

Warning: External Email - Watch for Email Red Flags!

We are not in favor of proposed this new establishment due to the concern of noise, traffic, homelessness and disruptions of our quality of life.

Concern citizen and neiborhood, Thank you

Sent from my iPad

From:
Sent:
To:
Cc:

## Subject:

Attachments:

Chris Lindholm [chris@progressiverep.com](mailto:chris@progressiverep.com)
Thursday, November 9, 2023 3:29 PM
Michael Ramirez; Khosrow Omidvar; Sean P. Kelleher
Perrie Ilercil; Zenaida Leung; JZ. Joseph Zhang; Theodore Tran; Angel Cesar; Wei Sun, T.E., PTOE; Melissa Walker, P.E.; Clement Jimenez, P.E.; Lillyanna Diaz; FAHED NICK Fahed; Rabih RABIH SATER; SATER BROS Mark; Martin Gonzalez
BEYOND Iris Ave and Oliver - Mixed Use
Beyond Site Plan.pdf; Cresta Bella Site Plan.pdf

## Warning: External Email - Watch for Email Red Flags!

All,
We received the public hearing notice for this evening's Planning Commission meeting. We were surprised to see that a shared access driveway was not incorporated into the submitted plans as all the correspondence from March and April suggested that there would be a shared access. We proceeded with the development of our plans assuming a shared access drive and recently submitted under PAP23-0705. Please note our attached submitted site plan still shows the shared access.

Upon reviewing the submitted plans we reached out to the City and scheduled an emergency meeting with the Transportation department which ended about an hour ago. Based on that meeting we believe that a shared access driveway per the attached would work for both projects and would be approved. Please pardon the fact that this is a hand sketch, we wanted to communicate as quickly as possible.

We plan on attending the Planning Commission hearing this evening and requesting that the Planning Commission delay their vote on approval until we can hopefully get a condition of approval for shared access incorporated. We are not apposing the Beyond project and we want to make it clear that we're not trying to delay that project any more than necessary which is why we met with the Transportation department earlier this afternoon to confirm that a viable path forward could be achieved.

We understand Beyond is likely concerned regarding our respective construction schedules. As such we are willing to allow early construction of this drive aisle prior to our plans being approved. Also, we understand this benefits both projects so we would be willing to share the cost of construction 50/50. The extension of the drive aisle to the rest of our project would of course not be included in the calculated cost. Any shared cost would just be the necessary construction to give Beyond access so.

We are open to communicating prior to the hearing but obviously timing is tight so we're open to speaking later this evening or tomorrow as well.

Thank you,

|  | Report to City Council |
| :---: | :---: |
| TO: | Mayor and City Council |
| FROM: | Jane Halstead, CMC, City Clerk |
| AGENDA DATE: | December 19, 2023 |
| TITLE: | CITY COUNCIL REORGANIZATION - SELECTION OF MAYOR PRO TEM (CONTINUED FROM DECEMBER 5, 2023) |

## RECOMMENDED ACTION

## Recommendation:

1. Conduct the reorganization of the City Council by selecting one Council Member to serve a one-year term as Mayor Pro Tem.

## SUMMARY

The City Council shall meet annually in December to choose one of its members as Mayor Pro Tem. The new Mayor Pro Tem shall be installed, sworn, and shall assume the office at the Council meeting.

## DISCUSSION

Section 4.1.3 of the Rules of Procedure provides that nominations for the office Mayor Pro Tem may be made by any member of the City Council and need not be seconded in order to be effective. Appointment shall be made by three or more affirmative votes on a motion to appoint. In the event that no person receives three or more votes in the selection process, the selection process shall be repeated immediately; provided, however, that the two persons receiving the highest number of votes in the preceding selection process shall be the only nominees. If, upon repeating the selection process of Mayor Pro Tem, no person has yet received three affirmative votes for such office, the City Council may either repeat the selection process until the officer has been duly selected or may continue the selection to the next regular meeting of the City Council.

The new Mayor Pro Tem, shall serve until the next meeting scheduled for selection of the Mayor Pro Tem in December 2024.

## ALTERNATIVES

1. Conduct the reorganization of the City Council by selecting a Mayor Pro Tem.
2. Continue the selection to the next regular meeting of the City Council if upon repeating the selection process, no person receives three affirmative votes for Mayor Pro Tem.

FISCAL IMPACT
There is no fiscal impact associated with the recommended action.

## NOTIFICATION

Publication of the agenda.

## PREPARATION OF STAFF REPORT

Prepared By:
Jane Halstead
Manager of the Office of Mayor and City Council/City Clerk

## CITY COUNCIL GOALS

Positive Environment. Create a positive environment for the development of Moreno Valley's future.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" $\quad$ on the left hand side of this document for the necessary attachment.

None

## APPROVALS

Budget Officer Approval $\qquad$ $\checkmark$ Approved 11/27/23 4:13 PM

| City Attorney Approval | $\checkmark$ Approved |  |
| :---: | :---: | :---: |
| City Manager Approval | $\checkmark$ Approved | 11/27/23 4:23 PM |
| HISTORY: |  |  |
| 12/05/23 <br> Next: 12/19/23 | CON |  |

Mayor Cabrera made a motion to continue this item to the December 19th, 2023.
Motion made by Mayor Cabrera and seconded by Council Member Marquez to continue the selection of Mayor Pro Tem to the December 19, 2023 City Council Meeting.

Motion passed by a vote of 3-0, with Council Member Baca-Santa Cruz, Council Member Marquez, and Mayor Cabrera voting yes, with Mayor Pro Tem Delgado and Council Member Barnard absent.


Report to City Council
TO: Mayor and City Council
FROM: Brian Mohan, Assistant City Manager
AGENDA DATE:
December 19, 2023
TITLE:
PROVIDE DIRECTION REGARDING THE COUNCIL MOTION TO CANCEL THE JANUARY 02, 2024 REGULAR MEETING

## RECOMMENDED ACTION

## Recommendations:

1. Direct City Clerk to cancel the January 2, 2024 Regular Meeting; or
2. Provide alternate direction to the City Clerk.

## SUMMARY

This report discusses the motion from Council, at the December 5, 2023 Council meeting, to cancel the January 2, 2024 Regular Meeting.

## DISCUSSION

Authorize the City Clerk to publish the notice of cancelation for the January 2, 2024 Regular Meeting.

## ALTERNATIVES

1. Approve and authorize the recommended action item 1 as presented in this report.

Or
2. Provide alternate direction as stated in the recommended action item 2 presented in this report.

## FISCAL IMPACT

There is no fiscal impact with this action.

## NOTIFICATION

Publication of Agenda.

## PREPARATION OF STAFF REPORT

## Prepared By:

Name: Brian Mohan
Title: Assistant City Manager (Administration)

## CITY COUNCIL GOALS

None

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" side of this document for the necessary attachment.

None

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved |  | $12 / 10 / 23$ 6:01 PM |
| :--- | :--- | :--- | :--- |
|  |  |  |  |
| City Attorney Approval | Approved | $12 / 11 / 23$ 11:16 AM |  |

Report to City Council

FROM:
AGENDA DATE:
TITLE:

Mayor and City Council
Mayor and City Council Acting in its Capacity as President and Members of the Board of Directors of the Moreno Valley Community Services District (CSD)
December 19, 2023
RECEIVE, FILE AND ADOPT PARKS, COMMUNITY SERVICES \& TRAILS MASTER PLAN 2023

## RECOMMENDED ACTION

## Recommendations: That the City Council and CSD:

1. Staff recommends that the City Council receive, file and approve the Parks, Community Services, and Trails Master Plan 2023.

## SUMMARY

This report recommends that Council receive, file and adopt the Parks, Community Services, and Trails Master Plan 2023 prepared by KTU\&A as presented.

## DISCUSSION

KTU\&A has produced a comprehensive Parks, Community Services, and Trails Master Plan that will guide the city in short, mid, and long-term projects and programs for current and future Moreno Valley residents. The plan includes community and stakeholder engagement and provides a clear set of goals for both infrastructure and program improvements, maintenance, and operations.

KTU\&A completed several tasks under their agreement including but not limited to the Public Process, Outreach, Surveys, Demographic and Trend Analysis, Existing and Future Facilities Analysis of Level of Service, Prioritizing Demand and Opportunities, Analysis of Programs and Services, Progress Reporting, Action Plan, Development of Final Plans and Supporting Materials to produce a Final Master Plan.

Multiple workshops were held during the year, one in May and the other in September of 2023, to gather community input for inclusion in the final master plan. A number of focus group meetings with community groups, athletic organizations, councils, committees and commissions were also hosted to gather feedback. Of the surveys sent out to the community, 477 were completed and returned.

The proposed Parks, Community Services, and Trails Master Plan includes identified park amenities, facilities, and trail needs. It also categorizes new park opportunities and potential future park sites to help address park access gaps in the city by geographical locations. Infill Opportunity Areas have also been identified for potential parks. Other items included in the recommendations include level of service tables, implementation goals and potential funding sources.

This final version of the Parks, Community Services, and Trails Master Plan was presented to the Parks \& Community Services Subcommittee on December 5, 2023, and to the Parks Community Services and Trails Committee on December 7, 2023, both which have recommended receipt, filing and adoption of the plan from City Council.

## ALTERNATIVES

1. Receive, file, and adopt the Parks, Community Services, and Trails Master Plan 2023 completed by KTU\&A, as presented.
2. Do not accept the Parks, Community Services, and Trails Master Plan 2023 completed by KTU\&A, as presented, and provide alternative direction to staff on how to proceed.

## FISCAL IMPACT

There is no fiscal impact.

## NOTIFICATION

Posting of Agenda.

## PREPARATION OF STAFF REPORT

Patty Yhuit,
PCS Admin \& Financial Svs. Division Manager

Department Head Approval:
Jeremy Bubnick
Parks \& Community Services Director

## CITY COUNCIL GOALS

Advocacy. Develop cooperative intergovernmental relationships and be a forceful advocate of City policies, objectives, and goals to appropriate external governments, agencies and corporations.

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

Public Facilities and Capital Projects. Ensure that needed public facilities, roadway improvements, and other infrastructure improvements are constructed and maintained.

Positive Environment. Create a positive environment for the development of Moreno Valley's future.

Community Image, Neighborhood Pride and Cleanliness. Promote a sense of community pride and foster an excellent image about our City by developing and executing programs which will result in quality development, enhanced neighborhood preservation efforts, including home rehabilitation and neighborhood restoration.

## CITY COUNCIL STRATEGIC PRIORITIES

1. Economic Development
2. Public Safety
3. Library
4. Infrastructure
5. Beautification, Community Engagement, and Quality of Life
6. Youth Programs

## ATTACHMENTS

To view large attachments, please click your "bookmarks" $W$ on the left hand side of this document for the necessary attachment.

1. Moreno Valley Parks, Community Services \& Trails Master Plan Draft 2023 (3)

## APPROVALS

| Budget Officer Approval | $\checkmark$ Approved | 12/13/23 1:08 PM |
| :---: | :---: | :---: |
| City Attorney Approval | $\checkmark$ Approved |  |
| City Manager Approval | $\checkmark$ Approved | 12/13/23 1:09 PM |



## ACKNOWLEDGMENTS

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Edward Delgado, Mayor Pro Tem, District 2
David Marquez, Councilmember, District 3
Cheylynda Barnard, Councilmember, District 4
City of Moreno Valley Parks, Community Services and Trails Committee
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Omar Gonzalez, Jr., Vice Chairperson
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RRC
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## CHAPTER 01

 INTRODUCTION



### 1.1 WHAT IS A PARKS, COMMUNITY SERVICES, AND TRAILS MASTER PLAN?

The Moreno Valley Parks, Community Services, and Trails Master Plan (Plan) is designed to guide the future of parks, community services, and trails in Moreno Valley. This Plan was developed over a year-long planning process consisting of surveys, community workshops, stakeholder meetings, park visits, and an analysis of the usage of parks, community services, and trails in Moreno Valley. An in-depth assessment of the current state of parks, open space, and community services was conducted to determine opportunities for improvement, expansion, and new development. Extensive community feedback was used alongside the analysis to ensure the Plan prioritizes commu-nity-identified issues, solutions, and priorities for Moreno Valley. To adequately serve Moreno Valley's growing population, this Plan provides recommendations to meet the City's park, community services, and trail needs over the next 10 to 20 years.

Parks, community services, and trails play a critical role in maintaining a healthy, high quality of life in Moreno Valley. Not only do parks, recreation facilities, and programming promote physical health, they also serve a special role in bringing people together to build positive memories, experiences, and relationships. This Plan recognizes the importance of an accessible, well-maintained, and diverse parks and recreation system.

The Plan is intended to help the City achieve the short, mid, and longterm visions and projects identified in the recommendations chapter. Although the Plan does not include conceptual design plans for parks and recreation facilities, there is enough information to help City staff, elected officials, and other stakeholders make informed decisions.

### 1.2 PARKS AND COMMUNITY SERVICES DEPARTMENT

The City's Parks and Community Services Department (Department) is responsible for the operation and maintenance of over 400 acres of parks, over 20 miles of trails, and five public recreation facilities. The Department is also responsible for hosting annual special events, sports programs, and a variety of other recreation programs for youth, adults, and seniors. Other activities and programs the Department assists with include:
" Beautify MoVal Parks and Trails Program
" Healthy MoVal
" Public art programs
") Annual hikes
" Community demonstration garden

## Plan Components

The Parks, Community Services, \& Trails Master Plan includes the following components:



Packet Pg. 2762

### 1.3 PREVIOUS PLANNING HISTORY

There are several City-adopted planning documents and programs that govern the present and future of Moreno Valley's parks, community services, and trails. An extensive review of relevant plans was conducted to ensure this Plan is both consistent with and helps to advance policies and programs. An overview of the most pertinent plans and programs is provided below for reference.


### 1.3.1 CITY OF MORENO VALLEY GENERAL PLAN (2021)

The City of Moreno Valley General Plan (2021) is a comprehensive, long-term planning document that assesses the City's current conditions and plans for how Moreno Valley will grow in the future. The General Plan provides a path for Moreno Valley to achieve its aspirations for growth while maintaining its reputation as a family-friendly community for generations to come. The General Plan is guided by four overarching themes: Dynamic Economy, Vibrant Gathering Places, Community Identity, and Livable Neighborhoods. Under these themes are a number of guiding principles, many of which are relevant to parks, community services, and trails, including, but not limited to:

## Dynamic Economy

" Promote tourism and attract visitors, leveraging natural assets like Lake Perris.

## Vibrant Gathering Places

" Create inviting gateways into Moreno Valley from freeways and major roadways.
" Provide sports, recreation, and cultural facilities that provide a range of options for youth, families, and seniors and attract visitors to Moreno Valley.

## Community Identity

") Design and program public spaces that reflect Moreno Valley's cultural diversity.
" Make Moreno Valley a destination city with a modern, innovative brand and become a model community where people choose to live, work, and play.
"P Provide activities for youth and families to build community bonds.

## Livable Neighborhoods

" Create opportunities for neighborhood interaction.
") Prioritize safety on roads, near schools, in public places, and in neighborhoods.
» Promote active lifestyles with trail connections, parcourse courses, and other recreational amenities.

[^27]
## City of Moreno Valley General Plan: Parks \& Public Services Element (2021)

Within the General Plan is the Parks \& Public Services Element, which includes specific goals, policies, and actions for parks and recreation. This Element establishes a park service standard of three acres of parkland per 1,000 residents. The Element also guides the expansion of its multi-use trail system and envisions a 56mile network expansion. The four goals of the Element are to:

1. Provide and maintain a comprehensive system of quality parks, multi-use trails, and recreational facilities to meet the needs of Moreno Valley's current and future population.
2. Locate, design, and program public facilities as contributors to neighborhood quality of life.
3. Provide for responsive police and fire services that ensure a safe and secure environment for people and property.
4. Provide utilities and infrastructure to deliver safe, reliable services for current and future residents and businesses.

These goals, along with their supporting policies and actions, were considered throughout the planning process and integrated into the Plan's recommendations, where applicable.

## City of Moreno Valley General Plan: Environmental Justice Element (2021)

The General Plan also includes an Environmental Justice Element, which sets goals to prioritize a healthy and safe environment by reducing exposure to pollution; providing safe and sanitary housing; expanding access to healthy foods; and encouraging active engagement in civic life. There are many ways for the Environmental Justice Element goals to be advanced through parks and recreation, including but not limited to the provision of safe outdoor gathering spaces, recreational programming, and opportunities to grow healthy food at community gardens.

### 1.3.2 CITY OF MORENO VALLEY CLIMATE ACTION PLAN (2021)

The City of Moreno Valley Climate Action Plan guides the City's commitment to the reduction of greenhouse gas (GHG) emissions, as well as its compliance with the State's GHG emission reduction standards. The plan establishes a community-wide strategy for reducing Moreno Valley's GHG emissions and will be used as a tool for policymakers, businesses, and community members for years to come. This document also advances the City's General Plan (2021) goal to "prioritize clean air, water, fresh food, and community health."

### 1.3.3 MOMENTUM MOVAL (2016)

Momentum MoVal is a Strategic Plan adopted in 2016 as an effort to bring forward a comprehensive vision to help Moreno Valley thrive as it experiences population and economic growth. This plan initiated a vision for the transformation of a young city into a mature community by creating goals for economic development, public safety, library, infrastructure, beautification, community engagement, quality of life, and youth programming.

### 1.3.4 KEEP MOVAL BEAUTIFUL

Keep MoVal Beautiful is a volunteer and donation program dedicated to the beautification of MoVal's parks, trails, and streets. The program organizes community volunteer events, such as tree plantings, trash cleanups, fence painting, and more.




## CHAPTER 02 ANALYSIS

### 2.1 MORENO VALLEY AT A GLANCE

A demographic profile for Moreno Valley was completed using the most current data available from the U.S. Census Bureau. According to the U.S. Census Bureau, Moreno Valley has a population of 208,371 residents and 55,532 housing units. The racial and ethnic makeup is 28.7 percent white, 17.9 percent African American, 5.3 percent Asian, and 9.5 percent of people identify as two or more races. About 60.4 percent of the population identifies as Hispanic or Latino.

Key demographic comparisons with other state and national statistics include:
" The estimated median age in Moreno Valley is 32.3 , which is slightly lower than the median age of California (37.6) and the United States (38.8).
" The estimated median household income is $\$ 79,840$, which is lower than California $(\$ 84,907)$ and higher than the United States ( $\$ 62,843$ ).
" The population of Moreno Valley is almost evenly split between the sexes with 49.7 percent of the population identifying as male and 50.2 percent as female. The populations of California and the United States are also roughly evenly divided between the sexes.

### 2.1.1 POPULATION GROWTH TRENDS

The Southern California Association of Governments (SCAG) projects that the population will increase by 29.7 percent from 2016 to a total of 266,800 residents by the year 2045. The number of households is projected to increase by 44.6 percent from 2016 to 76,200 in 2045 and the total employment in Moreno Valley will increase by 82.8 percent to a total of 64,900 by the year 2045. The projected population estimates are displayed in Figure 2-1. Several factors that contribute to the projected population increase include new commercial/industrial development along State Route 60 and new housing projects in undeveloped areas of the Moreno Valley.

FIGURE 2-1: Population Growth Trends


### 2.2 PARK CLASSIFICATION

The Plan classifies the City's parks into five categories: Mini Parks, Neighborhood Parks, Community Parks, Linear Parks, and Special Use Parks, as shown in Table 2-1. Each park type provides standard and unique recreation opportunities.

### 2.2.1 MINI PARKS

Mini parks are generally smaller parks that provide both passive and limited active recreation. Although they focus on passive recreation, they play an important role in providing outdoor access to greenspace. These parks are typically less than two acres and serve residents within a halfmile walking distance. Small picnic areas, outdoor exercise areas, and playgrounds are typical park amenities. Other park features may include open grassy areas, benches, landscaped gardens, and small shade structures. Mini parks typically do not include active recreation amenities such as court sports and fields.

### 2.2.2 NEIGHBORHOOD PARKS

Neighborhood parks are generally smaller parks that provide both passive and some active recreation. Although they tend to focus more on passive recreation, they sometimes include a few active recreation amenities such as sports courts. Neighborhood parks play an important role in providing outdoor park access for neighborhoods. These parks are typically less than eight acres and serve residents within a half-mile walking distance. Playgrounds, picnic areas, restrooms, walking paths, and sports courts are typical park amenities.

TABLE 2-1: Park Type by Typical Size and Current Acreage

| PARK TYPE | SIZE | ACRES |
| :--- | :--- | ---: |
| Mini Park | $<2$ acres | 0.5 |
| Neighborhood Park | $2-8$ acres | 102.98 |
| Community Park | > 8 acres | 208.9 |
| Linear Park (counting <br> $25 \%$ of total acreage) | Varies | 10.43 |
| Special-use Facility | Varies | 88.33 |
| Total |  | 411.16 |



Santiago Park: A Neighborhood Park


Westbluff Park: A Neighborhood Park

### 2.2.3 COMMUNITY PARKS

Community parks serve the daily recreational needs of the local neighborhood they are located in, as well as the broader community at large. They are generally between eight and thirty acres in size. They consist of larger park facilities such as sports fields, pools, and multiple-court sports, as well as playgrounds, larger group picnic areas, and walking paths. Community parks serve both residents within a half-mile walking distance and residents within a two-mile driving distance.

### 2.2.4 LINEAR PARKS

Linear parks are narrow, passive park areas that typically have limited amenities. Recreation opportunities are usually designed for walking, jogging, biking, or equestrian uses. Common amenities include benches, picnic tables, outdoor exercise areas, or interpretive signage. For the purposes of calculating level of service (LOS), 25 percent of the total linear park acreage was calculated because the uses within the park space are limited to walking, biking, or other forms of micro mobility.

### 2.2.5 SPECIAL-USE FACILITIES

Special-use facilities are park areas that provide unique recreation opportunities. They are usually limited to a single-use recreation experience such as a dog park, community center, pool, or equestrian center. Spe-cial-use facilities serve both residents within a half-mile walking distance and residents within a two-mile driving distance.


Morrison Park: A Community Park


Juan Bautista De Anza Trail, CA Linear Aqueduct Site: A Linear Park


[^28]
(1) Adrienne Mitchell Memorial Park
(2) Bay Side Park
(3) Bethune Park
(4) Celebration Park
(5) Civic Center Amphitheater and Park
(6) College Park
(7) Cottonwood Golf Center
(8) El Potrero Park
(9) Fairway Park
(10) Gateway Park
(11) Hidden Springs Park

12 Hidden Springs Passive Nature Park
(13) Hound Town Dog Park

14 John F. Kennedy Memorial Park
(15) Lasselle Sports Park
(16) March Field Park and Valley Skate Park

17 Moreno Valley Community Park
18 Moreno Valley Equestrian Park
(19) Morrison Park

20 Parque Amistad
21) Patriot Park

22 Pedrorena Park
23 Rancho Verde Park (future park)
24 Ridge Crest Park
25 Rock Ridge Park
26 Santiago Park
27 Shadow Mountain Park
28 Sunnymead Park
29) TownGate II Park

30 TownGate Memorial Park
(31) Victoriano Park

32 Vista Lomas Park

33 Westbluff Park
34 Weston Park
35 Woodland Park
36 Cold Creek Trailhead
37 Cottonwood Staging Area
38 Rancho Verde Equestrian Staging Area
39 Sunnymead Ranch Trailhead
40 March Field Park Community Center
41 Moreno Valley Conference and Recreation Center
42 Senior Community Center
29) TownGate Community Center
(41) Civic Center Demonstration Garden
(5) Veteran's Memorial
(43) CA Aqueduct Linear Park/ Juan Bautista De Anza Trail

## 43 <br> Parks \& Facilities



Playgrounds (ages 6-12)


Tennis Courts


1
Recreation Center


15
Tot Lots (ages 2-5)



Splashpad



Amphitheater



Senior Center


11
Basketball Courts


10
Soccer Fields



Picnic Areas


Volleyball Court


3
Football Fields


### 2.3 TAKING A LOOK AT MORENO VALLEY'S PARKS

### 2.3.1 A GLIMPSE INTO EACH PARK

## Adrienne Mitchell Memorial Park - 4.4 acres

Adrienne Mitchell Memorial Park is located on the west side of the city along Adrienne Avenue and Pan Am Boulevard. Its amenities include four lighted basketball half-courts, a shaded picnic area with barbecues, a horseshoe play area with two pits, a walking path, and a green grassy area surrounded by trees.

## Bay Side Park - 2 acres

Bay Side Park is located on the northwest side of the city along Bay Avenue. It is a neighborhood park with a playground area, horseshoe, one basketball half-court, a picnic area, and an open grassy area with a walking path.

## Bethune Park-6 acres

Bethune Park is a neighborhood park located at the southern corner of Moreno Valley next to Bethune Elementary School. It has a snack bar, a playground, two tennis courts, shaded picnic areas, a barbecue, and a splash pad area. The City also has a joint-use agreement with Mary McLeod Bethune Elementary School for the use of the two baseball/ softball fields next to the park.

## Celebration Park - 6.7 acres

Celebration Park is located on the east side of Moreno Valley. It is a neighborhood park that offers several amenities including shaded picnic areas, a playground area, one basketball half-court, a walking path, a splash pad, and a large grassy open space. There are several picnic tables and seating areas along the walking path.

## Civic Center Amphitheater and Park - 8 acres

The Civic Center Amphitheater and Park is located off Alessandro Boulevard and Frederick Street. The site contains several facilities, including the Demonstration Garden, 600-seat amphitheater, and the Moreno Valley Conference and Recreation Center (CRC). The Conference and Recreation Center provides access to indoor sports, meeting spaces, and restrooms. The Amphitheater hosts several City events throughout the year including Juneteenth, Fourth of July, MoVal Rocks, Movies, and more.

The Veteran's Memorial can also be found here. It is a space honoring United States Veterans. It is located in front of the Moreno Valley CRC.


Bay Side Park


Bethune Park


Celebration Park


Civic Center Amphitheater and Park

## College Park - 25 acres

College Park is located on the east side of Moreno Valley on Lasselle Street, adjacent to Moreno Valley Community College. It is a $25-$ acre community park that provides access to a playground and large, flat, grassy spaces for sports such as soccer.

## El Portero Park - $\mathbf{1 5}$ acres

El Portero Park is located south end of the city on Lasselle Street. This 15 -acre community park is divided into two areas. A bridge that passes over a flood control channel connects both sides of the park. The large, open, grassy areas provide access to four multi-purpose athletic fields, a soccer field, picnic tables, barbecues, and fitness equipment. A playground and restroom are also located on the east side of the park.

## Fairway Park - 5.5 acres

Fairway Park is located on the east side of the city along on John F. Kennedy Drive. It is a neighborhood park with a multi-purpose field commonly used for soccer tournaments and practices. Other amenities include a restroom, a playground, and volleyball court.

## Gateway Park - 7.7 acres

Gateway Park is a located on the north side of the city along Heacock Street. Amenities at this park include a large, grassy open space, a playground, restroom, several picnic tables, and a parking lot. This park also provides direct access to Sunnymead Linear Park, greatly increasing park access to the surrounding neighborhoods.

## Hidden Springs Passive Nature Park - 17 acres

Hidden Springs Passive Nature Park is located on the northwest end of the city along Greenridge Drive. Although this passive park has limited amenities, residents enjoy access to multi-use trails as well as picnic tables near the trailhead.

## Hidden Springs Park - 7 acres

Hidden Springs Park is a neighborhood park located on the northwest end of the city along Hidden Springs Drive. The park shares its southern boundary with Hidden Springs Elementary School. The park contains a playground, a shaded picnic area with a barbecue, and an open grassy area with baseball backstops.

## Moreno Valley Equestrian Park and Nature Center- 45 acres

Moreno Valley Equestrian Park and Nature Center is a 45 -acre spe-cial-use facility located in the northeast area of the city. The Equestrian Park contains a large arena, a handful of holding pens, hiking trails, and vehicular parking. The Moreno Valley Trailseekers, a 501(c)(3) non-profit organization "dedicated to supporting and promoting the rural lifestyle", conducts various programs at this park. The City's sole dog park (Hound Town Dog Park) is also located within the Equestrian Park. The dog park is 0.25 acres and has a small parking lot, seating areas, and portable restrooms.


## John F. Kennedy Memorial Park - 7.7 acres

John F. Kennedy Memorial Park is a neighborhood park located in the central-west area of the city along John F. Kennedy Drive and Indian Street. Amenities include an adult baseball/softball field with lights, open grassy areas, a playground area, an outdoor exercise area, shaded picnic tables, and four lighted tennis courts. The Riverside County Fire Station is also located within the park's boundary.

## Lasselle Sports Park - $\mathbf{1 2 . 8}$ acres

Lasselle Sports Park is a community park located on the south end of Moreno Valley. The park has three lighted multi-use fields, a large shaded picnic area, a snack bar, a walking path around the fields, and a playground area. This park is also located south of El Potrero Park.

## March Field Park and Valley Skate Park - 93.3 acres

March Field Park and Valley Skate Park is a community park that is located on the west side of Moreno Valley. This park includes a lighted and gated skatepark, a snack bar, two softball/baseball fields, a soccer arena, and picnic tables.

## Moreno Valley Community Park - 15.6 acres

Moreno Valley Community Park is a community park located on the northeast side of the city, adjacent to Moreno Valley High School. This park offers four lighted soccer fields, a playground, picnic tables, a walking path, a skatepark, and a large parking lot.

## Morrison Park - 14 acres

Morrison Park is a community park located in the central-east area of the city that mostly serves as a baseball park. It has four lighted baseball fields, restrooms, a snack bar, and picnic tables with barbecues. It is located across Dracaea Avenue from Mountain View Middle School.

## Parque Amistad - 4.2 acres

Parque Amistad is a neighborhood park located at the southeast corner of Moreno Valley. It is a passive park offering basic amenities that include a playground, a picnic area, two basketball half-courts, and a softball/baseball backstop. Amenities are surrounded by grassy tree-shaded areas.

## Patriot Park - 0.5 acres

Patriot Park is a mini park located on the south side of the city along Perris Boulevard and Filaree Avenue. Its amenities include a walking path and a playground area.


John F. Kennedy Memorial Park


Lasselle Sports Park


March Field Park and Valley Skate Park


Morrison Park

## Pedrorena Park - 5.5 acres

Pedrorena Park is a neighborhood park located in the southeast area of the city along Iris Avenue and Ranch Del Lago. It contains several active recreational amenities, such as a full-size basketball court, four tennis courts, a playground area, and an open grassy area with a baseball/softball backstop. It also has two picnic areas.

## Ridge Crest Park - 5 acres

Ridge Crest Park is located on the east side of the city along John F. Kennedy Drive. It is a neighborhood park next to Ridge Crest Elementary School. It has a playground, restrooms, picnic areas with barbecues, and an open grassy area with a baseball/softball backstop.

## Rock Ridge Park - 1.9 acres

Rock Ridge Park is a neighborhood park located on the northeast side of Moreno Valley. Its amenities include a playground, picnic areas, and a walking path connecting the south and north sides of the park. This park has access to a short hiking trail that leads people to the top of a hill, providing nice views of the surrounding neighborhood.

## Santiago Park-2.8 acres

Santiago Park is a newer neighborhood park located on the southwest side of the city. Its amenities include an outdoor exercise area, a playground area, picnic areas with barbecues, two basketball half-courts, a open grassy area, and a walking path.

## Shadow Mountain Park - $\mathbf{1 0}$ acres

Shadow Mountain Park is located on the north side of Moreno Valley. It is a community park with a large, open grassy space. Its amenities include two youth softball/baseball fields, a soccer field that is used during softball/baseball off-season, a large playground area that includes a zip line, shaded picnic areas with barbecues, a restroom, and a walking path.

## Sunnymead Park - $\mathbf{1 5 . 5}$ acres

Sunnymead Park is a large community park located in the central-north area of Moreno Valley along Perris Boulevard and Fir Avenue. The park is known for the four lighted diamond fields (one baseball field and three softball fields). The park also has a playground, picnic areas with barbecues, concession stands, restrooms, and two parking lots.


Pedrorena Park


Ridge Crest Park


Shadow Mountain Park


Sunnymead Park

## TownGate Memorial Park and TownGate II Park - 17 acres

TownGate Memorial Park and TownGate II Park are jointly located on the northwest side of the city. These two community parks contain a community center building, two separate playground areas, softball/ baseball fields, a multi-purpose field, picnic areas with barbecues, and a walking path. The Juan Bautista De Anza Trail passes through the park's boundary and can be accessed from these parks.

## Victoriano Park - 5 acres

Victoriano Park is located in the southeast side of the city next to Victoriano Elementary School. It is a passive neighborhood park with amenities that include a restroom and a multi-purpose field. Improvements to the park were under construction during the development of this Plan.

## Vista Lomas Park - 4 acres

Vista Lomas Park is located on the east side of the city along Iris Avenue. It is a neighborhood park that contains two basketball halfcourts, a playground area, a shaded picnic area, and open grassy areas with backstops.

## Westbluff Park - 5 acres

Westbluff Park is located in the north side of the city between Vista Heights Middle School and Canyon Springs High School. It is a small neighborhood park with a large playground, picnic areas with barbecues, and a walking path.

## Weston Park - 4.1 acres

Weston Park is located on the northeast side of the city along Lasselle Street. This neighborhood park contains several amenities such as a restroom, a playground area, picnic tables, a full-size basketball court, and a multi-use trail. NBA All-Star Kawhi Leonard partnered with the City and other stakeholders to help build the existing basketball court and design the mural on the court's surface.

## Woodland Park - 9.1 acres

Woodland Park is a community park located in central Moreno Valley along Cactus Avenue. It contains several amenities, including a restroom, two playground areas, a lighted softball field, four tennis courts with, pickleball courts overlaid on the tennis courts, four basketball half-courts, walking paths, and a play area with chess tables.


TownGate Memorial Park


Vista Lomas Park


Westbluff Park


### 2.3.2 MORENO VALLEY COMMUNITY FACILITIES <br> Moreno Valley Conference and Recreation Center (CRC)

The Moreno Valley Conference and Recreation Center is the city's premiere indoor facility. It is located in the central-west area of the city on the corner of Frederick Street and Alessandro Boulevard. This facility offers residents access to several spaces, such as the 8,200-square foot ballroom that has a full kitchen, stage, dressing rooms, and AV technology. The Center also has two meeting rooms, an outdoor banquet patio, a large gymnasium, aerobics studio, a Teen Center, and several activity rooms for recreation programs.

## TownGate Community Center

The TownGate Community Center is located on Arbor Park Lane within TownGate II Park. The amenities in this facility include a 2,000 -square foot ballroom that can be used for events and a covered courtyard overlooking the park. The Community Center also contains several activity rooms for classes and programs.

## Senior Community Center

The Senior Community Center is located on Fir Avenue. Its amenities include a 3,500-square foot ballroom with a full kitchen, tables, and chairs. There are two additional meeting rooms with tables and chairs that are used for senior classes and programs.

## Cottonwood Golf Center

The Cottonwood Golf Center and Banquet Room is located on Frederick Street. This facility offers a banquet room, a spacious lobby, and a separate activity room.

## Moreno Valley Libraries

The Moreno Valley Public Library has three branches that serve the city. The main library is located on Alessandro Boulevard while the other two locations can be found in the Moreno Valley Mall on Town Circle and in the Iris Plaza on Perris Boulevard. Moreno Valley residents have access to books, public computers, and free Wi-Fi at the three library branches.


[^29]
### 2.4 QUALITATIVE ANALYSIS OF EXISTING PARK AMENITIES

The park amenity inventory included an assessment of the overall condition of each major amenity. The project team counted and inspected each amenity and gave it one of four grades: Excellent, Good, Fair, or Poor. The team was not evaluating individual pieces of a park amenity. For example, the nuts and bolts of a playground slide were not inspected one by one. Instead, the team assessed the overall playground structure condition based on the team's design and construction expertise. If interested in a greater level of detail and precision, the City can perform an asset evaluation of all park facilities and amenities.
"Excellent" means that the amenity is in near-perfect condition and has many years left in its life cycle. "Good" means that the amenity is not quite brand new, it may have some minor signs of wear and tear but it is functioning as it should. "Fair" means that the amenity is functioning, but it is showing some major signs of wear and tear and will be in need of replacement or repair in the near future. "Poor" means that the amenity is not functioning for its intended use and needs to be replaced as soon as possible. The condition of each amenity at each park was averaged to determine the overall condition of the park.

Table 2-2 shows the average conditions of each amenity at each park. Lasselle Sports Park and Santiago Park were the only two parks to receive an excellent overall condition rating, while March Field Park and Valley Skate Park was the only park to receive a poor overall condition rating. Table 2-2 helps to determines which parks will require the allocation of additional resources to replace amenities in the future.

TABLE 2－2：Qualitative Analysis of Existing Park Amenities

| QUALITATIVE ANALYSIS OF EXISTING PARK AMENITIES |  |  |  |  | 上 <br> 2 <br> 0 <br> 0 <br> 0 <br> 2 <br> 2 <br> 2 <br> 1 |  |  | ㅁ $\frac{2}{1}$ $\frac{1}{5}$ $\frac{1}{4}$ a |  |  |  | ૪ヨyv ヨsioxヨXe ぬoocıno |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Adrienne Mitchell Memorial Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| Bay Side Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Bethune Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| Celebration Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| College Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| El Portrero Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Fairway Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Gateway Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| Hidden Springs Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Hound Town Dog Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| John F．Kennedy Memorial Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Lasselle Sports Park |  |  |  |  |  |  |  |  |  |  |  |  | Excellent |
| March Field Park \＆Valley Skate Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Moreno Valley Community Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Moreno Valley Equestrian Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Morrison Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| Parque Amistad |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Patriot Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Pedrorena Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| Ridge Crest Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Rock Ridge Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| Santiago Park |  |  |  |  |  |  |  |  |  |  |  |  | Excellent |
| Shadow Mountain Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| Sunnymead Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| TownGate Memorial Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Victoriano Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |
| Vista Lomas Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Westbluff Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Weston Park |  |  |  |  |  |  |  |  |  |  |  |  | Fair |
| Woodland Park |  |  |  |  |  |  |  |  |  |  |  |  | Good |

### 2.5 ADJACENT PARKS AND FACILITIES

Figure 2-3 displays the two parks and recreation facilities located adjacent to Moreno Valley.

## Lake Perris State Recreation Area

The Lake Perris State Recreation Area is operated by California State Parks and is located on the southeast side of the city. The reservoir lake provides many opportunities for recreation use, such as fishing, boating, swimming, and water sports. The areas surrounding the lake provide opportunities for camping, hiking, bicycling, wildlife viewing, and hunting. The recreation area also hosts events, like music festivals, throughout the year. There is an entry fee for visitors that varies by activity type.

## Box Springs Mountain Reserve Park

Box Springs Mountain Reserve Park is a 3,400-acre park operated by Riverside County Parks. It overlooks the cities of Riverside and Moreno Valley. This mountain reserve is located on the northwest border of the city. This reserve has several miles of multi-use trails and pathways that vary in difficulty. Locals enjoy these trails for hiking and wildlife viewing. The mountain range peak elevation is approximately 3,000 feet. There are also picnic tables and restrooms located at the two parking areas.


Lake Perris State Recreation Area


Perris Reservoir


Box Springs Mountain Reserve


Box Springs Mountain Reserve Park
Lake Perris State Recreation Area
City Parks
Schools
City Boundary
Sphere of Influence

### 2.6 EXISTING TRAILS

Figure 2-4 displays existing and previously proposed trails in Moreno Valley, including the following three popular trails:

## Juan Bautista de Anza Trail

The Juan Bautista de Anza Trail is a $1,210-$ mile historic route that runs from the U.S.-Mexico border to San Francisco and includes a segment through Moreno Valley. An eight-mile segment of the trail runs diagonally through the city from TownGate Park to Lake Perris. The trail is mostly a multiuse path except for a small segment of Class II bike lanes along Alessandro Boulevard and Heacock Street. In 2022, the City commemorated the addition of a new two-mile trail segment that stretches from El Potrero Park to Lake Perris.

## Sunnymead Trail

Sunnymead Trail is a multi-use trail located on Sunnymead Ranch Parkway and Via Del Norte on the north side of Moreno Valley. The trail traverses across streets before it follows a path behind residential homes, which creates a more enclosed and shaded trail until it reaches a mountain.

## Cold Creek Trail

Cold Creek Trail is a multi-use trail located east of Moreno Valley. It is a 2.5 -mile out-andback trail that leads to a small mountaintop and typically takes about an hour to complete.


Juan Bautista Trail


Sunnymead Trail


Multi-use Trail


### 2.7 LEVEL OF SERVICE ANALYSIS

Level of Service (LOS) within the context of park planning is a measurement to evaluate how parks, open spaces, and facilities serve the Moreno Valley community. For this Plan, three different types of park LOS analysis were used to determine park LOS.

1. Population-based LOS analysis
2. Amenity LOS analysis

## 3. Geographic distribution LOS analysis

These three LOS analysis methods allow the project team to determine how well the existing park system is serving the community from an analytical perspective.

Population-based service analysis uses the most recent population data and existing park acres to determine LOS. The amenity LOS analysis uses existing park amenity numbers and existing population data and compares them to national averages set by the National Recreation and Park Association (NRPA) to determine amenity surpluses and deficits. The geographic distribution level of service analysis determines the actual geographic coverage that each park serves based on the road network by creating park "travelsheds".

### 2.7.1 POPULATION-BASED LEVEL OF SERVICE ANALYSIS

The City's General Plan (2021) established a goal to have three park acres per every 1,000 residents. Table 2-3 shows that the City is very close to reaching this goal and needs to add additional park acres to achieve it. The City's existing park system has 411.16 acres of parkland ( 1.97 park acres per 1,000 people) and will require an additional 213.96 acres of parkland to provide three acres of parkland for every 1,000 residents.

TABLE 2-3: Population-based Level of Service

| 2021 LOS | ALL CITY PARKS |
| :--- | :---: |
| Existing Park Acreage | 411.16 |
| Recommended Adopted Standard <br> per 1,000 Population | 3.00 |
| Acres per 1,000 Population (2021) | 1.97 |
| Total Surplus/Deficit Acres per <br> 1,000 Population (2021) | -1.03 |
| Acres in Deficit | 213.96 |

### 2.7.2 AMENITY LEVEL OF SERVICE ANALYSIS

A thorough analysis of each park was completed as a part of the existing conditions analysis of this Plan. This included field surveys to inventory park and recreation amenities at each park and recreation facility in Moreno Valley. Through this process, a detailed catalog of park amenities was produced. Total amenity inventory counts for Moreno Valley were compared to national averages of city-wide park and recreation system amenities derived from the NRPA guideline service level and recommended benchmarks averages from 2008 to 2022. The calculations are based on the latest population estimates for Moreno Valley $(208,371)$ according to the 2021 Census American Community Survey (ACS) 5-Year estimates. The results of this analysis are shown in Table 2-4.

According to the NRPA national benchmark averages, the City is currently meeting the needs of several amenities including multi-use courts (tennis/pickleball), equestrian staging areas, and golf centers. However, the City is currently not meeting the needs for many amenities highlighted in Table 2-4, some of the largest amenities deficits include court sports like basketball, volleyball, tennis, and pickleball, as well as recreation centers, group picnic areas, rectangular soccer fields, multi-purpose fields, splashpads/spraygrounds, community gardens, and walking loops. The full list of amenities with inventory deficits is shown on Table 2-4.

While the amenity LOS serves as a valuable indicator for identifying general surpluses and deficits, it should not be the only indicator for identifying shortcomings of amenities in the existing parks and recreation system. It is important to cater to the unique needs of the Moreno Valley community as well as national and regional trends in parks and recreation specific to southern California. Trends like handball, birdwatching, hiking, and adventure sports like rock climbing, bouldering, obstacle courses, and adventure playgrounds are all currently trending and growing in popularity. These activities are not adequately reflected in the NRPA national survey data. Therefore, it is important to have an additional lens that captures the needs and priorities of the ever-evolving community. This approach, coupled with the population-based LOS, can provide a comprehensive understanding of the future park needs. Detailed analysis regarding these needs will be discussed in the following sections and chapters of this Plan.

## LARGEST SHORTCOMINGS OF



WALKING LOOP


VOLLEYBALL


RECTANGULAR SOCCER FIELDS


MULTI-PURPOSE FIELDS

TABLE 2-4: NRPA Amenity Level of Service

|  | AMENITY LEVEL OF SERVICE FOR 2021 POPULATION (208,371 EST. POP. CENSUS 2021) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Recreation Center | 1 | 31,505 | 32,000 | 6.5 | -5.5 |
|  | Community Center | 2 | 55,270 | 55,300 | 3.8 | -1.8 |
|  | Senior Center | 1 | 58,200 | 58,200 | 3.6 | -2.6 |
|  | Teen Center | 1 | 108,280 | 108,000 | 1.9 | -0.9 |
|  | Nature Center | 0 | - | 98,000 | 2.1 | -2.1 |
|  | Public Library | 3 | - | 25,000 | 8.3 | -5.3 |
| OUTDOOR AMENITIES | Picnic Area (12+ People) | 35 | - | 5,000 | 41.7 | -6.7 |
|  | Playground (ages 6-12) | 28 | 3,735 | 6,900 | 30.2 | -2.2 |
|  | Playground/Tot Lot (ages 2-5) | 15 | 12,435 | 12,500 | 16.7 | -1.7 |
|  | Restroom Facility | 23 | - | 7,400 | 28.2 | -5.2 |
|  | Basketball | 11 | 7,300 | 7,300 | 28.5 | -17.5 |
|  | Volleyball | 1 | - | 10,000 | 20.8 | -19.8 |
|  | Tennis | 10 | 4,346 | 4,300 | 48.5 | -38.5 |
|  | Pickleball | 0 | - | 8,000 | 26.0 | -26.0 |
|  | Multi-use Courts (Tennis/Pickleball) | 12 | - | 25,000 | 8.3 | 3.7 |
|  | Diamond Fields* | 15 | 11,943 | 12,000 | 17.4 | -2.4 |
|  | Rectangular Soccer Fields* | 7 | 9,670 | 9,700 | 21.5 | -14.5 |
|  | Football Fields | 3 | 28,070 | 28,100 | 7.4 | -4.4 |
|  | Multi-purpose Fields* | 15 | 8,373 | 8,400 | 24.8 | -9.8 |
|  | Splashpad/Water Play Feature | 2 | - | 35,000 | 6.0 | -4.0 |
|  | Swimming Pool | 0 | 74,660 | 74,000 | 2.8 | -2.8 |
|  | Equestrian Trail | 5 | - | 26,000 | 8.0 | -3.0 |
|  | Equestrian Staging Area | 6 | - | 32,000 | 6.5 | -0.5 |
|  | Skate Park | 2 | 54,978 | 55,000 | 3.8 | -1.8 |
|  | Pump Track | 0 | - | 106,000 | 2.0 | -2.0 |
|  | Amphitheater (built in seating/terrace) | 1 | - | 42,000 | 5.0 | -4.0 |
|  | Concession Stand | 5 | - | 15,600 | 13.4 | -8.4 |
|  | Golf Center | 1 | 112,500 | 112,500 | 1.9 | -0.9 |
|  | Community Garden | 1 | 34,793 | 35,000 | 6.0 | -5.0 |
|  | Dog Park | 1 | 44,188 | 44,200 | 4.7 | -3.7 |
|  | Walking Loop | 14 | - | 5,300 | 39.3 | -25.3 |
|  | Outdoor Exercise Area/Exercise Path | 3 | - | 28,000 | 7.4 | -4.4 |

[^30]
### 2.7.3 GEOGRAPHIC DISTRIBUTION LEVEL OF SERVICE ANALYSIS

A Geographic Distribution Analysis (GDA) was performed at all of the City parks. A GDA examines the walktime and drivetime to these parks and facilities based on a Geographical Information System (GIS)-based travelshed analysis. Results from this analysis are displayed in Figure 2-5.

The park's GDA analysis takes into account the percentage of the population served by mini/ pocket parks, neighborhood, community, and special-use parks. The method used takes into account walking or driving distances that consider walking, biking, and driving routes that someone would use to get to these parks. By using the actual road network, this analysis calls attention to the need to improve the local sidewalk, bike, and road
network to improve access to parks and facilities. The GDA is important because it highlights the neighborhoods that do not fall within these park travelshed areas, which indicates that these areas currently lack easy access to parks.

## Park Travelsheds

A travelshed analysis for each park in Moreno Valley was completed to determine the geographic service area for the park system. The analysis generated polygons representing a halfmile travelshed or 15-minute walk, given a walking speed of 2.5 mph (slowed to 2 mph to take into account street crossings, some with signals). The half-mile travelshed polygons were superimposed on the city base map with residential land uses to see which regions were well covered by park access. The
 results of this analysis are displayed on Figure 2-5.
$\square$ Half-Mile Parks Travelshed
Parks
Schools
Sphere of Influence

Multi-Family Residential
Mixed Residential
Mobile Homes \& Trailer Parks
Single Family Residential

Rural Residential

## Amenity-specific Travelsheds

The following series of maps feature park travelsheds that contain specific amenities. These maps illustrate the geographic distribution of amenities across the city.

Figure 2-6 displays the half-mile travelshed of parks with playgrounds. Figure 2-6 illustrates that most parks in the city contain playgrounds and the geographic playground coverage is relatively the same as the park travelshed coverage shown in Figure 2-5. Significant playground gaps exist all throughout the city.

Figure 2-7 shows the half-mile travelshed of parks that contain sport courts. There are many residential areas within the city that do not have sport courts within a half-mile walk. There are gaps all throughout the city, with the most significant gaps north of SR 60 and in the eastern areas of the city.

Figure 2-8 shows the half-mile travelshed of parks with sport fields. Figure 2-8 illustrates that there are significant field sport gaps throughout the city, with significant gaps existing in the northern and eastern areas of the city.

Figure 2-9 shows both half-mile travelsheds and two-mile travelsheds of indoor recreation facilities in the city. Since residents are likely to drive to larger community facilities like a recreation center, two-mile travelsheds were used in this analysis in combination with half-mile travelsheds. Gaps exist in the northern, southern, and eastern areas of the city.

Figure 2-10 shows half-mile and two-mile travelsheds of the trails in the city. Gaps exist in the north-central and eastern areas of the city.






Sphere of Influence


## $\square$ <br> Sphere of Influence

### 2.8 PARK PRESSURE

Analyzing how the existing park system is serving the current population is important because it can help determine priority areas within the existing travelshed for new parks or park renovations in the future. It is assumed that these areas of high deficit will continue to worsen in the future as additional development and population growth occurs and no new parks are added to the park system.

Park pressure is a modeled analysis of park size and accessibility to demonstrate how park usage or "pressure" varies in different parts of the city. Park pressure is based on the residential population density within the half-mile travelsheds of each park. This process assumes that residents use the park that is closest to their home.

Each park centered in a travelshed offers a unique amount of acres per the number of residents in the covered travelshed. The estimated number of potential park users within each travelshed is based on population data from the U.S. Census Bureau. The acreage of each park was used to calculate the number of park acres available per 1,000 residents within the travelshed. The City's established goal of three park acres per 1,000 residents was used as the basis of the park pressure model, shown in Figure 2-11. Areas may have a surplus of acres per 1,000 residents or a deficit based on the residential density around each park.

FIGURE 2-11: Park Pressure Model


### 2.8.1 EXISTING PARK PRESSURE

Figure 2-12 shows that many park travelsheds in the city fall within the deficit category because they have a large number of residents with fewer park acres available to them. These are shown as the red, orange, and yellow colors. Areas around Bay Side Park, Weston Park, Patriot Park, and Parque Amistad have greater park pressure due to the higher density of residents living nearby. These parks are more likely to experience
heavier demand and use due to the lack of park acres relative to the number of residents living nearby.

The dark to light green areas represent where pressure on the parks is lighter because the parks have a greater acre-to-resident ratio. In other words, bigger parks with fewer residents in close proximity experience less park pressure. Areas around the Juan Bautista Trail, Equestrian and Dog Park, Westbluff Park, Celebration Park, and Fairway Park have less park pressure.


### 2.9 PARK EQUITY

Despite the widespread and well-documented benefits of parks and open spaces to health and well-being, in many cities across the United States, these benefits are not distributed equitably. Studies show that racial and socio-economic factors play a role in the provision, distribution, and quality of parks in many cities across the nation. In 2021, The Trust for Public Land reported that neighborhoods where residents predominantly identify as people of color have access to an average of 44 percent less park acreage than predominantly white neighborhoods, and low-income neighborhoods average 42 percent less park acreage per person than high-income neighborhoods. The Trust for Public Land also revealed that parks in communities of color are, on average, five times more likely to be crowded and half the size of parks that serve white populations. Similarly, parks that primarily serve low-income households are, on average, four times smaller than parks that serve a majority of high-income households. Studies have also shown that in addition to having access to less park acreage, low-income communities and communities of color tend to have access to poorer-quality park spaces with less recreational programming. ${ }^{1}$

Recognizing systemic inequities in park access and quality is integral to creating an equitable park and recreation system for Moreno Valley. The City's General Plan (2021) established goals for addressing community-wide injustices and determined that the City should target investments in public infrastruc-
ture, including recreational facilities and programming to benefit disadvantaged communities in Moreno Valley. Disadvantaged Communities refer to State-identified communities that experience combined high levels of economic, health, and environmental burdens. As displayed in Figure 2-13, Disadvantaged Communities in Moreno Valley are generally concentrated in the more densely populated areas in the western areas of the city, close to the freeways and major transportation corridors.

## Disadvantaged Communities with Limited Park Access

Figure 2-14 highlights areas where residential areas with limited park access overlap with disadvantaged communities. The yellow areas in Figure 2-14 show residential neighborhoods that are not within a half-mile (or walking distance) of a park to demonstrate areas with limited park access. The areas outlined in red show residential neighborhoods with limited park access that are also designated as disadvantaged communities. Figure 2-14 shows that the majority of disadvantaged communities also experience limited park access, indicating that park deficiencies disproportionately affect underserved neighborhoods. To address systemic injustices, invest in Moreno Valley's disadvantaged communities, and advance City-adopted policies in the General Plan, the areas featured in Figure 2-13 and Figure 2-14 should be prioritized for any park improvement, enhancement, or development projects.

[^31]


### 2.10 RECREATION PROGRAMS

### 2.10.1 CURRENT PROGRAMS AND SERVICES OFFERINGS

## Recreation Facilities

The City provides recreational programming through its Parks and Community Services Department in the various recreational facilities and parks it owns. Funding to support programming is primarily from special taxes paid by property owners through the Community Services District, which is one of several established special financing districts in Moreno Valley. The City is one of the largest municipalities in the area and provides a robust recreation program with multiple programming options for residents.

As described earlier in the Chapter, the City has many parks and facilities. Most recreational programming is hosted at one of the four community facilities: Cottonwood Golf Center, Moreno Valley Senior Center, Moreno Valley Conference and Recreation Center, and TownGate Community Center.

Moreno Valley CRC is the primary meeting facility in the City and provides over 42,000 square feet of flexible event and reception space for the community to use. Most non-outdoorsports and non-senior program-
ming is held in the CRC. The CRC is located at the Civic Center in the "downtown" or central government services area of Moreno Valley. The Cottonwood Golf Center, the TownGate Community Center, and the Senior Center are additional recreational facilities used to provide specialized programming for specific demographics or areas. However, due to the large size of Moreno Valley and the limited number of recreational facilities, it is challenging for the City to offer programming close to where many residents live.

## Recreation Programs \& Special Events

The City currently offers various services and programs for youth, adults, families, and seniors, as well as several annual special events. Recreation programs offered by Moreno Valley include:

## Youth

" After-School Activities (Educational Workshops, Homework Assistance, etc.)
" Time for Tots (Skill Building, Dual Language Learning)
" Online Classes (Art, Coding, Game Design, Guitar, Keyboard)
") Esports
" Dance Classes (Ballet, Folkloric, Hip Hop, Cheerleading, Hula)
" Basketball (Clinics, Open Play, Leagues)
" Day Camp
") Fitness (Adaptive Zumba)
" Martial Arts (Tae Kwon Do, Aikido, Vovinam, etc.)
" Pickleball
» Tennis
" Soccer (Coming in 2024)
" Snow Day Youth Sledding
" Teen Tutoring
" Volleyball

## Adult \& Family

" Basketball (Open Play, League Play)
" Culinary Arts (Cooking with the Trendy)
" Dance Classes (Folkloric, Salsa, Line)
" Fitness (Zumba, Pilates)
" Garden Workshops
") Martial Arts (Karate)
" Pickleball
» Skills and Education (Social Club for Development)
" Volleyball

## Seniors

" Arts \& Crafts (Creative Writing, Crochet, Scrapping, Quilting)
" Clubs (Art, Weight Loss Support)
" Dance (Ballet, Dancercise, Line Dancing)
") Fitness (Aerobics, Tai Chi, Yoga, Zumba)
» Game (Bingo, Billiards, etc.)
" Music (Guitar)
" Skills Improvement (CPR, Driving, Notary Services)
" Social Services (Counseling, Housing Assistance, Meals, Transportation)
" Special Events (International Day, Birthday Celebrations, Veterans Day, etc.)

## Special Events

" Adult Flashlight Egg Scramble
") Day of the Dead
") Earth Day and Tree Giveaway
» El Grito Festival
" Fun Color Run
" Holiday Tree Lighting
» Independence Day
» Juneteenth
» MoVal Movies
" MoVal Rocks!
» Multicultural Festival
" Public Safety Expo
" Snow Day
") Springtastic
" Veterans Day Ceremony and Art Contest


## Recreation Program Popularity

Tracking the most popular recreation programs currently offered by the City provides critical insights into program successes and areas for improvement. Table 2-5 displays the top 15 recreation programs based on registration totals for 2022. In 2022, the most popular programs were: Winter Youth and Teen Basketball Leagues, Shito-Ryu Youth Karate, and Time for Tots.

## Recreation Program Capacity

Program registrations were also analyzed to determine which programs met or exceeded registration capacity. This analysis evaluates program success based on the desired number of attendees compared to the actual number registered. In recreation, the ideal number of program participants varies by program type, such as a summer camp with hundreds of participants, or an art class with 10 to 20 participants. As such, a percentage fill rate is a more insightful method to evaluate program success because it is based on more than total registration numbers alone.

Table 2-6 lists the programs that, on average, had a registration percentage that exceeded the expected capacity in 2022. Programs over 100 percent capacity are highly anticipated and enjoyed by the community. Top programs include dance programs, youth and teen basketball, day camps, cheerleading programs, and art programs. To meet community demand, the City should continue offering and consider adding more sessions of programs that continually meet or exceed capacity.

TABLE 2-5: Top Fifteen Programs by Registration Totals in 2022

| PROGRAM | REGISTRATIONS |
| :--- | :---: |
| Winter Youth and Teen Basketball | 401 |
| Shito-Ryu Karate - Youth | 341 |
| Time 4 Tots - CRC AM | 282 |
| Dance Exploration | 255 |
| Folkloric Dance - Youth | 245 |
| Summer Youth and Teen Basketball | 205 |
| Ballet/Acro | 191 |
| Valley Day Camp (5-6 years) | 173 |
| Vovinam Martial Arts | 171 |
| Sunshine Social | 169 |
| Beginning Ballet for Kids | 167 |
| Time 4 Tots - Towngate | 164 |
| Valley Day Camp (11-14) | 157 |
| Valley Day Camp (7-8 year) | 153 |
| Valley Day Camp (9-10) | 153 |

TABLE 2-6: Recreation Programs Over 100\% of Capacity in 2022

| PROGRAM | PERCENTAGE OF <br> REGISTRATION <br> SPOTS FILLED |
| :--- | :---: |
| Dance Exploration | $135 \%$ |
| Summer Youth and Teen Basketball - May | $123 \%$ |
| Valley Day Camp (ages 11-14) | $115 \%$ |
| CYSC All Stars Cheer | $110 \%$ |
| Valley Day Camp (ages 7-8) | $110 \%$ |
| Ballet/Acro - June | $110 \%$ |
| Winter Youth and Teen Basketball - November | $109 \%$ |
| Art Expression | $108 \%$ |
| Valley Day Camp - June (ages 9-10) | $105 \%$ |
| Beginning Ballet for Kids | $105 \%$ |
| Summer Time 4 Tots | $105 \%$ |
| Ballet/Acro | $105 \%$ |
| Summer Youth and Teen Basketball - May-June | $104 \%$ |
| CYSC All Stars Cheer | $103 \%$ |
| Shito-Ryu Karate - Youth | $103 \%$ |
| POM-POM Cheerleading | $103 \%$ |
| Soccer (Pee Wee M/W) | $103 \%$ |
| Basketball League (Junior) | $103 \%$ |
| Winter Youth and Teen Basketball - Dec-Feb | $101 \%$ |

*Note: Some programs are offered multiple times per year and have different registration totals each season. These programs are shown per program offering rather than as an aggregate of all offerings of the same program and may be listed in Tables 2-5 through 2-7 multiple times.

Table 2-7 displays programs with registrations between 75 and 100 percent of the program capacity. While the programs listed in Table 2-7 did not exceed full capacity, they are still achieving high levels of success and should continue to be provided, but do not require expansion at this time. Programs in this category included preschool programs, dance, martial arts, food rallies, day camps, and basketball clinics.

TABLE 2-7: Recreation Programs between 75\% and 100\% of Capacity in 2022

| PROGRAM | \% OF REGISTRATION SPOTS FILLED | PROGRAM | \% OF REGISTRATION SPOTS FILLED |
| :---: | :---: | :---: | :---: |
| Time 4 Tots - CRC AM - February | 100\% | Valley Day Camp - June (ages 11-14)* | 90\% |
| Dance Exploration - November | 100\% | Valley Day Camp - August (ages 11-14) | 90\% |
| Youth Shito-Ryu Karate | 100\% | Valley Day Camp - June (ages 11-14)* | 90\% |
| Youth Art Expression | 100\% | Valley Day Camp - July (ages 7-8) | 90\% |
| Springtastic Food Vendor | 100\% | Time 4 Tots - CRC AM - January | 87\% |
| Valley Day Camp - June (ages 11-14) | 100\% | Summer Youth and Teen Basketball | 87\% |
| Valley Day Camp - July (ages 7-8) | 100\% | Valley Day Camp - July (ages 7-8) | 85\% |
| Valley Day Camp - June (ages 9-10) | 100\% | Summer Time 4 Tots | 85\% |
| Youth Shito-Ryu Karate - October | 100\% | Beginning Ballet for Kids - June | 85\% |
| Junior Basketball Clinic | 100\% | Valley Day Camp - July (ages 5-6) | 83\% |
| Pee Wee Basketball Clinic | 100\% | Winter Youth and Teen | 83\% |
| Pee Wee Basketball League | 100\% | Dance Exploration - March | 82\% |
| Ballet/Acro - September | 100\% | Day of the Dead - Food | 82\% |
| 2 Person, 2 Club, Partner | 100\% | Valley Day Camp - July (ages 5-6)* | 80\% |
| Time 4 Tots - CRC AM - March | 97\% | Valley Day Camp - July (ages 7-8) | 80\% |
| Winter Youth and Teen Basketball Clinic - Nov | 97\% | Valley Day Camp - July (ages 9-10) | 80\% |
| POM-POM Cheerleading | 97\% | Valley Day Camp - August (ages 9-10) | 80\% |
| Summer Youth and Teen | 95\% | Ballet/Acro - August | 80\% |
| Valley Day Camp - July (ages 11-14) | 95\% | Summer Time 4 Tots | 80\% |
| Valley Day Camp - June (ages 7-8 year) | 95\% | Beginning Ballet for Kids - May | 80\% |
| Valley Day Camp - July (ages 9-10) | 95\% | Day of the Dead Retail | 80\% |
| Ballet/Acro - October | 95\% | Soccer (Junior M/W) | 78\% |
| Soccer (Pee Wee T/TH) | 94\% | Time 4 Tots - CRC AM | 77\% |
| CYSC All Stars Cheer | 93\% | Time 4 Tots - TownGate | 77\% |
| Youth Shito-Ryu Karate - November | 93\% | Beginning Ballet for Kids - August | 75\% |
| Youth Shito-Ryu Karate - December | 93\% | Ballet/Acro - July | 75\% |
| Valley Day Camp - July (ages 5-6)* | 93\% | Public Safety Expo Food | 75\% |
| Winter Youth and Teen Basketball Clinic (Dec-Feb) | 92\% | Summer Time 4 Tots | 75\% |
| Cooking with the Trendy | 90\% | Beginning Ballet for Kids - July | 75\% |
| CYSC All Stars Cheer | 90\% | Art Expression | 75\% |

[^32]
### 2.10.2 POPULAR RECREATION PROGRAMMING IN MORENO VALLEY

Based on an analysis of recreational programming data for Moreno Valley in 2022, the programs with the highest interest and participation from community members are:
» Youth sports (specifically basketball and cheerleading)
") Dance classes (Ballet and Exploration Classes)
" Youth camps (Day Camps and Summer Camps)
" Toddler programs
" Martial arts (Shito-Ryu Karate)
" Special events
Currently, these programs are the most successful and should continue to be provided to the community and considered for future expansion, as needed. Additionally, community feedback indicates that there is high interest in expanding sports, teen, and gardening programs in Moreno Valley.


## Sports Leagues

The City offers several youth and adult recreational sports leagues. These include basketball, t-ball, soccer, and softball for various age groups. These leagues are all included in the City's programming options for the year, and as previously shown, are typically some of the largest attended programs provided by the City. Beginning in Fall 2023, the City will also be offering youth golf classes, which will teach participants the basics of the sport.


## Teen Programs

There is an interest in expanding the City's teen programs to increase interest and participation. The City already provides many teen programs and is actively working to attract more participants. However, because most of these programs are hosted in the CRC, they are hard for many teens to access due to transportation barriers. Providing additional satellite locations for teen programming and/or offering transportation options would make programs more accessible to teens and boost participation.


## Community Demonstration Garden

The City's Community Demonstration Garden hosts programs that teach gardening skills and best practices. Community feedback indicates a growing interest in broadening the programming provided at the Community Demonstration Garden and expanding the types of gardening practiced on site to and creating additional demonstration gardens to other areas in Moreno Valley.

## 2．10．3 POPULAR RECREATION PROGRAMMING NATIONWIDE

The NRPA has published an Agency Performance Review that documents programming offered by parks and recreation agencies across the country．The results of the review included the percentage of agencies that perform specific types of programs．The examples provided show various programs that fall under each category．The data includes agencies of all sizes in various regions to illustrate that the City is providing ele－ ments of programming that are popular in agencies across the country．With the exception of aquatics and safety training，the City offers all of the program categories to Moreno Valley residents．
» Themed special events（offered by 90 percent of comparable agencies）
＂）Earth Day，Flag Day Parade
＂Social recreation events（offered by 88 percent of comparable agencies）
＂Card games，dances
＂Team sports（offered by 87 percent of comparable agencies）
＂Basketball，Soccer，and Cheerleading Camps
＂Fitness enhancement classes（offered by 82 percent of comparable agencies）
» Yoga，Zumba
» Health and wellness education（offered by 80 percent of comparable agencies）
》 Nutrition classes，mental health classes
》 Individual sports（offered by 76 percent of comparable agencies）
＂Karate，gymnastics
＂Safety training（offered by 72 percent of comparable agencies）
» CPR，pedestrian safety
＂Racquet sports（offered by 71 percent of comparable agencies）
» Tennis，pickleball
＂Aquatics（offered by 70 percent of comparable agencies）
》）Learn to swim programs，aquatic fitness


### 2.10.4 RECREATION PROGRAMMING ANALYSIS

A review and analysis of the City's recreation programming and staffing was conducted to compare the City to nationwide data collected in the NRPA Agency Performance Review.
» Nationwide Programming Assessment: The City's recreation programming was compared to nationwide recreation programming data to assess if major programming areas commonly provided across the nation are offered in Moreno Valley.
" The general programming analysis compares general programming areas, such as team sports, special events, and aquatics, based on a set of variables, designed through NRPA's research, to compare communities of similar size. These variables are park acres, number of parks, population, and region. This assessment allows an 'apples to apples' comparison between Moreno Valley and similarly sized communities.
" The specific programming analysis is very similar to the general programming analysis, but with a deeper dive into types of programming. This table compares specific types of programming, such as Science, Technology, Engineering, and Mathematics (STEM), summer camps, and specific senior programming.
» Regional Programming Comparison: In addition to a nationwide programming assessment, a regional programming comparison was conducted to compare the City's program offerings to local agencies in the same region.

## Nationwide Programming Assessment

An assessment was conducted using NRPA Agency Performance Data to compare Moreno Valley's general and specific program offerings to the offerings provided by other parks and recreation agencies. To facilitate a fair comparison, the agencies included in the assessment have a similar number of parks, park acreage, and population as Moreno Valley.

## General Programming Assessment

Table 2-8 lists the general programming types included in the NRPA Agency Performance Review and shows which programs are provided by the City alongside the percentage of comparable communities that provide the same program and is broken down by several variables. The general programming analysis shows that the City compares favorably to most entities with similar circumstances. However, the City does not currently provide aquatics or safety training programs, like some other comparable agencies. Aquatics programs are not provided due to a lack of aquatic facilities owned or utilized by the City. Aquatics programs require specialized facilities, such as a pool or aquatic center, which the City currently does not have, or strategic partnerships with an entity that does. The City can consider finding qualified instructors to provide safety training programs for the community.

## Specific Programming Assessment

Table 2-9 displays an analysis that compares specific programming provided by the City to comparable national entities. The analysis shows that the City provides the majority of specific programs geared towards youth, adults, and seniors, including summer camps, which are one of the most popular programs provided across the nation. The only specific program not provided by the City is full daycare, which is rarely provided by agencies with similar circumstances to the City.

## How to Understand

Table 2-8 \& Table 2-9
Look at the row for "Themed Special Events" as an example. Themed special events are provided by 92 percent of communities with similar park acreage, 93 percent of communities with a similar population size, 93 percent of communities with a similar number of parks, and 94 percent of communities in the same region as Moreno Valley. 90 percent is the average percentage of these four variables and provides a comprehensive look at the percentage of communities similar to Moreno Valley that provide themed special events. The check mark under Moreno Valley indicates that the City provides themed special events.

TABLE 2-8: General Programming Analysis based on NRPA Agency Performance Data

| PROGRAMMING TYPE | MORENO <br> VALLEY | AVERAGE | PARK <br> ACRES | POPULA- <br> TION | \# OF <br> PARKS | REGION |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Themed Special Events | $\checkmark$ | $93 \%$ | $92 \%$ | $93 \%$ | $93 \%$ | $94 \%$ |
| Social Recreation Events | $\checkmark$ | $92 \%$ | $90 \%$ | $94 \%$ | $92 \%$ | $92 \%$ |
| Team Sports | $\checkmark$ | $91 \%$ | $91 \%$ | $90 \%$ | $92 \%$ | $90 \%$ |
| Fitness Enhancement Classes | $\checkmark$ | $87 \%$ | $83 \%$ | $85 \%$ | $88 \%$ | $92 \%$ |
| Health and Wellness Education | $\checkmark$ | $87 \%$ | $83 \%$ | $88 \%$ | $85 \%$ | $90 \%$ |
| Individual Sports | $\checkmark$ | $81 \%$ | $80 \%$ | $82 \%$ | $84 \%$ | $78 \%$ |
| Safety Training |  | $77 \%$ | $71 \%$ | $79 \%$ | $76 \%$ | $83 \%$ |
| Racquet Sports | $\checkmark$ | $75 \%$ | $75 \%$ | $71 \%$ | $78 \%$ | $75 \%$ |
| Aquatics |  | $77 \%$ | $73 \%$ | $81 \%$ | $74 \%$ | $80 \%$ |
| Performing Arts | $\checkmark$ | $70 \%$ | $70 \%$ | $73 \%$ | $69 \%$ | $69 \%$ |
| Visual Arts | $\checkmark$ | $69 \%$ | $63 \%$ | $75 \%$ | $68 \%$ | $69 \%$ |
| Natural/Cultural History | $\checkmark$ | $66 \%$ | $59 \%$ | $79 \%$ | $67 \%$ | $60 \%$ |
| Activities | $\checkmark$ | $66 \%$ | $57 \%$ | $75 \%$ | $64 \%$ | $67 \%$ |
| Cultural Crafts | $\checkmark$ | $66 \%$ | $63 \%$ | $65 \%$ | $70 \%$ | $64 \%$ |
| Trips and Tours | $\checkmark$ | $65 \%$ | $59 \%$ | $64 \%$ | $65 \%$ | $71 \%$ |
| Martial Arts | $\checkmark$ | $54 \%$ | $52 \%$ | $53 \%$ | $60 \%$ | $52 \%$ |
| Running/Cycling Races | $\checkmark$ | $55 \%$ | $52 \%$ | $67 \%$ | $53 \%$ | $47 \%$ |
| Golf | $\checkmark$ | $13 \%$ | $15 \%$ | $17 \%$ | $12 \%$ | $8 \%$ |
| eSports/eGaming |  |  |  |  |  |  |

TABLE 2-9: Specific Programming Analysis based on NRPA Agency Performance Data

| PROGRAMMING TYPE | MORENO <br> VALLEY | AVERAGE | PARK <br> ACRES | POPULA- <br> TION | \# OF <br> PARKS | REGION |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Summer Camp | $\checkmark$ | $87 \%$ | $85 \%$ | $88 \%$ | $88 \%$ | $86 \%$ |
| Specific Senior Programs | $\checkmark$ | $82 \%$ | $80 \%$ | $86 \%$ | $83 \%$ | $78 \%$ |
| Specific Teen Programs | $\checkmark$ | $72 \%$ | $67 \%$ | $76 \%$ | $71 \%$ | $75 \%$ |
| Programs for People with <br> Disabilities | $\checkmark$ | $69 \%$ | $66 \%$ | $77 \%$ | $70 \%$ | $64 \%$ |
| STEM Programs | $\checkmark$ | $61 \%$ | $55 \%$ | $68 \%$ | $59 \%$ | $60 \%$ |
| After School Programs | $\checkmark$ | $59 \%$ | $50 \%$ | $63 \%$ | $55 \%$ | $66 \%$ |
| Preschool | $\checkmark$ | $41 \%$ | $37 \%$ | $38 \%$ | $41 \%$ | $46 \%$ |
| Before School Programs | $\checkmark$ | $20 \%$ | $21 \%$ | $17 \%$ | $21 \%$ | $21 \%$ |
| Full Daycare |  | $7 \%$ | $8 \%$ | $3 \%$ | $6 \%$ | $10 \%$ |



## Regional Programming Comparison

Table 2-10 summarizes the types of classes or programs provided by the City compared to similar local agencies. This listing is based on a review of current recreation program guides. Additional programs listed outside of each agency's recreation program guides may be offered, but are not captured in this analysis.

In comparison to similar communities nearby, the City provides a diverse offering of programming activities that compares well to the types of programs offered in neighboring jurisdictions. For example, Moreno Valley offers programming that is not provided by most neighboring jurisdictions, such as adaptive and inclusive programs for persons with disabilities and virtual programs that can be attended remotely or from home.

As mentioned previously, one area that the City could improve is the provision of aquatics programming, which would require the construction of a new specialized facility or a partnership with another entity with an aquatic facility. An aquatic facility would require a feasibility study to determine community interest and desire for an aquatics facility, and if community demand is high enough, a decision to invest in the development.

TABLE 2-10: Program Comparison with Local Recreation and Parks Organizations

| PROGRAMMING TYPE | MORENO VALLEY | RIVERSIDE | BEAUMONT | LA HABRA | $\begin{aligned} & \text { LA } \\ & \text { MIRADA } \end{aligned}$ | SOUTH EL MONTE | BREA | ```SANTA FE SPRINGS``` |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Early Childhood | $\checkmark$ | $\checkmark$ |  |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Youth | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Teen | $\checkmark$ | $\checkmark$ |  | $\checkmark$ | $\checkmark$ | $\checkmark$ |  | $\checkmark$ |
| Adult | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Senior | $\checkmark$ | $\checkmark$ | $\checkmark$ |  | $\checkmark$ |  | $\checkmark$ | $\checkmark$ |
| Fitness | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Aquatics |  | $\checkmark$ |  |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Camps | $\checkmark$ | $\checkmark$ |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Youth Sports | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Adult Sports | $\checkmark$ | $\checkmark$ | $\checkmark$ |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| Cultural Arts | $\checkmark$ | $\checkmark$ | $\checkmark$ |  | $\checkmark$ |  | $\checkmark$ | $\checkmark$ |
| Therapeutic/Inclusive | $\checkmark$ | $\checkmark$ |  |  |  |  |  | $\checkmark$ |
| Virtual | $\checkmark$ |  |  | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |

### 2.10.5 RECREATION STAFFING ANALYSIS

The City currently has 74 fulltime equivalent (FTE) staff in the Parks and Community Services Department. This includes divisions for Parks and Landscape Maintenance, Community Services (recreation), Special Events and Facilities (including sports), and Administration and Financial Services. For the purposes of programming, there are 28 FTEs with a focus on programming in the Community Services and Special Events Division.

In the analysis of programming for the City's parks and recre-
ation program, staffing levels were reviewed to determine if current program staffing meets established industry standards. The NRPA Agency Performance Review was used as the basis for the analysis. This analysis reviews parks and recreation agencies nationally and provides data sets based on qualifiers such as population and park acreage. This dataset is based on staffing percentages and total staffing in parks and recreation departments in a geographic region.

Using this data, comparable cities have between 42.78 (lowest quartile of agencies) and 144.15 (highest quartile of agencies)

FTE staff in their parks and recreation departments. Within this same dataset, there are between 14 (lowest quartile of agencies) and 47 (highest quartile of agencies) FTE staff dedicated to programming activities. Specific staffing levels are primarily dictated by the type and number of programs offered and must be continually adjusted to address programming modifications. The current programming staffing is within average staffing requirements for programming of similar parks and recreation agencies.

### 2.10.6 RECREATION FINANCIAL ANALYSIS

The City has budgeted approximately $\$ 10.5$ million for recreational activities, which translates to $\$ 50.40$ per capita. The City's primary sources of revenue for Parks and Recreation are:
" User Fees: These are fees charged by the Department for specific classes, programs, camps, and rentals offered within Moreno Valley. These generally help to fund employees, contract instructors, and basic program materials and supplies.
" Special Financing Districts: The City has several special financing districts, including Community Services Districts (CSDs) and Community Facilities Districts (CFDs). CSDs and CFDs are specialized limited funding sources that help pay for initial and ongoing costs for recreation and maintenance needs based upon a specific assessment amount. These districts are specifically assessed to residents of a specific geographic area and are only applicable to parks and recreation needs within that geographic area.
") Tax Revenue: This refers to property and sales tax revenue that is used to supplement funding that is not covered by the items aforementioned. It can be used for operations, staffing, and infrastructure as needed.
" Grants, Sponsorships, and Donations: This refers to grant funding, sponsorships, or direct donations provided to the Department to help fund specific programs or activities. These are not consistent annual streams, but typically more program or activity-generated revenue streams.

Together these revenue streams help fund the Department. The Department charges fees for a variety of services - youth sports, adult sports, golf, senior activities, and facility rentals. Figure 2-15 shows the types of revenue streams by major service areas that can help fund various services and programs.

As shown in Figure 2-15, more specific functional areas, such as contracted classes or facility rentals, can generally be user fee funded, whereas more community service-based programs, such as sports activities or youth camps, are funded by a mix of sources. While other services, such as cultural events or senior services, are primarily funded by tax revenues.

As the City continues to offer different programs, programming revenues should be evaluated on a program-by-program basis. Table 2-11 displays total revenues, expenditures, differences between revenues and expenditures, and the cost recovery percentages for each major spending category.

Overall, the City is only recovering approximately 18 percent of its costs or, in other words, under-recovering its costs by approximately $\$ 8.7$ million. Cost recovery and deficit vary by program area. For example, some areas have a higher cost recovery, such as Golf at 41 percent and Sports Programs at 78 percent, while other areas have low-cost recovery such as Community Events at 2 percent and Community Services at 3 percent. Maintenance activities typically are very low-cost recovery because revenues are not related to services provided.

FIGURE 2-15: Revenue Streams by Major Service Area


Primarily Funded by Tax Revenues

- Park/Facility

Maintenance

- Senior Services
- Cultural Events

Funded by a Mix of
User Fees, Taxes, and Other Sources

- Field Rentals
- Sports
- Youth Camps

The City has a detailed fee schedule and structure based on resident and non-resident rates, as well as extensive rental rates. While the City updated its fees in 2023, it should regularly review the fee structure to ensure that fees reflect the current program and rental facility popularity.

In addition to annual operating needs, the Department has a robust capital program dedicated to building new facilities and expanding and improving existing facilities. Capital projects are funded through CFDs, which are more project or geographic-specific. CFDs can help pay for both initial infrastructure costs, as well as the ongoing maintenance and operations of those facilities within the area.

Taxes and grants, along with sponsorships and donations, help fill the funding gaps needed for both operations and capital projects. While tax revenue is typically not restricted, grants and sponsorships, along with donations can be specific to programs and/or specific activity types. The City has done its best to utilize grant funding and donations to help offer programs. The City should continue to explore these opportunities and utilize alternative funding sources as appropriate.



COST RECOVERY

| Park Maint. \& Park Projects | $\$ 455,938$ | $\$ 4,636,554$ | $-\$ 4,180,616$ | $10 \%$ |
| :--- | :---: | :---: | :---: | :---: |
| Golf Course | $\$ 204,924$ | $\$ 498,142$ | $-\$ 293,218$ | $41 \%$ |
| Senior Program | $\$ 92,500$ | $\$ 637,218$ | $-\$ 544,718$ | $15 \%$ |
| Community Services | $\$ 39,461$ | $\$ 1,551,301$ | $-\$ 1,511,840$ | $3 \%$ |
| Community Events | $\$ 9,961$ | $\$ 568,643$ | $-\$ 558,682$ | $2 \%$ |
| Conf. \& Rec. Center | $\$ 206,923$ | $\$ 798,675$ | $-\$ 591,753$ | $26 \%$ |
| Recreation Programs | $\$ 302,491$ | $\$ 1,206,142$ | $-\$ 903,650$ | $25 \%$ |
| Special Events | $\$ 28,683$ | $\$ 105,083$ | $-\$ 76,399$ | $27 \%$ |
| Sports Programs | $\$ 437,861$ | $\$ 564,352$ | $-\$ 126,491$ | $78 \%$ |
| TownGate Community Center | $\$ 120,976$ | $\$ 37,671$ | $\$ 83,305$ | $321 \%$ |
| Amphitheater | $\$ 12,464$ | $\$ 25,802$ | $-\$ 13,338$ | $48 \%$ |
| March Annex Rental | $\$ 6,300$ | $\$ 53$ | $\$ 6,248$ | $11,887 \%$ |
| Total | $\mathbf{\$ 1 , 9 1 8 , 4 8 2}$ | $\mathbf{\$ 1 0 , 6 2 9 , 6 3 4}$ | $-\$ 8,711,152$ | $\mathbf{1 8 \%}$ |



### 2.11 RECREATION TRENDS

Recreation program trends can vary over time and may be influenced by changes in societal preferences, technology, and other factors. While the City already offers a diverse range of recreation programming, as trends continue to change over time, the City should continue to remain open to new concepts and adapt recreation programming to meet evolving community desires.

### 2.11.1 NATIONAL TRENDS

The 2023 Sports, Fitness, and Leisure Activities Topline Participation Report from the Sports and Fitness Industry Association (SFIA) highlights national recreation trends. The report indicates that participation in recreational activities in the U.S. has increased for the fifth consecutive year, rising 9.2 percent from 2017 and 1.9 percent from 2021. During 2022, 77.6 percent (236.9 million people) of United States residents participated in at least one recreational activity, roughly 20 million more people than in 2017. Now more than ever, people are prioritizing recreational activity and bouncing back from all-time lows recorded before the COVID-19 pandemic.

The number of totally inactive people decreased for the fourth consecutive year with 22.4 percent ( 68.6 million people) of United States residents being inactive. Inactivity in every single age group decreased, except for 18 to 24 -year-olds and 25 to 34 -year-olds, likely due to life changes brought on by the COVID-19 pandemic, like enrolling in college and having children. Similarly, inactivity rates
for every income level decreased by more than 3 percent in 2022, indicating that people are investing more in physical activity more than in previous years.

## Recreation Trend Highlights

» Pickleball continued to be the fastest-growing sport in America with participation almost doubling in 2022.
" Trail running and day hiking participation increased for the fifth consecutive year.
" Every racquet sport increased its participation from the previous year for the first time since 2015.
» Golf and tennis continue to maintain momentum with 9.7 and 4.3 percent participation increases in 2022, respectively. Both sports have grown over 20 percent since 2019.
" Basketball, soccer (outdoor), football (flag), and football (tackle) all saw three-year total participation increases of over 4.5 percent with basketball seeing the highest threeyear increase of 13.0 percent.
" Personal combat sports like martial arts, boxing for fitness, MMA for competition, MMA for fitness, and wrestling all posted participation increases in 2022.
» Barre and Pilates showed solid participation increases in 2022, while yoga decreased for the first time in the last decade. All have strong threeyear participation increases with yoga and Pilates increasing over 10 percent in the last three years.
" Camping, fishing, and bicycling activities recovered to 2020 participation levels after showing slight decreases in 2021.
" Group fitness-based activities continued to struggle, but showed some signs of recovery with boot camp style training, cardio kickboxing, and stationary cycling (group) experiencing participation increases in 2022.
") Health club-based activities continued to struggle. Elliptical motion/cross-trainer, stair-climbing machine, stationary cycling (recumbent/ upright), and weight resistance machines all had participation decreases last year, and are down over 10 percent compared to 2019 numbers.
" Most team sports displayed a significant decrease in regular/consistent participants while seeing significant increases in casual participation. Outdoor soccer was the only team sport that saw a participation increase in regular/consistent and casual participants.

See Table 2-12 to Table 2-17 for a closer look at national trends in the following areas:
») Fitness Sports Trends
") Team Sports Trends
» Individual Sports Trends
» Racquet Sport Trends
» Outdoor Activity Trends
" Winter Sports Trends

## Generational Trends in Recreational Activities

Activity participation and preferences tend to vary based on several demographic factors, but can also differ based on generational preferences. Figure 2-16 displays three-year participation categories across different generations. Overall, the top two most participated activity categories for every generation were fitness and outdoor sports.

Gen X (1965-1979)
At the peak of their careers and raising families, Gen X had the biggest participation increases in racquet, water, and team sports. Programming additional sports leagues would bring benefits to this age group.

## Gen Z (2000+)

Gen $Z$ is a tech-savvy generation with diverse interests. Gen Z participation increased the most in water and racquet sports, while overall participation in team sports is higher than all other generations.

FIGURE 2-16: Generational Trends in Activity


Baby Boomers (1945-1964)
Enjoying retirement, they are looking for opportunities in fitness, sports, outdoor activities, cultural events, and other activities that suit their lifestyles. In particular, Baby Boomers lead all other generations in increased participation in racquet sports.

## Millennials (1980-1999)

Millennials are a social and driven group with an interest in balancing wealth, work, and play. Similar to Gen X, Millennial participation increased the most in water, racquet, and team sports.

### 2.11.2 LOCAL TRENDS

## Household Participation in Team Sports

Figure 2-17 displays estimated sports participation in Moreno Valley based on data from ESRI Business Analyst. This data uses national propensities applied to local demographic composition to estimate the relative likelihood of adults and households in the specified trade area to exhibit certain consumer behavior. According to ESRI Business Analyst data, it is estimated that 27.8 percent of all sports participants in Moreno Valley participate in basketball, followed by 18.3 percent participating in soccer, and 14.2 percent participating in tennis. The top team sports played in Moreno Valley are similar to national trends. The SFIA report shows that nationally, basketball and soccer are two of the top five team sports based on participation numbers. Additionally, the two sports had the highest increases in participation over the last three years out of all team sports ( 13.0 and 9.3 percent, respectively), indicating that interest in these sports continues to grow nationally, as well as locally.

FIGURE 2-17: Estimated Team Sports Participation in Moreno Valley


[^33]
## Household Participation in Recreation

Figure 2-17 shows recreational activity participation in Moreno Valley based on data from ESRI Business Analyst. Walking for exercise is by far the most popular activity in Moreno Valley, followed by hiking, weight lifting, swimming, and jogging/running. Other recreational activities that ranked highly in Moreno Valley include road bicycling, yoga, and aerobics. Recreational activity trends in Moreno Valley indicate a high interest in physical fitness, which aligns with national trends. The SFIA report shows that the majority of active individuals in the U.S. participate in fitness sports (>65\%), compared to lower participation rates in individual, outdoor, racquet, team, water, and winter sports. The City can accommodate community interest in these recreational activities by increasing related amenities, such as trails, bicycle lanes, and outdoor exercise equipment, as well as related programming like fitness classes, guided hikes, group runs, and bicycle rides.

FIGURE 2-18: Estimated Recreational Activity Participation in Moreno Valley


Source: ESRI Business Analyst


## FITNESS SPORTS TRENDS

## 2022 Top 5 Sports Based on Participation Numbers



TABLE 2-12: SFIA National Fitness Sports Trends Participants

| SPORT | 2019 | 2020 | 2021 | 2022 | 1-YEAR CHANGE | 3 - YEAR <br> CHANGE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Pilates Training | 9.2 M | 9.9 M | 9.7 M | 10.3 M | +5.8\% | +11.6\% |
| Yoga | 30.5 M | 32.8 M | 34.3 M | 33.6 M | -2.1\% | +10.4\% |
| Kettlebells | 12.9 M | 13.6 M | 13.6 M | 13.7 M | +1.0\% | +6.5\% |
| Dance, Step, and Other Choreographed Exercise to Music | 13.5 M | 25.2 M | 24.8 M | 25.2 M | +1.7\% | +5.0\% |
| Barre | 3.7 M | 3.6 M | 3.7 M | 3.8 M | +3.9\% | +3.8\% |
| Free Weights (Dumbbells/Hand Weights) | 51.4 M | 53.3 M | 52.6 M | 53.1 M | +1.0\% | +3.3\% |
| Walking for Fitness | 111.4 M | 114.0 M | 115.8 M | 114.8 M | -0.9\% | +3.0\% |
| High Impact/Intensity Training | 22.0 M | 22.5 M | 22.0 M | 21.8 M | -0.7\% | -1.0\% |
| Free Weights (Barbells) | 28.4 M | 28.8 M | 28.2 M | 28.7 M | +1.5\% | +1.1\% |
| Aquatic Exercise | 11.2 M | 11.0 M | 10.4 M | 10.7 M | +2.6\% | -4.6\% |
| Running/Jogging | 50.1 M | 50.7 M | 49.0 M | 47.8 M | -2.4\% | -4.5\% |
| Treadmill | 56.8 M | 49.8 M | 53.6 M | 53.6 M | -0.1\% | -5.7\% |
| Bodyweight Exercise \& Bodyweight Accessory-Assisted Training | 23.5 M | 22.8 M | 22.6 M | 22.0 M | -2.6\% | -6.3\% |
| Swimming for Fitness | 28.2 M | 25.7 M | 25.6 M | 26.3 M | +2.5\% | -6.9\% |
| Rowing Machine | 12.8 M | 11.7 M | 11.6 M | 11.9 M | +2.6\% | -7.2\% |
| Tai Chi | 3.8 M | 3.3 M | 3.4 M | 3.4 M | 0.0\% | -10.5\% |
| Stationary Cycling (Recumbent/Upright) | 37.1 M | 31.3 M | 32.5 M | 32.1 M | -1.1\% | -13.4\% |
| Weight/Resistance Machines | 36.2 M | 30.7 M | 30.6 M | 30.0 M | -1.9\% | -17.1\% |
| Elliptical Motion/Cross-Trainer | 33.1 M | 27.9 M | 27.6 M | 27.1 M | -2.1\% | -18.2\% |
| Cardio Kickboxing | 7.0 M | 5.3 M | 5.1 M | 5.5 M | +8.5\% | -21.3\% |
| Boot Camp Style Training | 6.8 M | 5.0 M | 5.2 M | 5.2 M | +0.4\% | -24.0\% |
| Stair-Climbing Machine | 15.4 M | 11.3 M | 11.8 M | 11.7 M | -0.9\% | -24.0\% |
| Cross-Training Style Workouts | 13.5 M | 9.2 M | 9.8 M | 9.2 M | -5.3\% | -31.7\% |
| Stationary Cycling (Group) | 9.9 M | 6.1 M | 5.9 M | 6.3 M | +5.5\% | -36.9\% |

Source: SFIA Topline Report 2023

## TEAM SPORTS TRENDS

## 2022 Top 5 Sports Based on Participation Numbers



TABLE 2-13: SFIA National Team Sports Trends Participants

| SPORT | 2019 | 2020 | 2021 | 2022 | 1-YEAR <br> CHANGE | 3-YEAR <br> CHANGE |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Basketball | 24.9 M | 27.8 M | 27.1 M | 28.1 M | $+3.7 \%$ | $+13.0 \%$ |
| Soccer (Outdoor) | 11.9 M | 12.4 M | 12.6 M | 13.0 M | $+3.7 \%$ | $+9.3 \%$ |
| Football (Tackle) | 5.1 M | 5.1 M | 5.2 M | 5.4 M | $+4.0 \%$ | $+6.5 \%$ |
| Football (Flag) | 6.8 M | 7.0 M | 6.9 M | 7.1 M | $+3.1 \%$ | $+4.7 \%$ |
| Wrestling | 1.9 M | 1.9 M | 1.9 M | 2.0 M | $+5.1 \%$ | $+4.7 \%$ |
| Soccer (Indoor) | 5.3 M | 5.4 M | 5.4 M | 5.5 M | $+1.6 \%$ | $+3.0 \%$ |
| Swimming on a Team | 2.8 M | 2.6 M | 2.8 M | 2.9 M | $+2.9 \%$ | $+2.9 \%$ |
| Baseball | 15.8 M | 15.7 M | 15.6 M | 15.5 M | $-0.7 \%$ | $-2.1 \%$ |
| Gymnastics | 4.7 M | 3.8 M | 4.3 M | 4.6 M | $+7.0 \%$ | $-2.8 \%$ |
| Ice Hockey | 2.4 M | 2.3 M | 2.3 M | 2.3 M | $-1.3 \%$ | $-3.4 \%$ |
| Softball (Fast-Pitch) | 2.2 M | 1.8 M | 2.1 M | 2.1 M | $+2.8 \%$ | $-4.3 \%$ |
| Volleyball (Court) | 6.5 M | 5.4 M | 5.8 M | 6.1 M | $+4.2 \%$ | $-6.1 \%$ |
| Volleyball (Beach/Sand) | 4.4 M | 4.3 M | 4.2 M | 4.1 M | $-1.3 \%$ | $-6.2 \%$ |
| Football (Touch) | 5.2 M | 4.8 M | 4.9 M | 4.8 M | $-0.8 \%$ | $-6.3 \%$ |
| Ultimate Frisbee | 2.3 M | 2.3 M | 2.2 M | 2.1 M | $+-2.2 \%$ | $-6.5 \%$ |
| Cheerleading | 3.8 M | 3.3 M | 3.5 M | 3.5 M | $+1.2 \%$ | $-6.5 \%$ |
| Volleyball (Grass) | 3.1 M | 2.7 M | 2.8 M | 2.8 M | $+0.8 \%$ | $-9.8 \%$ |
| Paintball | 2.9 M | 2.8 M | 2.6 M | 2.6 M | $+1.2 \%$ | $-10.0 \%$ |
| Track and Field | 4.1 M | 3.6 M | 3.6 M | 3.7 M | $+2.9 \%$ | $-10.8 \%$ |
| Lacrosse | 2.1 M | 1.9 M | 1.9 M | 1.9 M | $-0.9 \%$ | $-11.4 \%$ |
| Softball (Slow-Pitch) | 7.1 M | 6.3 M | 6.0 M | 6.0 M | $+0.5 \%$ | $-14.6 \%$ |
| Roller Hockey | 1.6 M | 1.5 M | 1.4 M | 1.4 M | $-4.0 \%$ | $-15.3 \%$ |
| Rugby | 1.4 M | 1.2 M | 1.2 M | 1.2 M | $-5.8 \%$ | $-16.2 \%$ |
|  |  |  |  |  |  |  |

Source: SFIA Topline Report 2023

## INDIVIDUAL SPORTS TRENDS

## 2022 Top 5 Sports Based on Participation Numbers



TABLE 2-14: SFIA National Individual Sports Trends Participants

| SPORT | 2019 | 2020 | 2021 | 2022 | 1-YEAR <br> CHANGE | 3-YEAR <br> CHANGE |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Skateboarding | 6,610 | 8,872 | 8,747 | 9,019 | $+3.1 \%$ | $+36.4 \%$ |
| Trail Running | 10,997 | 11,854 | 12,520 | 13,253 | $+5.9 \%$ | $+20.5 \%$ |
| Golf (on- or off-course) | 34,176 | 36,861 | 37,473 | 41,096 | $+9.7 \%$ | $+20.2 \%$ |
| MMA for Competition | 978 | 979 | 1,026 | 1,076 | $+4.9 \%$ | $+10.1 \%$ |
| Roller Skating (Inline Wheels) | 4,816 | 4,892 | 4,940 | 5,173 | $+4.7 \%$ | $+7.4 \%$ |
| Ice Skating | 9,460 | 9,857 | 9,481 | 10,086 | $+6.4 \%$ | $+6.6 \%$ |
| Boxing for Fitness | 5,198 | 5,230 | 5,237 | 5,472 | $+4.5 \%$ | $+5.3 \%$ |
| MMA for Fitness | 2,405 | 2,445 | 2,339 | 2,524 | $+7.9 \%$ | $+5.0 \%$ |
| Martial Arts | 6,068 | 6,064 | 6,186 | 6,355 | $+2.7 \%$ | $+4.7 \%$ |
| Horseback Riding | 6,990 | 6,748 | 6,919 | 7,309 | $+5.6 \%$ | $+4.6 \%$ |
| Roller Skating (2x2 Wheels) | 6,612 | 6,160 | 6,373 | 6,810 | $+6.9 \%$ | $+3.0 \%$ |
| Archery | 7,449 | 7,249 | 7,342 | 7,428 | $+1.2 \%$ | $-0.3 \%$ |
| Bowling | 45,372 | 40,143 | 41,666 | 42,292 | $+1.5 \%$ | $-6.8 \%$ |
| Trathlon (Non-Traditional/ Off Road) | 1,472 | 1,363 | 1,304 | 1,350 | $+3.5 \%$ | $-8.2 \%$ |
| Trathlon (Traditional/ Road) | 2,001 | 1,846 | 1,748 | 1,780 | $+1.8 \%$ | $-11.0 \%$ |
| Adventure Racing | 2,143 | 1,966 | 1,826 | 1,714 | $-6.1 \%$ | $-20.0 \%$ |

Source: SFIA Topline Report 2023

## RACQUET SPORTS TRENDS

## 2022 Top 5 Sports Based on Participation Numbers



TABLE 2-15: SFIA Racquet Sports Trends Participants

| SPORT | 2019 | 2020 | 2021 | 2022 | 1-YEAR <br> CHANGE | 3-YEAR <br> CHANGE |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Pickleball | 3,460 | 4,199 | 4,819 | 8,949 | $+85.7 \%$ | $+158.6 \%$ |
| Tennis | 17,684 | 21,642 | 22,617 | 23,595 | $+4.3 \%$ | $+33.4 \%$ |
| Cardio Tennis | 2,501 | 2,503 | 2,608 | 2,812 | $+7.8 \%$ | $+12.4 \%$ |
| Badminton | 6,095 | 5,862 | 6,061 | 6,490 | $+7.1 \%$ | $+6.5 \%$ |
| Table Tennis | 14,908 | 16,854 | 15,390 | 15,824 | $+2.8 \%$ | $+6.1 \%$ |
| Racquetball | 3,453 | 3,426 | 3,260 | 3,521 | $+8.0 \%$ | $+2.0 \%$ |
| Squash | 1,222 | 1,163 | 1,185 | 1,228 | $+3.6 \%$ | $+0.5 \%$ |

Source: SFIA Topline Report 2023

## OUTDOOR ACTIVITY TRENDS

# 2022 Top 5 Activities Based on Participation Numbers 



TABLE 2-16: SFIA Outdoor Activity Trends Participants

| SPORT | 2019 | 2020 | 2021 | 2022 | 1-YEAR <br> CHANGE | 3-YEAR <br> CHANGE |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Camping | 28,183 | 36,082 | 35,985 | 37,431 | $+4.0 \%$ | $+32.8 \%$ |
| Birdwatching More Than 1/4 Mile <br> From Home/Vehicle | 12,817 | 15,228 | 14,815 | 15,818 | $+6.8 \%$ | $+23.4 \%$ |
| Hiking (Day) | 49,697 | 57,808 | 58,697 | 59,578 | $+1.5 \%$ | $+19.9 \%$ |
| Bicycling (BMX) | 3,648 | 3,880 | 3,861 | 4,181 | $+8.3 \%$ | $+14.6 \%$ |
| Climbing (Sport/Boulder) | 2,183 | 2,290 | 2,301 | 2,452 | $+6.6 \%$ | $+12.3 \%$ |
| Bicycling (Road/Paved Surface) | 39,388 | 44,471 | 42,775 | 43,554 | $+1.8 \%$ | $+10.6 \%$ |
| Camping (RV) | 15,426 | 17,825 | 16,371 | 16,840 | $+2.9 \%$ | $+9.2 \%$ |
| Climbing (Indoor) | 5,309 | 5,535 | 5,684 | 5,778 | $+1.7 \%$ | $+8.8 \%$ |
| Fishing (Fly) | 7,014 | 7,753 | 7,458 | 7,631 | $+2.3 \%$ | $+8.8 \%$ |
| Fishing (Saltwater) | 13,193 | 14,527 | 13,790 | 14,344 | $+4.0 \%$ | $+8.7 \%$ |
| Fishing (Freshwater/Other) | 39,185 | 42,556 | 40,853 | 41,821 | $+2.4 \%$ | $+6.7 \%$ |
| Bicycling (Mountain/Non-Paved <br> Surface) | 8,622 | 8,998 | 8,693 | 8,916 | $+2.6 \%$ | $+3.4 \%$ |
| Wildlife Viewing (More Than 1/4 Mile <br> From Home/Vehicle) | 20,040 | 21,038 | 20,452 | 20,615 | $+0.8 \%$ | $+2.9 \%$ |
| Hunting (Bow) | 4,628 | 4,656 | 4,577 | 4,739 | $+3.5 \%$ | $+2.4 \%$ |
| Climbing (Traditional/Ice <br> Mountaineering) | 2,400 | 2,456 | 2,374 | 2,452 | $+3.3 \%$ | $+2.1 \%$ |
| Hunting (Handgun) | 3,015 | 2,998 | 2,900 | 2,993 | $+3.2 \%$ | $-0.8 \%$ |
| Hunting (Rifle) | 11,084 | 11,098 | 10,762 | 10,811 | $+0.5 \%$ | $-2.5 \%$ |
| Shooting (Sport Clays) | 4,852 | 4,699 | 4,618 | 4,718 | $+2.2 \%$ | $-2.8 \%$ |
| Backpacking Overnight - More Than <br> 1/4 Mile From Vehicle/Home | 10,660 | 10,746 | 10,306 | 10,217 | $-0.9 \%$ | $-4.2 \%$ |
| Hunting (Shotgun) | 8,083 | 7,874 | 7,627 | 7,628 | $+0.0 \%$ | $-5.6 \%$ |
| Shooting (Trap/Skeet) | 4,057 | 3,837 | 3,750 | 3,739 | $-0.3 \%$ | $-7.8 \%$ |
| Target Shooting (Rifle) | 13,197 | 12,728 | 12,388 | 12,044 | $-2.8 \%$ | $-8.7 \%$ |
| Target Shooting (Handgun) | 14,579 | 14,253 | 13,952 | 13,303 | $-4.6 \%$ | $-8.8 \%$ |

Source: SFIA Topline Report 2023
$\square$ Top 5 Activities by 3-Year Percentage Change $\square 2022$ Top 5 Activities Based on Participation Numbers

## WINTER SPORTS TRENDS



Source: SFIA Topline Report 2023
$\square$ Top 5 Sports by 3-Year Percentage Change 2022 Top 5 Sports Based on Participation Numbers

## Chapter

 03
## COMMUNITY OUTREACH



### 3.1 COMMUNITY ENGAGEMENT OVERVIEW

Engaging Moreno Valley community members in the planning process was critical to the development of a Plan that accurately reflects community needs and desires. A comprehensive community engagement strategy was developed to facilitate a collaborative planning process and gather meaningful input from residents, stakeholders, and City staff. Outreach methods used to collect community input included community workshops, stakeholder meetings, a statistically valid survey, social media promotions, and online engagement through the City's website.

The target audience of community engagement efforts was anyone who lives, works, or plays within in Moreno Valley. Additional emphasis was placed on under-served communities that disproportionately lack easy and comfortable access to parks, open spaces, and other recreation facilities.

### 3.1.1 COMMUNITY ENGAGEMENT STRATEGY

The primary outreach methods used to engage Moreno Valley community members were:
" Project branding
") City website
" Social media
" Statistically-valid survey
" Three community workshops
Six focus group meetings with key stakeholders

COMMUNITY ENGAGEMENT TIMELINE


Community Workshop \#2 November 9, 2023

# COMMUNITY ENGAGEMENT NUMBERS <br>  <br> 7 <br> <br> Community Survey Responses <br> <br> Community Survey Responses <br>  <br> Focus Group Meetings <br>  <br> Community Workshops 



### 3.2 PROJECT PUBLICITY

### 3.2.1 PROJECT BRANDING

Distinct branding was developed for the Plan to promote project familiarity throughout the planning process. A unique project logo and color palette was used for all outreach materials and presentations. The project branding was designed to maintain consistency with City branding, while also distinguishing the project as a new planning endeavor.

### 3.2.2 SOCIAL MEDIA

Social media was used throughout the development of the Plan to share information and invite community members to participate in a collaborative planning process. Regular social media posts were made to publicize the Plan, promote events and feedback opportunities, and share project updates.


MORENO VALLEY
MASTER PLAN
¡Participa en nuestra encuesta!
El Plan Maestro de Parques, Servicios Moreno Valley (Ciudad) es un esfuerro de planificación integral que proportionard a Moreno Valley una visión moderna para parques y recreación.

La Ciudad esta comprometida a hacer del proceso de planificación un esfuerzo col pobotativo. EEscaneee el código ORR
a continuación para participar en la a continuacion para part

¡Gracias!


MORENO VALLEY
M A S TER PL A N YOU ARE INVITED TO COMMUNITY WORKSHOP *2!

help shape the future of moreno valley PARKS, COMMUNITY SERVICES, AND TRAILS



### 3.3 COMMUNITY WORKSHOPS

Three community workshops were held between May 2023 and November 2023 to engage community members in a participatory planning process for the Plan. The workshops enabled community members to engage in the planning process and provide direct input on current and future park needs. Some items mentioned by participants in the workshops had not been captured by other forms of community engagement, which reinforces the importance of in-person participatory planning opportunities in reaching different audiences.

### 3.3.1 COMMUNITY WORKSHOP \#1: VISION, OPPORTUNITIES, CHALLENGES, AND EXISTING CONDITIONS

The first workshop was held on May 3, 2023, at the Moreno Valley Conference and Recreation Center. The workshop served as an official kick-off for the Plan. The planning team presented an overview of the planning process and initial findings from the citywide park inventory.

After the presentation, participants split into small groups to discuss the following topics:
" Current usage of existing parks
") General conditions of existing parks
" Overall satisfaction with current park experience
" Value placed on parks and recreation amenities
" Collective vision of the future park system
The most common comments from participants were related to the following topics:

1. Park Lighting and Safety
2. Park Connectivity and Safe Access
3. Nature and Open Space
4. Community Centers and Programming
5. Equestrian Facilities
6. Arts, Culture, and History
7. Park Maintenance
8. Additional Park Amenities


### 3.3.2 COMMUNITY WORKSHOP \#2: COMMUNITY PRIORITIES AND INFILL OPPORTUNITIES

The second workshop was held on September 26, 2023, at the Moreno Valley Conference and Recreation Center. The workshop began with a presentation of the results from the project's existing conditions analysis and the community survey. After the presentation, attendees participated in an interactive activity to collect input on desired parks and recreation facilities, amenities, and programming in Moreno Valley.

The top five amenities participants wanted to see at Moreno Valley parks were:

1. Community Gardens
2. Splashpad / Water Features
3. Outdoor Exercise Areas
4. New and Upgraded Playgrounds
5. Skate Parks

The top four amenities participants wanted to see at Moreno Valley trails were:

1. Signalized Intersections with Equestrian Push Buttons
2. Animal Crossing Signs
3. Fencing
4. Nature Center or Community Garden

### 3.3.3 COMMUNITY WORKSHOP \#3: DRAFT RECOMMENDATIONS

The third and final workshop was held on November 9, 2023, at the Moreno Valley Conference and Recreation Center. The planning team presented draft recommendations to the workshop participants in a public workshop setting. The team shared a summary of findings from the previous workshop activities and existing conditions analysis and then presented the draft recommendations. Participants were then given opportunities to provide feedback on and potential revisions to the draft recommendations through a series of open-house activities.

Workshop participants expressed the most interest in addressing the following four categories within the draft recommendations:
") Improvements to Equestrian Center
" Additional and Improved Trail Connections
" Interest in All-Inclusive Programming and Events
» Additional Facilities
Feedback related to improvements to the equestrian center includes the addition of intersections with light signals, a nature center, an outdoor stage/amphitheater, fencing, picnic areas, a community garden, a tot-lot near a dog park, natural trails, and designated maintenance staff.

Additional and improved trail connections were requested through comments that consisted of the desire for improved trails with pas-

sive parks, east-west trail connections in northern Moreno Valley, a greenway trail network around the city, SR-60 multi-use trail crossings, and north-south trail connections to link Lake Perris to the Moreno Valley Equestrian Center.

The interest in all-inclusive programming and events includes desires for an international film festival, new youth/teen programs, programs for people of all ability levels, and a community health/wellness center.

Lastly, community members expressed the need for additional facilities, such as a new library in the cen-tral-east area, a museum, a small-scale amphitheater, and a performing arts center.

### 3.4 STAKEHOLDER FOCUS GROUPS

Focus group meetings with key stakeholders were conducted during the summer of 2023. The goal of these meetings was to gather input on the needs and desires of target community groups. This input, in combination with other community feedback from the survey and workshops, was used to guide the recommendations provided in Chapter 4. A series of questions were asked during each of the stakeholder meetings and some of the collective themes and responses are summarized on the following page.

Six focus groups were convened to gather information from a broad cross-section of community members:


Arts and Library Commissions: Members of the City of Moreno Valley Arts Commission and City of Moreno Valley Library Commission.


City Leadership: Department heads and directors from the following City departments: City Manager's Office, Community Development, Economic Development, Fire, Parks and Community Services, and Public Works.

Parks and Community Services Department Staff: Staff from the City Parks and Community Services Department.


Parks, Community Services, and Trails Committee and Emerging Leaders Council: Members of the City of Moreno Valley Emerging Leaders Council and members of the City of Moreno Valley Parks, Community, and Trails Committee.


Senior Citizens' Advisory Board: Members of the City of Moreno Valley Senior Citizens' Advisory Board.


Youth Sports: Representatives from youth football, soccer, baseball, and softball leagues.

### 3.4.1 INFRASTRUCTURE QUESTIONS

1. Are there any current unmet needs in park facilities, civic facilities (libraries), or amenities?
" Sports fields and facilities need lighting, more regular maintenance, and additional parking.
" There is a lack of public indoor gathering spaces to host meetings, programs, and classes.
" Parks need additional and improved restrooms with cleaner facilities and more lighting.
" The existing library, senior center, and recreation centers are too small and lack sufficient amenities and meeting spaces.
2. What kind of facility needs do you anticipate in the future?
" Stakeholders expressed an overwhelming need for a new library, senior center, teen center, and multi-purpose recreation center
 to provide much-needed community spaces to host meetings, programs, and classes.
" Sports-related needs include a large sports complex, an aquatic facility, additional sports fields, and lighted fields.
" Other top needs include dog parks, splash pads, safe walking and bicycling routes to and from parks, larger and cleaner restrooms, and diverse park amenities to meet different community needs.
3. Are there underserved areas of Moreno Valley where the City should focus on park improvements/construction?
" The east and northeast portions of Moreno Valley are currently underserved and lack parks, sports fields, and open spaces.
4. Are there enough facilities and amenities for the diverse community in the City?
") Facilities and amenities are lacking for Moreno Valley teens, seniors, and community members with special needs.
5. Are there any trails or trailheads that the City should prioritize?
" Multi-use trails that provide safe connections to parks for pedestrians and bicyclists should be prioritized.
" Opportunities to create a connected trail system, particularly to the Juan Bautista de Anza Trail, should also be prioritized.
6. What are your top park/trail project recommendations?
" Top park and trail recommendations for new facilities include a large central library, large recreation center, large sports complex, large senior center, multi-purpose fields, an aquatic facility, dog parks, splash pads, and community gardens.
" Top park and trail recommendations for existing facilities include the addition of shade structures, picnic areas, BBQs, lighting, and restrooms to existing parks, as well as the remodeling of playgrounds to meet safety standards.



## 3．4．2 PROGRAMMING QUESTIONS

1．Are there any current unmet needs in recreation／library program－ ming？

》）More programming and meeting spaces are needed for teens， young adults，seniors，and community members with special needs．
＞＞Childcare programs are often full and are too expensive for some community members．

2．What programs would best service your family＇s future needs？
》 The following programs are desired：childcare，tutoring，adult literacy programs，multi－generational programs，pottery class－ es，van service for teens，and programs specifically for teens and seniors．

3．Are there any partnerships between the City and the community that can be created or strengthened？

》）The City＇s relationship with the Moreno Valley Unified School District could be strengthened to improve and add more Joint－ Use Agreements．

## Key Findings from Stakeholder Focus Group Meetings

Several common themes were repeated across focus groups，demonstrating consensus on a number of key desires and needs for Moreno Valley：

1
Desire for new large indoor facilities with diverse amenities and ample space to host meetings， programs，and classes（i．e．，Central Library，Teen Center，Senior Center，and Recreation Center）．

## 2

Desire for a large sports complex and an aquatic facility to meet the needs of residents and attract visitors from outside Moreno Valley．

Desire for better connectivity to parks through trails and safe routes．

Need for park and field lighting to increase safety and expand evening recreation opportunities．

## 5

Need for park restroom lighting，improved maintenance，and expanded capacity．

Need for diverse and multi－generational programming and amenities to accommodate differ－ ent interests and needs of the community．

East and northeast portions of Moreno Valley are underserved and in need of new parks and recreation facilities．

### 3.5 COMMUNITY SURVEY

Surveys were used to collect community input from residents and other park users on City parks, recreation facilities, amenities, future planning, communication, and more. The survey was designed to yield results that could assist the City in developing a plan that accurately reflects the needs, wants, and desires of the entire community. The survey results were analyzed and incorporated into the development of this Plan.

Two samples were collected in the survey effort:
" Statistically Valid Invite Sample (259): Paper surveys were mailed to a random sample of 4,500 residential households in Moreno Valley with instructions for how to complete the survey through a pass-word-protected web link. An additional 4,000 reminder postcards were also sent to encourage residents to take the survey. Out of the 4,500 paper surveys mailed to Moreno Valley households, 259 surveys were completed.
" Open Link Sample (218): An online survey was shared widely through social media, City newsletters, and other promotional activities with the intent to reach as many Moreno Valley residents as possible, as well as non-residents who may use Moreno Valley parks and recreation facilities. 218 Open Link surveys were completed online.

Together, the two samples provide a useful source of community input on Moreno Valley's existing parks and recreation facilities and programming, as well as the need for future improvements.

### 3.5.1 SURVEY RESULTS SUMMARY

Figure 3-1 to Figure 3-5 present a snapshot of survey results as a comparison of responses from both the Statistically Valid Invite (Invite) sample and the Open Link sample. In general, responses from the Invite sample are similar to those from the Open Link sample, which indicates a general consensus in the community on various park and recreation-related topics and ideas. Complete survey results are provided in Chapter 5.

FIGURE 3-1: Please rate how important the following recreation facilities and services are to your household. (On a scale of 1 to 5 , with 5 being "Very Important")


FIGURE 3-2: Please identify your household's priorities for recreation facilities, parks, programs, and special events to be added, expanded, or improved upon in Moreno Valley in the next 5 years. (On a scale of 1 to 5 , with 5 being "A Very High Priority")


FIGURE 3-3: What are the top priorities for improvement within our trail system? (Select Top 3)


FIGURE 3-4: What are the most important items that, if addressed by the City of Moreno Valley, would increase your use of parks and recreation facilities?


FIGURE 3-5: What will increase your household's use of Moreno Valley Parks and Community Services programs?


## Key Findings from Community Survey



Satisfaction: There are high ratings of satisfaction for the overall quality of Moreno Valley parks, facilities, recreation programs, and services. In particular, the Library and Special Events received average ratings of 3.7 and above on a scale of $1-5$, with 5 being "very satisfied."

Proximity: Most respondents live close to their most visited park. A total of 81 percent of the Invite sample and $68 \%$ of the Open Link sample say it takes less than 10 minutes to get to a park from their home.

Mode of Transportation: Most respondents drive a motor vehicle to get to the park they most frequently visit. However, 21 percent of the Invite sample report walking/running or rolling.

Most Used Facilities: Parks, trails and pathways, and the Recreation Center are the most frequently used facilities provided by the City.

Most Important Facilities: Community/neighborhood parks and open space/natural areas are the most important recreation facilities and services to both samples. However, their rating for meeting the needs of the community is lower than other facilities.

Top Ways to Increase Park Usage: The top three ways to help increase the usage of parks and recreation facilities are to improve safety and security, add more lighting, and enhance and maintain existing parks and facilities.

Future Priorities: The top future priorities for both samples are improved amenities, additional open space/natural areas/trails, and more community/neighborhood parks. When given a choice between natural resource preservation/protection and active recreation, respondents generally would prefer Moreno Valley pursue natural resource preservation/protection.

Trail System Priorities: Accessible walking trails and soft-surface hiking trails are the most important priorities for improvement within the City's trail system.

Program Participation: About a quarter (25 percent) of Invite respondents had participated in Moreno Valley Parks \& Community Services-led programs in the past 12 months. The top reason for participation in facility location.

Top Ways to Increase Program Participation: To help increase the use of Moreno Valley Parks \& Community Services programs, respondents prefer better condition/maintenance of parks or facilities and more programming opportunities that appeal to adults.

Communication: Respondents rated the communication efforts from Moreno Valley as moderately effective. The most preferred forms of communication for the Invite sample include the City's newsletters, Soaring Activity Guide, and emails.

### 3.6 KEY TRENDS FROM COMMUNITY ENGAGEMENT

## Workshop Trends



A permanent restroom building is strongly desired, as well as more amenities like picnic areas, outdoor fitness equipment, campsite, and community gardens.


Better trail connections are strongly desired, especially in the northwestern part and eastern parts of Moreno Valley, with a focus on connections to Lake Perris.


More programs for teens, seniors, and adults, as well as new special events are desired.

## Stakeholder Trends



New public centers like recreation centers, community centers, new senior centers are all desired.


Stakeholders would like to see a large sports complex to hold regional tournaments.


Lighting and additional safety features are wanted at parks and facilities.

## Survey Trends



Many survey respondents have a desire to improve the existing amenities at parks.


More access to open spaces, natural areas, and trails is strongly desired.


Additional community and neighborhood parks are desired.
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### 4.1 THE FUTURE OF MORENO VALLEY PARKS

The future of Moreno Valley's parks and recreation system will depend on actions that combine infrastructure, programming, and financial elements. This recommendations chapter begins with eight overarching initiatives that are intended to guide the City's efforts over the next ten years. Each initiative is supported by various objectives and actions that can assist with implementation.

The remaining recommendations in this Chapter are based on the findings from the existing conditions analysis, community engagement, and the comparative analyses described in the previous chapters of this Plan. These recommendations are also intended to be consistent with the Moreno Valley General Plan (2021).

## HOW TO USE INITIATIVES, OBJECTIVES, AND ACTIONS

## INITIATIVE

Initiatives represents an overarching topic related to parks and recreation.

## OBJECTIVE

Objectives provide direction to help create the positive change the City envisions.

## ACTION

Actions are well-defined steps needed to achieve objectives.


### 4.2 PLAN INITIATIVES

The Plan recommendations provide a clear set of goals for how Moreno Valley can continue to grow, plan, design, and implement park projects and programs into its park and recreation system. The eight initiatives are defined below.


## PARKS AND FACILITIES

TRAILS AND CONNECTIVITY


PROGRAMS AND SERVICES


MAINTENANCE


PLACEMAKING


ADMINISTRATIVE


FINANCIAL


SAFETY AND TECHNOLOGY

4.3 initiative ONE:

PARKS AND FACILITIES

Parks and recreation facilities are the foundation of Moreno Valley's Parks \& Community Services Department. Parks and recreation facilities are the physical locations that enhance the quality of life of residents. Although Moreno Valley is already home to a large number of parks, the City is encouraged to explore additional ways to maintain and enhance their park system. The City's demographics will continue to evolve and so will the recreation needs. The following objectives can help guide and prioritize physical infrastructure improvements throughout the City.

OBJECTIVE 1: Explore the improvement and equitable distribution of existing and future parks.

ACTION 1.1: Aim to maintain a standard/goal of three acres of parkland per 1,000 residents.

ACTION 1.2: Increase the acreage of parks in Moreno Valley to serve the needs of the growing and diverse population.

ACTION 1.3: Improve the planning process of developer-built parks to include park amenities with the highest deficits.

ACTION 1.4: Encourage public participation in the park planning process for amenities, facilities, and programming.

ACTION 1.5: Locate new neighborhood parks and open spaces along accessible bicycle and pedestrian routes.

ACTION 1.6: Prioritize new parks and open spaces in underserved neighborhoods.

ACTION 1.7: Coordinate with youth sports leagues, such as football and baseball, to improve or expand fields for tournaments to spurn participation and economic growth and return.

> OBJECTIVE 2: Expand existing and develop new parks and recreation facilities.

ACTION 2.1: Explore incorporating community gardens within parks to promote the production of local foods.

ACTION 2.2: Evaluate locations for the development of splash pads and other amenities for youth.

ACTION 2.3: Develop outdoor fitness spaces that would encourage activity and wellness among adults.

ACTION 2.4: Expand existing and develop new walking trails and recreational areas that promote outdoor fitness.

ACTION 2.5: Develop strategically placed open spaces to provide additional opportunities for community members to utilize Moreno Valley's outdoor areas.

OBJECTIVE 3: Improve the current offering of indoor facilities, recreation, and community centers.

ACTION 3.1: Identify underutilized areas within Moreno Valley's priority and underserved areas for the addition of new indoor facilities.


OBJECTIVE 4: Improve park maintenance for higher-quality parks.

ACTION 4.1: Encourage partnerships, such as "Beautify MoVal", for existing and future efforts to maintain and improve parks.

ACTION 4.2: Conduct a detailed facility conditions assessment to ensure each park includes features such as lighting, seating, and restrooms.

ACTION 4.3: Maintain an appropriate number of park maintenance staff to ensure clean and safe parks as much as possible.


## OBJECTIVE 5:

Integrate parks with new development projects.

ACTION 5.1: Integrate parks, trails, and public spaces into new residential developments to contribute to the livability of neighborhoods.

ACTION 5.2: New parks should be developed outside of the 65 decibel noise contour and require noise buffering if located near sensitive land uses.

ACTION 5.3: Parks, recreational facilities, and public spaces should be designed for future ease of maintenance.

ACTION 5.4: Landscape and site design measures help ensure the integration of safe parks and open spaces into adjacent development.


While physical park infrastructure is the foundation of a modern, robust, and diverse park system, programs and services are what bring parks to life. Programs allow community members to engage in fun and diverse physical and mental activities, learn new skills, socialize, and become involved members of the community. The Programs and Services Initiative aims to provide Moreno Valley with additional programs to meet the needs of the growing and evolving community.

OBJECTIVE 1: Provide recreation programs to accommodate the diverse interests, needs, ages, and cultural backgrounds of Moreno Valley residents.

ACTION 1.1: Develop additional programming for adults, such as sports activities and non-sport programs (yoga, meditation, arts and crafts, ballet classes, board games, etc.).

ACTION 1.2: Develop additional programming for teens like additional sports programs (ultimate frisbee, lacrosse, rugby, etc.) and non-sports programs (i.e., arts and crafts, field trips, BMX, etc.)

ACTION 1.3: Continue to implement non-traditional programs such as CPR, personal safety, and martial arts classes, with an emphasis on programs for adults and seniors.

ACTION 1.4: Expand indoor programming to provide alternative recreational options (board games, video games, karaoke, cultural workshops, arts and crafts, additional fitness classes, etc.).

ACTION 1.5: Engage with residents and stakeholders to identify additional programs that respond to growing or changing interests.

## OBJECTIVE 2: Promote community health and wellness through programs, services, and events.

ACTION 2.1: Continue to promote community health and active living through City-sponsored initiatives, events, and activities (i.e., Healthy MoVal, Community Demonstration Garden).

ACTION 2.2: Expand community education programs on healthy eating habits and lifestyles, including topics such as nutrition, physical activity, and vegetable gardening.

ACTION 2.3: Communicate through the libraries, Senior Community Center, and Teen SPOT (Support, Programs, Opportunities \& Technology) to provide informational resources about health.

ACTION 2.4: Collaborate with local health officials, nonprofit organizations, hospitals, health clinics, and community groups to provide programs and host events that promote health and wellness.

OBJECTIVE 3: Raise awareness of parks and recreation programs offered by the City.

ACTION 3.1: Promote broad awareness of the recreation opportunities offered in Moreno Valley through social media campaigns, email and mailed newsletters, word-of-mouth, posted flyers, paid advertisements, and other forms of targeted outreach.


ACTION 3.2: Provide recreation programs in a variety of locations to make participation convenient and accessible.

ACTION 3.3: Increase public awareness of youth programs in Moreno Valley through the development, maintenance, and promotion of a central directory of programs serving Moreno Valley youth.

ACTION 3.4: Increase youth program participation by expanding the number of Teen SPOT's available to low-income youth.


OBJECTIVE 4: Partner with public and private entities to provide programs and services that support families and meet the diverse needs of community members of all ages, backgrounds, and interests.

ACTION 4.1: Continue partnerships to provide access to aquatics programs, such as swim lessons and water aerobics classes.

ACTION 4.2: Develop partnerships with businesses, community organizations, and non-profits to supplement and sponsor City programs and events.



### 4.5 INITIATIVE THREE:

 PLACEMAKINGPlacemaking is a collaborative process that takes place between the government and community members to create public spaces that the community loves and feels connected to. Healthy placemaking ensures that the context of the local environment shines through the design and intent of the park or public space. The Placemaking Initiative encourages the celebration of community diversity, culture, local context, and history at parks and recreation facilities in Moreno Valley.

OBJECTIVE 1: Foster the use of arts and culture in the parks and trail systems.

ACTION 1.1: Encourage public art that represents the history, heritage, culture, and identity of Moreno Valley.

ACTION 1.2: Continue to collaborate and support local artists and students to create local art.

ACTION 1.3: Continue to utilize the Public Art Development Impact Fees to add art to public property throughout the city.

ACTION 1.4: Gather public and private resources for future funding that can support visual and performing arts, as well as cultural development goals and activities.

ACTION 1.5: Locate areas at City parks and trails for opportunities for art installations.

## OBJECTIVE 2: Build a unique sense of place and pride in Moreno Valley parks and trails.

ACTION 2.1: Create design guidelines for streetscape design, signage, lighting, and building materials.

ACTION 2.2: Design unique architectural elements or entry towers for key intersections, gateways, or park/trail entrances.

ACTION 2.3: Incorporate unique traits of Moreno Valley into park and trail identity.

ACTION 2.4: Integrate social gathering places such as plazas and amphitheaters into new and existing parks.

ACTION 2.5: Ensure new park amenities or features reflect the surrounding neighborhood character.

## OBJECTIVE 3: Celebrate the history of Moreno Valley.

ACTION 3.1: Recognize historic structures and sites in the city as historic places.

ACTION 3.2: Use historic artifacts as inspiration for placemaking items or themes at parks.



### 4.6 INITIATIVE FOUR

 MAINTENANCEIt is not possible to achieve a high-quality park and recreation system without a team of passionate maintenance staff and an efficient maintenance system. Regularly maintained parks increase park use and overall community satisfaction. The Maintenance Initiative aims to increase the efficiency and skills of the park and recreation maintenance staff to increase the overall quality of parks.

OBJECTIVE 1:
Maintain high-quality parks and recreation facilities through better park maintenance and operations.

ACTION 1.1: The City should develop minimum service levels and standards for park maintenance and develop a program to document them.

ACTION 1.2: Contracts for services should use the minimum service levels as specifications for work.

OBJECTIVE 2: Invest in City parks by investing in City maintenance staff.

ACTION 2.1: Add a parks maintenance inspector for daily documentation and review of maintenance contract performance and to monitor maintenance needs throughout the city.

ACTION 2.2: Invest time for staff training on maintenance standards and specialty maintenance areas, such as irrigation management and playground inspection, to increase capacity and skillsets and provide cross-coverage for maintenance operations.

ACTION 2.3: Add an additional parks maintenance staff member to assist in diamond field maintenance.

ACTION 2.4: Additional support through contracted services or an additional staff position (minimum 0.5 FTE) is necessary to maintain the potential seven new parks recommended in the following sections.

OBJECTIVE 3: Utilize modern technology to increase maintenance efficiency.

ACTION 3.1: Using City GIS data, procure and implement a computerized maintenance and asset management system to manage and regulate work and document coverage.

ACTION 3.2: Integrate contracted and in-house maintenance operations into this system to document needs and guide the City's Parks Rehabilitation \& Refurbishment Program in the future.


### 4.7 INITIATIVE FIVE:

## TRAILS AND CONNECTIVITY

Providing a safe, comfortable, and convenient trails network between parks, schools, and residential areas is the key to making parks and facilities more accessible to the community. Residents are more likely to walk, bike, or ride their horses to these community facilities when there is a safe and pleasant route to do so. The Trails and Connectivity Initiative aims to give the City the means to create infrastructure to better connect residents to parks, improve the trail system in Moreno Valley, and promote active transportation.

OBJECTIVE 1: Explore opportunities to increase equestrian trails and amenities.

ACTION 1.1: Ensure existing and future staging areas can accommodate quality amenities (restrooms, parking, interactive kiosks, security cameras, wayfinding, etc.).

ACTION 1.2: Provide sufficient resources for the maintenance of trails and staging areas through a combination of grant funding, City resources, and volunteer efforts.

ACTION 1.3: Work with community members to plan and develop trail infrastructure, such as enhanced crossings, closing gaps, lighting, and wayfinding.

ACTION 1.4: Explore installing a traffic signal at Redlands Boulevard and Locust Avenue for safer pedestrian and equestrian crossing.

ACTION 1.5: Coordinate with Riverside County to connect trails through Reche Canyon between the Sunnymead Ranch Staging Area and the Moreno Valley Equestrian Staging Area.

ACTION 1.6: Coordinate with public and private entities to link regional open spaces with a network of paths and trails, including connections to Moreno Valley's multi-use trail system.

## OBJECTIVE 2: Enhance connections and entry points into parks, trails, and open spaces.

ACTION 2.1: Explore installing curb ramps and closing gaps along sidewalks within a quarter mile of parks, trails, and open spaces.

ACTION 2.2: Improve or create new access points to trails from neighborhoods, where appropriate.

ACTION 2.3: Expand Moreno Valley's network of multi-use trails and provide connections from residential and commercial areas.

ACTION 2.4: Incorporate wayfinding, entry monuments, security cameras, signage, and educational kiosks at trail entry points and staging areas to encourage trail use.

ACTION 2.5: Explore programs that connect equestrian riders to future multi-purpose trails within Moreno Valley.

ACTION 2.6: Consider adding ADA-accessible trails.

OBJECTIVE 3: Create walkable and bike-friendly networks that lead to parks and trails.

ACTION 3.1: Provide more walking trails and enhance the existing trails to promote health and wellness.

ACTION 3.2: Implement traffic calming elements on streets that create a bicycle and pedes-trian-friendly environment to trails and parks.

ACTION 3.3: Explore the potential for off-street trails and non-motorized connections between parks and Moreno Valley's existing multi-use trail system.


Photo credits to Moreno Valley Trailseekers



### 4.8 INITIATIVE SIX:

 ADMINISTRATIVEPassionate, innovative, and efficient City staff provide the park system with the tools it needs to be successful. City staff perform essential administrative tasks that determine the success of programs, special events, parks, and facilities. The Administrative Initiative is intended to improve the effectiveness and efficiency of the City's Parks and Community Services Department to better serve the needs of the growing community.

OBJECTIVE 1: Increase overall community satisfaction with the parks and recreation system.

ACTION 1.1: Conduct park user and program participant satisfaction surveys quarterly or semi-annually to address issues and highlight successes promptly.

OBJECTIVE 2: Enhance the park user experience by considering infrastructure enhancements.

ACTION 2.1: Increase facility usage by installing lighting to allow for park use beyond daylight hours.

ACTION 2.2: Continue to improve the overall maintenance program. This will allow for continuous improvement of equipment, maintenance, and park cleanliness (i.e., establish janitorial and maintenance plans to address issues promptly and consistently).

> OBJECTIVE 3: Develop partnerships to improve and expand access to parks and recreation facilities.

ACTION 3.1: Work with Moreno Valley Unified School District and Val Verde Unified School District to expand the shared use of parks and recreational facilities.

ACTION 3.2: Develop relationships with local businesses, clubs, and organizations to seek funding, volunteers, and marketing support to expand programs and facilities.

ACTION 3.3: Recruit volunteers to help operate and run programs.

ACTION 3.4: Review current contacts with partners and seek out new public/private partnerships to enhance amenities.

ACTION 3.5: Identify partnerships with other organizations that can provide additional programming space where needed.

ACTION 3.6: Update and expand joint-use agreements with local school districts.

ACTION 3.7: Generate partnerships with organizations that can help with park maintenance and clean-up.

ACTION 3.8: Evaluate land for potential purchase and re-purposing as parkland.
OBJECTIVE 4: Staff appropriately to meet current demand and maintain established quality service.

ACTION 4.1: Align staffing levels with future park, facility, and programming enhancements.

ACTION 4.2: Identify current performance standards.

ACTION 4.3: Assess the need for additional maintenance staff, program staff, and resources at the seven potential new parks and other upgraded facilities.


# 4.9 INITIATIVE SEVEN: FINANCIAL 

ACTION 2.3: Consider allocating additional City funds towards community events and programming to encourage more community members to use the park system.

ACTION 2.4: Develop targeted cost recovery policies based on program areas (rentals 80-100\%, youth sports $20-50 \%$, etc.)

ACTION 2.5: Continue to evaluate existing fee levels on an annual basis to allow for increased cost recovery.

ACTION 2.6: Capture indirect costs when setting fees to allow for full cost recovery on programs.

ACTION 2.7: Consider creating a parks and recreation-specific Impact fee applicable to residential projects to allow for a dedicated capital funding source.

ACTION 2.8: Explore the creation of CFD(s) for new park facilities being proposed to help offset general fund costs.

ACTION 1.5: Expand the use of grants and sponsorships to subsidize and offset costs of community benefit programs.
ing additional City funds to the
ACTION 1.6: Evaluate the use of additional contracted services for Cottonwood Golf Center and other programs to allow for more cost-effective use of city resources.

ACTION 1.7: Continue tracking NRPA, CRNA, OGALS, LWCF, CRPS, American Trails, and Education in Arts for grants.

ACTION 1.8: Utilize NRPA's Foundation Center for links to thousands of grant opportunities, grant education, and training.

OBJECTIVE 2: Assess existing funding sources and structures to identify opportunities for improvement.

ACTION 2.1: Periodically assess in-lieu parkland dedication fees, park improvement impact fees, and other fees and charges to ensure they are adequately providing for community need and are competitive within the region.

ACTION 2.2: Consider dedicatmaintenance of parks.


### 4.10 INITIATIVE EIGHT:

SAFETY AND TECHNOLOGY

Developing the use of more technological resources at parks and facilities can help improve the overall park and recreation system. The Safety and Technology Initiative's goal is to provide the City with actions to address park safety concerns through the utilization of technology and park design best practices.

## OBJECTIVE 1: Develop and use technology within parks and recreation facilities and programs.

ACTION 1.1: Offer video crime reporting services that allow residents to contact the Moreno Valley Police Department and interact with officers in real time.

ACTION 1.2: Facilitate installment of advanced technology infrastructure for high-speed internet access and solar energy at parks.

ACTION 1.3: Continue the implementation of Wi-Fi technology, or Wi-Fi gardens, at all Moreno Valley parks.

ACTION 1.4: Increase the use of security cameras at parks and trailheads where safety concerns and other issues have been mentioned.

ACTION 1.5: Utilize blue light emergency phone towers at parks and trails that can provide communication in times of emergencies.

ACTION 1.6: Develop digital methods to reach community members and increase awareness of City programs and events (smartphone app, push notifications, etc.).

## OBJECTIVE 2: <br> Promote safety and security at Moreno Valley parks and recreation facilities.

ACTION 2.1: Collaborate with the Police Department to invest in strategically placed cameras to better promote a sense of security throughout the parks.

ACTION 2.2: Coordinate with the Police Department to increase the police presence throughout the parks, especially in areas where incidents and crime have been reported.

ACTION 2.3: Install time-controlled or automatic lighting for better visibility and easily accessible emergency phones throughout parks and open spaces to increase safety.


OBJECTIVE 3:
Implement safety and accessibility design guidelines for parks and services.

ACTION 3.1: Design new parks with natural surveillance features, such as strategically placing physical features and activities to maximize the visibility of surrounding activity.

ACTION 3.2: Incorporate ADA accessibility at all parks and facilities.

ACTION 3.3: Establish and integrate safe and highly visible crosswalks, playgrounds, and bicycle access away from main streets.

ACTION 3.4: Incorporate vegetation and fencing as a buffer zone from vehicles.

OBJECTIVE 4: Use park features to increase park safety.

ACTION 4.1: Increase lighting in all Moreno Valley Parks, paths, and low visibility areas.

ACTION 4.2: Maintain all park restroom facilities and install self-locking doors to reduce unauthorized use after hours.

OBJECTIVE 5: Offer opportunities for virtual programs, events, and activities.

ACTION 5.1: Explore additional programs and activities that can be supported through virtual classes such as those in the City's CLIC (Community Learning Internet Connectivity) initiative.

ACTION 5.2: Assess if any existing recreational programs can additionally be held as virtual classes to reach a broader audience.

## OBJECTIVE 6:

Continue developing Moreno Valley's GIS databases.

ACTION 6.1: Continue to build the City's GIS database for all of the City's mapped parks, park amenities, and trails data.

ACTION 6.2: Continue working with the Police Department to collect and map crime data to monitor safety issues.


### 4.11 FUTURE LEVEL OF SERVICE WITH EXISTING PARK SYSTEM

The population of Moreno Valley is projected to grow significantly by the year 2045 due to expected economic growth and development, bringing physical and demographic changes to the city. The population is expected to grow by 29.7 percent to a total of about 266,800 and the number of employment opportunities is expected to nearly double, increasing from 35,500 to about 65,000 . These changes will bring new needs to the City's parks and recreation system. It is assumed that the new population will use the City's existing parks and facilities, which will add demand to the existing park system. This section analyzes how the projected growth will impact the City's parks and recreation system and identify where park acreage and amenity deficits are expected to increase.

### 4.11.1 FUTURE POPULATION-BASED LEVEL OF SERVICE

The projected population growth will also bring changes to the population LOS by the year 2045. If no new parks were to be added to the City's park and recreation system by the year 2045, the park acres per 1,000 residents would decrease to -1.46 park acres per 1,000 residents, leaving the City 389 park acres short of reaching its goal of 3 park acres for every 1,000 residents (Table 4-1). The City will require additional parkland to address its current park deficit and to prepare for future population growth.

TABLE 4-1: Future Population LOS

| 2045 LOS | ALL CITY PARKS |
| :--- | :---: |
| Existing Park Acreage | 411.16 |
| Recommended Adopted Standard <br> per 1,000 Population | 3.00 |
| Acres per 1,000 Population (2045) | 1.54 |
| Total Surplus/Deficit Acres per 1,000 <br> Population (2045) | -1.46 |
| Acres in Deficit | 389.25 |

### 4.11.2 FUTURE PARK AMENITY LEVEL OF SERVICE

Table 4-2 uses the 2045 population projection to determine future amenity surpluses and deficits in the overall park system. Using the future population projections, all of the amenity deficits increase. Table 4-2 assumes that the City does not add additional park amenities between now and 2045. Every amenity will be in a deficit by the year 2045 if the City does not add new amenities. This analysis highlights the need for additional park amenities at existing parks and for new parks to be more highly-amenitized for more efficient use of space at parks.

Section 4.13 of this chapter identifies potential opportunity areas at each park and recommended amenities for each existing park site.

TABLE 4-2: 2021 and 2045 Amenity Level of Service


### 4.12 FUTURE PARK AND TRAIL RECOMMENDATIONS

Many areas throughout Moreno Valley are undeveloped, a unique and advantageous scenario for a city of this size. The following section identifies seven potential sites that can be developed into future parks. These sites are located on City-owned vacant properties or on properties slated for redevelopment. The sites vary in size, from 7 acres to 43 acres, but they have the opportunity to offer residents a variety of park amenities that can address the existing park access and amenity deficits discussed in Chapter 2.

The City will need to develop individual park master plans to properly identify the challenges and opportunities each site offers. Through this process, the City will be able to design community-driven park master plans that reflect the unique character of the neighborhood, address missing park amenities, recognize the importance of maintaining open space, and assess unique challenges such as the protection of wildlife, sensitive habitats, or historical resources.

### 4.12.1 PARK RECOMMENDATIONS

## Park A - Marlborough Property 43.2 acres

This park site is located in the northern region of the city off Perris Boulevard. This park site was previously identified in the Moreno Valley General Plan (2021) and could potentially add up to 43.2 acres to the existing park system. The terrain at this site varies but provides a great opportunity to design a large, passive park that has amenities and features such as trails, picnic areas, playgrounds, gardens, outdoor exercise equipment, educational spaces, or habitat restoration areas.

## Park B - Moreno Valley Mall Redevelopment Park-5.52 acres

The existing Moreno Valley Mall is slated to undergo redevelopment in the future. This is an opportunity to design a park space that is approximately 5 acres in size. A new park in this location would provide residents and shopping mall visitors a fun and unique recreation opportunity. Park amenities such as playgrounds, splash pads, picnic areas, or educational spaces can be incorporated. Redesigning shopping malls to include park elements has been a strategy many cities and developers have
used in the past decade. This strategy has resulted in positive outcomes for both the owner of the site and the residents that get to spend time in these spaces.

## Park C - Ironwood Ave and Davis St-12.8 acres

This site is located off Davis Street, just south of Ironwood Avenue. This 12.8-acre site could potentially provide a variety of new park amenities that would benefit the surrounding neighborhood and the City at large. The terrain is relatively flat which allows for an easier approach to designing amenities such as sports courts and fields, playgrounds, picnic areas, walking paths, a restroom building, and outdoor exercise equipment.

## Park D - Alessandro Blvd and Day St / Edgemont-8.2 acres

This City-owned vacant land is located off Alessandro Boulevard and Day Street. The surrounding neighborhood is one of the oldest in the City and residents currently do not have access to a park that is within a half-mile. A new park in this neighborhood would provide residents access to amenities such as a playground, picnic areas, court sports, walking path, splash pad, or outdoor exercise equipment.

## Park E - Cottonwood Ave and Perris Blvd-9.24 acres

This park site is located off Cottonwood Avenue, just east of Perris Boulevard. This 9.24-acre site can provide residents from the surrounding neighborhood access to a variety of park amenities such as a playground, picnic areas, court sports, walking path, a couple of youth-sized sports fields, or outdoor exercise equipment.

## Park F - Morrison Park Expan-sion-7.0 acres

Developing the open land located southwest of Morrison Park will help expand access to new amenities. Specific recommendations are identified in Section 4.13.13 of this chapter.

## Park G - Redlands Blvd and Brodiaea Ave - 8.19 acres

This site is located off Redlands Boulevard and Brodiaea Avenue. This 8.19 -acre site is relative-ly-flat, open space that would allow the City to design amenities such as sports courts, a couple of youth-sized fields, a playground, picnic areas, walking paths, a restroom building, and outdoor exercise equipment. Wayfinding and interpretive signage would also help residents learn about the surrounding open space and trail opportunities.


### 4.12.2 TRAIL RECOMMENDATIONS

The trails shown in Figure 4-2 are the proposed multi-use trails that build upon the City's Bicycle Master Plan (BMP) (2014), MoVal 2040 General Plan, Master Plan of Trails (2018), and World Logistics Center Specific Plan (2014). Many of these proposed trails connect to existing parks and open space, providing additional forms of transportation and helping close gaps in the existing trails network.

The proposed trails are either paved Class 1 multi-use trails, such as the Juan Bautista de Anza, or natural surface trails that can be used by bicyclists, pedestrians and equestrians. Many of these trails are located near the perimeter of the City's boundary and connect to regional destinations such as Box

Springs Mountain Reserve, Lake Perris Recreation Area, Riverside County open space, and the San Jacinto Wildlife Area.

The recommended multi-use trails are meant to connect to other existing trails, such as the Juan Bautista de Anza trail, and to close gaps such as between Rancho Verde High School and Moreno Valley College along the perimeter of Lake Perris Recreation Area. These types of trails could provide both recreational and commuting forms of travel for residents to enjoy.

The City and the surrounding area are home to unique resources and trails to these open spaces can showcase the local geology, landform, and habitats. For example, Box Springs Mountain Reserve provides incredible views of the region while Lake Perris provides access aquatic recreation.

It is important to note a large open space area that is located in the northern area of the city. Donkeyland Rescue is a nonprofit organization that is dedicated to protecting wild burros and their habitats. Their private property creates a large east-towest barrier for those wishing to connect to City destinations via trails. There have been previous attempts to develop nature trails through this property that strike a balance between providing access to open space areas in Riverside County while protecting the goals of Donkeyland Rescue. The City is encouraged to continue conversations with Donkeyland Rescue to determine the best strategies to develop trails that respect each others' initiatives.

Photo credits to Moreno Valley Trailseekers

Trails
$\qquad$
$\qquad$ Juan Bautista de Anza Trail
$\qquad$
$\qquad$
工 Trail subject to feasibility of freeway bridge

Trail Recommendations
$\qquad$ Previously Proposed Trails
= = = Proposed Trails
$\qquad$ Previously Proposed Multi-use Paths (from BMP)
=- = - Proposed Multiuse Paths
( $\downarrow$ Pedestrian Crossings
(4) Equestrian Crossing
$\Leftrightarrow$ Animal Crossing
目 Traffic LightPotential Area for Nature Center

### 4.13 OPPORTUNITY AREA ANALYSIS

Making efficient use of existing park space is incredibly important when designing or redesigning parks. This section identifies underutilized park areas within existing parks and suggests recommended amenities for these infill areas. If these recommendations were to be implemented, the City could help address amenity deficits identified in Chapter 2 and help fulfill additional needs identified by the community.

### 4.13.1 OPPORTUNITY AREAS ANALYSIS

The opportunity area analysis determines undeveloped or underutilized areas within a park and suggests park amenities that can potentially fit based on the square footage of the area. Each park with an opportunity area is shown alongside a table of potential amenities, supporting text, and a key map highlighting potential recommendations. The table identifies what kinds of amenities can approximately fit in the opportunity areas based on square footage and dimensions.

The amenities with an " $X$ " indicate a need based on park amenity deficits and geographic distribution of park amenities identified in Chapter 2. The amenities listed at the top of each table (highlighted with a star) are based on community input and the analysis completed in chapter two of this Plan. The City is encouraged to explore the best options for each park and is expected to use this section of the Plan as a guide to determine which amenities to design and construct over the next ten years.

Parks with no opportunity areas and therefore not included in this analysis are Civic Center Amphitheater and Park, Fairway Park, Hidden Springs Passive Nature Park, Lasselle Sports Park, March Field Park, and Santiago Park.

## Public Input on Opportunity Areas

Giving residents an opportunity to share their ideas for potential new park amenities at these opportunity areas was a priority during the community engagement process. Participants at the second workshop were given the opportunity to vote on their most desired amenities. These votes were tallied and integrated into the final amenity recommendations for each opportunity area.


### 4.13.2 ADRIENNE MITCHELL MEMORIAL PARK OPPORTUNITY ANALYSIS

Adrienne Mitchell Memorial Park is a neighborhood park located in the eastern area of the city. The existing amenities include a playground, tot-lot, basketball half-court, walking loop, group picnic area, and horseshoe pit. Although this park has several amenities already, there are spaces for additional amenities.

There are three opportunity areas at this park: a large grassy area in the center of the park and two other areas on the southeast corner of the park. According to votes at the second community workshop, the top five park amenities recommended at this park are restrooms, community garden, youth rectangular soccer field, outdoor exercise stations along the walking path, and a skate park.

FIGURE 4-3: Adrienne Mitchell Memorial Park Opportunity Areas


Restrooms


Community Garden


Youth Rectangular Soccer Field


Skate Park

TABLE 4-3: Adrienne Mitchell Memorial Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | AREA 1: <br> 69,640 | AREA 2: <br> 8,210 | AREA 3: <br> 5,450 |
| :--- | :--- | :---: | :---: | :---: |
| Restrooms | $400-1,000$ | x | x | x |
| Community Garden | $3,000-12,000$ |  | x | x |
| Youth Rectangular Soccer Field | $4,500-28,350$ | x |  |  |
| Outdoor Exercise Stations along walking path | $500-2,000$ |  | x | x |
| Skate Park | $12,000-18,000$ | x |  |  |
| Splashpad / Water Play Feature | $800-4,000$ |  | x | x |
| Group Picnic Areas (12+ people) | $500-1,500$ | x | x |  |
| Tot-lot Playground (ages 2-5) | $1,500-4,000$ |  | x | x |
| Adventure Playground | varies | x | x | x |
| Volleyball | 4,000 | x |  |  |
| Tennis | 7,200 | 1,800 | x |  |
| Pickleball |  |  |  |  |

### 4.13.3 BAY SIDE PARK OPPORTUNITY ANALYSIS

Bay Side Park is adjacent to a grocery market and a residential neighborhood. It is a large rectangular park in the northwestern part of Moreno Valley. Existing amenities in the park include a playground, basketball halfcourt, a walking trail through the park, a shaded picnic area, and an open grass area.

Three opportunity areas at this park were identified: one in the western portion and two additional areas in the eastern and central portions of the park. The top five amenities recommended for the park are an upgrade to the existing playground, a tot-lot playground, larger group picnic areas, a community garden, and splashpads/water play features.

FIGURE 4-4: Bay Side Park Opportunity Areas


[^34] rate playground (ages 6-12) and tot-lot play area


Upgraded
Playground


Tot-lot
Playground


Group picnic Areas ( $12+$ people)


Community
Garden


Splashpad /
Water Play Feature

TABLE 4-4: Bay Side Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICALSF | AREA 1: 2,990 | AREA 2: $2,290$ | AREA 3: $5,890$ | $\begin{gathered} \text { AREA 4: } \\ 23,410 \end{gathered}$ | AREA 5: 6,330 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\sum$ Upgraded Playground | 4,000-8,000 | X | x | X |  |  |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | x | X | x |  |  |
| 5 Group Picnic Areas (12+ people) | 500-1,500 | X | x | X | x | X |
| I Community Garden | 3,000-12,000 | X | X | X |  | X |
| W Splashpad / Water Play Feature | 800-4,000 |  |  | x | x |  |
| Outdoor Exercise Area | 500-2,000 | X |  | X | X |  |
| Restrooms | 400-1,000 | X | x | X | X |  |
| Adventure Playground | varies |  |  | x | X |  |
| Basketball | 6,300 |  |  |  | X |  |
| Volleyball | 4,000 |  |  |  | x |  |
| Tennis | 7,200 |  |  |  | X |  |
| Pickleball | 1,800 |  |  |  | X |  |
| Youth Rectangular Soccer Field | 4,500-28,350 |  |  |  | X |  |
| Walking Loop | varies | x |  |  |  |  |

### 4.13.4 BETHUNE PARK OPPORTUNITY ANALYSIS

Bethune Park is located in the southern edge of Moreno Valley within a residential area and adjacent to Mary McLeod Bethune Elementary. Included within the boundaries of the park are a snack bar, a playground, two tennis courts, a shaded picnic area, a barbecue station, and a splash pad area. A joint-use agreement exists between the City and the Elementary School that allows public use of two baseball/softball fields adjacent to and separated from the park by a gate and a fence.

The opportunity areas of the park are in its southernmost eastern and western portions. Based on community feedback, the four recommended amenities are a multi-purpose field, basketball half-court or full-sized court, outdoor exercise area, and youth rectangular soccer field.

FIGURE 4-5: Bethune Park Opportunity Areas


Multi-purpose Field


Outdoor
Exercise Area


Basketball


Youth Rectangular Soccer Field

TABLE 4-5: Bethune Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | AREA 1: <br> 16,440 | $\begin{aligned} & \text { AREA 2: } \\ & \text { 18,490 } \end{aligned}$ | $\begin{aligned} & \text { AREA 3: } \\ & 32,330 \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: |
| Multi-Purpose Field | 30,000-95,000 |  |  | x |
| $\sum$ Basketball / Half-Court Basketball | 6,300 | x | x | x |
| $\bigcirc$ Outdoor Exercise Area | 500-2,000 | x | x |  |
| Youth Rectangular Soccer Field | 4,500-28,350 |  |  | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x | x |
| Adventure Playground | 1,500-4,000 | x | x |  |
| Skate Park | 12,000-18,000 |  |  | x |
| Community Garden | 3,000-12,000 | x | x | x |
| Volleyball | 4,000 | x | x | x |
| Pickleball | 1,800 | x | x | x |

### 4.13.5 CELEBRATION PARK OPPORTUNITY ANALYSIS

Located in the eastern side of Moreno Valley next to Landmark Middle School, Celebration Park offers amenities such as shaded picnic areas, a playground area, a basketball half-court, a splash pad, a large grassy open space, and a walking loop with picnic tables and seating areas.

Four opportunity areas identified exist within the walking loop of the park. According to community workshop feedback, the most desired amenities are a pickleball court, outdoor exercise area, full-sized basketball court, and community garden.

FIGURE 4-6: Celebration Park Opportunity Areas

*Note: Pickleball is highly recommended at Celebration Park at Infill Area 3 due to its far proximity from residential areas, reducing the likelihood for noise complaints from residents. Additional parking may be necessary.


TABLE 4-6: Celebration Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & 25,490 \end{aligned}$ | $\begin{aligned} & \text { AREA 2: } \\ & 28,940 \end{aligned}$ | $\begin{aligned} & \text { AREA 3: } \\ & 29,660 \end{aligned}$ | $\begin{aligned} & \text { AREA 4: } \\ & 23,260 \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Pickleball* | 1,800* | x | x | x | x |
| Outdoor Exercise Area | 500-2,000 | x | x | x | x |
| Full-Sized Basketball Court | 6,300 | x | $x$ | $x$ | $x$ |
| $\}$ Community Garden | 3,000-12,000 | x | x | x | x |
| Upgraded Playground | 4,000-8,000 | x | x | x | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x | x | x |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | x | x | x | x |
| Adventure Playground | varies | x | x | x | x |
| Volleyball | 4,000 | x | x | x | $x$ |
| Youth Rectangular Soccer Field | 4,500-28,350 | x | x | x | x |

### 4.13.6 COLLEGE PARK OPPORTUNITY ANALYSIS

College Park is located on the east side of Moreno Valley, directly next to Moreno Valley Community College. It is a 25acre community park that offers a playground and a large grassy open space with two soccer fields. A segment of a natural surface multi-use trail also passes along the southeast edge of the park.

Three opportunity areas were identified between existing amenities. Recommended amenities for College Park include an amphitheater/outdoor stage, restrooms, an upgraded playground, and a parking lot since it currently lacks parking.

FIGURE 4-7: College Park Opportunity Areas



| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | AREA 1: $35,340$ | $\begin{aligned} & \text { AREA 2: } \\ & 32,300 \end{aligned}$ | AREA 3: $28,000$ |
| :---: | :---: | :---: | :---: | :---: |
| Amphitheater/Outdoor Stage | 6,000-11,000 |  |  | x |
| Restrooms | 400-1,000 | x |  |  |
| Upgraded Playground | 8,000-9,000 | x |  |  |
| Parking | Varies | x | x | x |

TABLE 4-7: College Park Recommended Infill Amenities

### 4.13.7 EL POTRERO PARK OPPORTUNITY ANALYSIS

El Potrero Park is a 15 -acre community park located in the south end of the city near El Potrero Elementary and Bethune Park. The park is bisected by a canal but connected by a bridge that is part of the park's existing walking path. Amenities at the park include four multi-purpose athletic fields, a soccer field, a playground, picnic tables with barbecues, fitness equipment, restrooms, and a walking path.

Two opportunity areas were identified in the northeastern side of the park facing a residential area. The top amenities identified with the help of the community are an upgraded playground, group picnic areas, walking loop, basketball court, tennis court, pickleball court, and additional outdoor exercise stations.

FIGURE 4-8: El Potrero Park Opportunity Areas

$\leftarrow-\rightarrow$ Pedestrian connection improvements are recommend between El Potrero Park and Lasselle Sports Park


Upgraded Playground


Group Picnic
Areas ( $12+$ people)


Walking Loop


Basketball


Tennis


Pickleball


Outdoor Exercise Area

TABLE 4-8: El Potrero Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | AREA 1: <br> 39,680 | $\begin{aligned} & \text { AREA 2: } \\ & 20,460 \end{aligned}$ |
| :---: | :---: | :---: | :---: |
| 1 Upgraded Playground | 4,000-8,000 | x | x |
| 5 Group Picnic Areas (12+ people) | 500-1,500 | x | x |
| Walking Loop | varies | x |  |
| Basketball | 6,300 | x |  |
| Tennis | 7,200 | x | x |
| Pickleball | 1,800 | x | x |
| 15 Additional Outdoor Exercise Stations | 500-2,000 | x | x |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | x | x |
| Adventure Playground | varies | x | x |
| Splashpad / Water Play Feature | 800-4,000 | x |  |
| Volleyball | 4,000 | x |  |
| Multi-purpose Field | 30,000-95,000 | x |  |
| Youth Rectangular Soccer Field | 4,500-28,350 |  |  |

### 4.13.8 GATEWAY PARK OPPORTUNITY ANALYSIS

Gateway Park is located in a residential neighborhood on the north end of the city. The park connects the neighborhood to Sunnymead Linear Park at the center of the city. Existing amenities include a playground, large grassy open space lined with trees, restroom, and picnic tables.

Four opportunity areas were identified in the center and south side of the park. Recommended amenities from public feedback are a dog park, basketball court, tennis court, community garden, skate park, and outdoor exercise area.

FIGURE 4-9: Gateway Park Opportunity Areas



Dog Park/ Dog Run


Community Garden


Basketball


Skate Park


Tennis


Outdoor
Exercise Area

TABLE 4-9: Gateway Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & 34,910 \end{aligned}$ | AREA 2: <br> 84,100 | AREA 3: $10,460$ | AREA 4: <br> 11,420 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| , Dog Park | 43,000+ |  | x |  |  |
| Basketball | 6,300 |  | x |  |  |
| Tennis | 7,200 |  | x |  |  |
| Community Garden | 3,000-12,000 | x |  | x | x |
| 5 Skate Park | 12,000-18,000 | x | x |  |  |
| 4 Outdoor Exercise Area | 500-2,000 | x | x | x | x |
| Upgraded Playground | 4,000-8,000 | X | x |  |  |
| Adventure Playground | varies | X | x | x | x |
| Splashpad / Water Play Feature | 800-4,000 | x | x |  |  |
| Group Picnic Areas (12+ people) | 500-1,500 | X | x | x | x |
| Updated Tot-lot Playground (ages 2-5) | 1,500-4,000 | X | x | X | X |
| Volleyball | 4,000 |  | x |  |  |
| Youth Rectangular Soccer Field | 4,500-28,350 |  | x |  |  |
| Youth Baseball | 50,000-77,000 |  | x |  |  |
| Youth Softball | 35,000-50,000 |  | x |  |  |
| Multi-purpose Field | 30,000-95,000 |  | x |  |  |

### 4.13.9 HIDDEN SPRINGS PARK OPPORTUNITY ANALYSIS

Hidden Springs Park is in a residential neighborhood on the northern edge of the city, adjacent to Hidden Springs Elementary School. The park has a small grassy open space with two youth-sized backstops, a playground that is to be renovated, and access to nearby trails.

One opportunity area was identified close to the Hidden Springs Elementary School boundary. The recommended amenities desired by the community are a walking loop, group picnic areas, a restroom building, tennis courts, pickleball courts, and an outdoor exercise area.

FIGURE 4-10: Hidden Springs Park Opportunity Areas



Walking Loop


Group Picnic Areas (12+ people)


Pickleball


Restrooms


Outdoor Exercise Area

TABLE 4-10: Hidden Springs Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICALSF | $\begin{aligned} & \text { AREA 1: } \\ & 43,050 \end{aligned}$ |
| :---: | :---: | :---: |
| Walking Loop | varies* | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x |
| Restrooms | 400-1,000 | x |
| W Tennis | 7,200 | x |
| Pickleball | 1,800* | x |
| Outdoor Exercise Area | 500-2,000 | X |
| Splashpad / Water Play Feature | 800-4,000 | x |
| Basketball | 6,300* | x |
| Volleyball | 4,000 | x |
| Community Garden | 3,000-12,000 | x |

### 4.13.10 JOHN F. KENNEDY MEMORIAL PARK OPPORTUNITY ANALYSIS

John F. Kennedy Memorial Park is a neighborhood park in the southern-central area of the city at the intersection of Indian Street and John F. Kennedy Drive. The Riverside County Fire Station is located within the park. Park amenities include an adult baseball/softball field with lighting, open grassy areas, a playground area, an outdoor exercise area, shaded picnic tables, and four illuminated tennis courts.

Four opportunity areas were identified at the park with two areas along John F. Kennedy Drive and two along Indian Street. The amenities most desired by community members are a basketball court, pickleball courts, and an updated playground.

FIGURE 4-11: John F. Kennedy Memorial Park Opportunity Areas


Basketball


TABLE 4-11: John F. Kennedy Memorial Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & \text { 18,670 } \end{aligned}$ | $\begin{gathered} \text { AREA 2: } \\ \text { 7,090 } \end{gathered}$ | $\begin{aligned} & \text { AREA 3: } \\ & 27,450 \end{aligned}$ | $\begin{aligned} & \text { AREA 4: } \\ & 3,720 \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\sum$ Basketball | 6,300* | x |  | x |  |
| Upgraded Playground | 4,000-8,000 | x |  | x | x |
| $\sim$ Pickleball | 1,800* | x | x | x |  |
| Splashpad / Water Play Feature | 800-4,000 | x | x | x | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x | x | x |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | x |  | x | x |
| Adventure Playground | varies | x |  | x | x |
| Volleyball | 4,000 | x |  | x |  |
| Walking Loop | varies | x |  |  |  |

### 4.13.11 MORENO VALLEY COMMUNITY PARK OPPORTUNITY ANALYSIS

Moreno Valley Community Park is a community park found on the central-west area of the city adjacent to Moreno Valley High School. The park currently has four lighted soccer fields, a playground, picnic tables, a walking path, shaded picnic areas, and a skate park.

Four opportunity areas were identified in the southern portion of the park. Amenities desired by community members include a group picnic area, an upgraded playground, a tot-lot playground, a splashpad/water play feature, outdoor exercise areas, pickleball courts, tennis courts, basketball courts, and volleyball courts.

FIGURE 4-12: Moreno Valley Community Park Opportunity Areas


Group Picnic Areas


Upgraded Tot-lot Splashpad/ Volleyball Playground Playground Water Play

Feature


TABLE 4-12: Moreno Valley Community Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | AREA 1: 5,190 | $\begin{aligned} & \text { AREA 2: } \\ & \text { 42,800 } \end{aligned}$ | $\begin{aligned} & \text { AREA 3: } \\ & 30,330 \end{aligned}$ | $\begin{aligned} & \text { AREA 4: } \\ & 30,520 \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x | x | x |
| Upgraded Playground | 4,000-8,000 | x | x | X | 1 |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | x | x | x | X |
| $\sum$ Splashpad / Water Play Feature | 800-4,000 | x | x | x | X |
| Pickleball | 1,800* |  | x | x | x |
| Outdoor Exercise Area | 500-2,000 | x | x | x | x |
| $\sum$ Tennis | 7,200 |  | x | x | x |
| Basketball | 6,300* | x | x | x | x |
| V Volleyball | 4,000 |  | x | x | x |
| Adventure Playground |  | x | X | x | X |
| Walking Loop | varies* | x |  |  |  |

### 4.13.12 MORENO VALLEY EQUESTRIAN PARK AND NATURE CENTER OPPORTUNITY ANALYSIS

Moreno Valley Equestrian Park and Nature Center is a 45-acre special use facility located in the northeast corner of the city. The equestrian park within the park contains an arena and pens. The park also includes Hound Dog Park, which contains a dog park with separated areas for small and larger dogs, as well as some agility equipment.

Four opportunity areas exist in the park. Recommended amenities include equestrian trails and connections to outside trails, group picnic areas, restrooms, outdoor exercise areas, and an overnight horse camping area for visitors traveling to Moreno Valley for events at the equestrian park. The City is also encouraged to explore adding a nature center building as suggested in previous planning efforts.

FIGURE 4-13: Moreno Valley Equestrian Park and Nature Center Opportunity Areas


New permanent restroom building recommended


TABLE 4-13: Moreno Valley Equestrian Park and Nature Center Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & \text { 1,300 } \end{aligned}$ | $\begin{gathered} \text { AREA 2: } \\ \text { 1,300 } \end{gathered}$ | $\begin{aligned} & \text { AREA 3: } \\ & 43,500 \end{aligned}$ | $\begin{aligned} & \text { AREA 4: } \\ & 29,600 \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\cong$ Community Garden | 3,000-12,000 |  |  | x | x |
| Walking Loop | varies | x |  |  |  |
| Group Picnic Areas (12+ people) | 500-1,500 |  |  | x | x |
| $\sum$ Restrooms | 400-1,000 | x | x | x | x |
| Outdoor Exercise Area | 500-2,000 |  |  | x | x |
| Overnight Horse Camping Area | varies |  |  | x | x |

### 4.13.13 MORRISON PARK OPPORTUNITY ANALYSIS

Morrison Park is at the heart of Moreno Valley and along the same street as Mountain View Middle School and Valley View High School. The park's primary use is as a baseball/softball park as it offers baseball/softball fields, restrooms, a snack bar, picnic tables with barbecues, and a large grassy area next to the fields.

Four opportunity areas were identified at the park. Community feedback was used to develop the following recommended amenities: a dog park (being considered by the City), a skate park, a group picnic area, a playground, a tot-lot playground, a pump track, a walking loop, a basketball court, a volleyball court, a tennis court, and a pickleball court. Areas one, two, and four offer great potential for a pump track due to their varied terrain.

FIGURE 4-14: Morrison Park Opportunity Areas

*City considering a dog park in this is area
Note: Pump track being planned for southern expansion of this park.


Pump Track Walking
Loop
Pickleball

TABLE 4-14: Morrison Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICALSF | $\begin{aligned} & \text { AREA 1*: } \\ & 171,600 \end{aligned}$ | $\begin{gathered} \text { AREA } 2^{*:} \\ 41,200 \end{gathered}$ | $\begin{aligned} & \text { AREA 3: } \\ & \text { 11,960 } \end{aligned}$ | $\begin{gathered} \text { AREA 4*: } \\ 50,520 \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| *Dog Park | 43,000+ |  |  |  |  |
| 5 Skate Park | 12,000-18,000 | $x$ | x | x | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x | x | x |
| Playground | 4,000-8,000 | x | x | x | x |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | x | x | x | x |
| *Pump Track | varies | x | x |  | x |
| Walking Loop | varies | $x x^{2}$ |  |  |  |
| Basketball | 6,300 | x | x | x | x |
| V Volleyball | 4,000 | x | x |  | x |
| Tennis | 7,200 | x | x |  | x |
| ) Pickleball | 1,800 | x | x |  | x |
| Community Garden | 3,000-12,000 | $\times$ | x | x | x |
| Outdoor Exercise Area | 500-2,000 |  | x | $\times$ | x |
| Splashpad / Water Play Feature | 800-4,000 |  | $x$ |  | x |
| Adventure Playground | varies* | x | x | $x$ | x |

### 4.13.14 PATRIOT PARK OPPORTUNITY ANALYSIS

Patriot Park is a mini park located on the south side of the city. Amenities include a walking path around the perimeter of the park and a playground area.

The infill opportunity area analysis helped pinpoint an opportunity area on the west half of the park. Community feedback indicated that the top three desired are an outdoor exercise area, a basketball half-court, and a group picnic area. The infill opportunity area is fairly small, but offers a great opportunity to reduce the city's basketball amenity deficit and geographic gap by adding one at this park.

FIGURE 4-15: Patriot Park Opportunity Areas


TABLE 4-15: Patriot Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{gathered} \text { AREA 1: } \\ 6,488 \end{gathered}$ |
| :---: | :---: | :---: |
| Outdoor Exercise Area | 500-2,000 | x |
| $\sim$ Basketball Half-Court | 3,600-6,000 | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x |
| Dog Park / Dog Run | 8,000-50,000 | x |
| Volleyball | 4,000 | x |
| Pickleball | 1,800 | x |

### 4.13.15 PARQUE AMISTAD OPPORTUNITY ANALYSIS

Parque Amistad is a passive neighborhood park with basic amenities located in the southeast area of Moreno Valley. Existing amenities include a playground, a picnic area, two basketball half-courts, and a softball/baseball backstop.

One opportunity area was identified on the west side of the park along Caballo Road. Recommended amenities include a tennis court, a pickleball court, an outdoor exercise area, group picnic areas, and a basketball court.

FIGURE 4-16: Parque Amistad Opportunity Areas


TABLE 4-16: Parque Amistad Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICALSF | AREA 1: <br> 22,770 |
| :---: | :---: | :---: |
| $\sum$ Tennis | 7,200 | x |
| $\longleftarrow$ Pickleball | 1,800 | x |
| 3 Outdoor Exercise Area | 500-2,000 | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x |
| Basketball | 6,300 | x |
| Restrooms | 400-1,000 | x |
| Adventure Playground | varies | x |
| Upgraded Playground | 4,000-8,000 | $x$ |
| Walking Loop | varies | x |

### 4.13.16 PEDRORENA PARK OPPORTUNITY ANALYSIS

Pedrorena Park is located in the southeast part of the city and contains active and passive recreational amenities. Active recreational amenities include a basketball court, four tennis courts, a playground area, and an open grassy area with a baseball/softball backstop. Passive amenities include two picnic areas with barbecue grills.

Three opportunity areas were identified in the north and southwestern areas of the park. The amenities most desired by workshop participants are an upgraded playground, a tot-lot playground, splashpad/water play feature, a dog park/dog run, a skate park, a volleyball court, a youth rectangular soccer field, a multi-purpose field, and a pickleball court.

FIGURE 4-17: Pedrorena Park Opportunity Areas


Feature

TABLE 4-17: Pedrorena Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICALSF | $\begin{aligned} & \text { AREA 1: } \\ & \text { 14,940 } \end{aligned}$ | $\begin{aligned} & \text { AREA 2: } \\ & 48,670 \end{aligned}$ | AREA 3: 7,640 |
| :---: | :---: | :---: | :---: | :---: |
| Upgraded Playground | 4,000-8,000 | X |  | X |
| 3 Tot-lot Playground (ages 2-5) | 1,500-4,000 | x |  | X |
| Splashpad / Water Play Feature | 800-4,000 | X | X | X |
| 5 Dog Park / Dog Run | 8,000-50,000 |  | x |  |
| Skate Park | 12,000-18,000 | x | X |  |
| Volleyball | 4,000 | X | X | X |
| Youth Rectangular Soccer Field | 4,500-28,350 |  | x |  |
| Multi-purpose Field | 30,000-95,000 |  | x |  |
| Pickleball* | 1,800 | x | X | x |
| Community Garden | 3,000-12,000 | X | x | x |
| Outdoor Exercise Area | 500-2,000 | X | X |  |
| Group Picnic Areas (12+ people) | 500-1,500 | X | X | x |
| Adventure Playground |  | X | X | X |
| Youth Baseball | 50,000-77,000 |  | X |  |
| Youth Softball | 35,000-50,000 |  | x |  |
| Walking Loop | varies |  | x |  |

### 4.13.17 RIDGE CREST PARK OPPORTUNITY ANALYSIS

Ridge Crest Park is a neighborhood park located on the east side of the city next to Ridge Crest Elementary School. Existing amenities include a playground, restrooms, picnic areas with barbecues, and an open grassy area with a baseball/softball backstop.

Two opportunity areas were identified. One is adjacent to Ridge Crest Elementary School and the other is along John F. Kennedy Drive. Recommended amenities include a multi-purpose field, a basketball court, group picnic areas, a volleyball court, a tennis court, a pickleball court, a community garden, and an outdoor exercise area.

FIGURE 4-18: Ridge Crest Park Opportunity Areas



Multi-purpose Field


Community Garden


Basketball


Outdoor
Exercise Area


Group Picnic Area


Tennis


Volleyball


Pickleball

TABLE 4-18: Ridge Crest Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | AREA 1: 49,940 | $\begin{gathered} \text { AREA 2: } \\ 9,276 \end{gathered}$ |
| :---: | :---: | :---: | :---: |
| Multi-purpose Field | 30,000-95,000 | x |  |
| Basketball | 6,300 | x |  |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x |
| ${ }^{2}$ Volleyball | 4,000 | x |  |
| 5 Tennis | 7,200 | x |  |
| 5 Pickleball | 1,800 | x |  |
| I Community Garden | 3,000-12,000 |  | x |
| O Outdoor Exercise Area | 500-2,000 | x | x |
| Splashpad / Water Play Feature | 800-4,000 | x | x |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 |  | x |
| Adventure Playground | varies |  | x |
| Youth Rectangular Soccer Field | 4,500-28,350 | $x$ |  |
| Youth Baseball | 50,000-77,000 | x |  |
| Youth Softball | 35,000-50,000 | x |  |

### 4.13.18 ROCK RIDGE PARK OPPORTUNITY ANALYSIS

Rock Ridge Park is located in a residential neighborhood on the northeastern side of Moreno Valley. Park amenities include a playground area, two shaded picnic areas, one non-shaded picnic area, and a walking trail that connects the south and north portions of the park. This park also provides an entrance to the Cold Creek Trail, which leads to the neighborhood hilltop.

The opportunity areas identified are located in four quadrants of the park in existing grassy open-areas. This park is fairly new and existing amenities are in great condition. As a result, only a few amenity recommendations were identified. Recommended amenities include a splashpad/water play feature and an outdoor exercise area.

FIGURE 4-19: Rock Ridge Park Opportunity Areas



Splashpad /
Water Play Feature


Outdoor
Exercise Area

TABLE 4-19: Rock Ridge Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICALSF | AREA 1: <br> 5,670 | AREA 2: <br> 3,890 | AREA 3: 7,030 | $\begin{gathered} \text { AREA 4: } \\ 3,810 \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Splashpad / Water Play Feature | 800-4,000 |  |  | x | x |
| O Outdoor Exercise Area | 500-2,000 | x | x | x | x |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 |  |  | x | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x | x | x |
| Adventure Playground | varies | x | x | x | x |
| Restrooms | 400-1,000 | x | x |  |  |
| Upgraded Playground | 4,000-8,000 |  |  | x | x |
| Pickleball | 1,800 | x |  | x |  |
| Community Garden | 3,000-12,000 | x | x | x | x |

### 4.13.19 SHADOW MOUNTAIN PARK OPPORTUNITY ANALYSIS

Shadow Mountain Park is a community park located on the northern boundary of the city. Park amenities include two youth softball fields with lights, a baseball/softball field that is converted for soccer use during the off-season, a large playground with a zip line area, and a tot-lot. Other amenities include a shaded picnic area with barbecues, a restroom, and a long walking loop along the perimeter of the park.

Since the park already has a great variety of amenities, just one opportunity area was identified. Future amenities to consider in this area include an outdoor exercise area, a group picnic area, and a splashpad/ water play feature.

FIGURE 4-20: Shadow Mountain Park Opportunity Areas



Group Picnic Areas (12+ people)


Splashpad / Water Play Feature

TABLE 4-20: Shadow Mountain Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & \text { 20,130 } \end{aligned}$ |
| :---: | :---: | :---: |
| $\oiiint$ Outdoor Exercise Area | 500-2,000 | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x |
| Splashpad / Water Play Feature | 800-4,000 | x |
| Adventure Playground | varies | x |

### 4.13.20 SUNNYMEAD PARK OPPORTUNITY ANALYSIS

Sunnymead Park is a community park located near the center of the city. The park is bisected by a flood control channel, but connected by a pedestrian bridge. Even though the park is mostly used for its four lighted baseball fields, the park has other amenities, including a playground, picnic areas with barbecues, concession stands, and restrooms.

Two opportunity areas were identified at the northwest side of the park. Amenities to be considered include a community garden, an outdoor exercise area, group picnic areas, and a basketball court. Community gardens are recommended here due to community need and proximity to multi-family housing where residents may not have access to private outdoor space for a garden. Moreno Valley currently lacks basketball courts, which is why one is recommended here.

FIGURE 4-21: Sunnymead Park Opportunity Areas



Community Garden


Outdoor
Exercise Area


Group Picnic Areas (12+ people)


Basketball

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & 30,610 \end{aligned}$ | $\begin{aligned} & \text { AREA 2: } \\ & \text { 10,150 } \end{aligned}$ |
| :---: | :---: | :---: | :---: |
| W Community Garden | 3,000-12,000 | $x$ | $x$ |
| Outdoor Exercise Area | 500-2,000 | X | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x |
| Basketball | 6,300 | x |  |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | X | x |
| Upgraded/Updated Playground | 4,000-8,000 | x | x |
| Adventure Playground | varies | X | x |
| Volleyball | 4,000 | x |  |
| Tennis | 7,200 | X |  |
| Pickleball | 1,800 | x |  |
| Walking Loop | varies | x |  |

### 4.13.21 TOWNGATE MEMORIAL PARK AND TOWNGATE II PARK OPPORTUNITY ANALYSIS

TownGate Memorial Park and TownGate II Park are combined to form a community park on the northwest side of the city. Park amenities include a community center, two playground areas, softball/baseball fields, soccer fields converted for softball/baseball use during the off-season, picnic areas with barbecues, and a walking loop. The park also has a walking and biking path that connects to the Juan Bautista de Anza Trail.

Five opportunity areas were identified in the northeast, southeast, and southwest areas of the park. Desired amenities include a dog park (being considered by the City), a splashpad/ water play feature, a basketball court, a volleyball court, a tennis court, additional group picnic areas, and a pickleball court.

FIGURE 4-22: TownGate Memorial Park Opportunity Areas

$\square$ *City considering a dog park in this is area


Dog Park /


Splashpad /


Basketball


Volleyball


TABLE 4-22: TownGate Memorial Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & 33,640 \end{aligned}$ | AREA 2: <br> 11,540 | AREA 3: <br> 11,270 | AREA 4: $12,540$ | AREA 5: <br> 14,420 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| *Dog Park | 43,000+ | x | x | x | x | x |
| S Splashpad / Water Play Feature | 800-4,000 |  | x | x | x | x |
| ) Basketball | 6,300 | x |  |  |  | x |
| V Volleyball | 4,000 | x |  |  |  | x |
| Tennis | 7,200 | x |  |  |  | x |
| Group Picnic Areas | 500-1,500 | x | x | x | x | x |
| \% Pickleball | 1,800 | x |  |  |  | x |
| Adventure Playground | varies | x | x | x |  |  |
| Youth Rectangular Soccer Field | 4,500-28,350 | x |  |  |  | x |
| Skate Park | 12,000-18,000 | X |  |  | x | x |
| Community Garden | 3,000-12,000 | x | x | x | x | x |

### 4.13.22 VICTORIANO PARK OPPORTUNITY ANALYSIS

Victoriano Park is a passive neighborhood park in the southeast side of Moreno Valley next to Victoriano Elementary School. The only amenities at this park are a multi-purpose field and restrooms.

Two opportunity areas were identified near the center of the park. Based on feedback from community members, the most desired amenities include a basketball court, a playground, a tot-lot playground, group picnic areas, and an outdoor exercise area.

FIGURE 4-23: Victoriano Park Opportunity Areas



Basketball


Upgraded
Playground


Tot-lot Playground


Group Picnic Area


Outdoor
Exercise Area

TABLE 4-23: Victoriano Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | AREA 1: <br> 15,620 | AREA 2: 7,380 |
| :---: | :---: | :---: | :---: |
| Basketball | 6,300 | x | x |
| Playground | 4,000-8,000 | x | x |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | x | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x |
| W Outdoor Exercise Area | 500-2,000 | x | x |
| Community Garden | 3,000-12,000 | X | X |
| Splashpad / Water Play Feature | 800-4,000 | x | X |
| Adventure Playground | 4,000-8,000 | x | x |
| Walking Loop | varies | x |  |
| Volleyball | 4,000 | x | x |
| Tennis | 7,200 | X | X |
| Pickleball | 1,800 | X | X |

### 4.13.23 VISTA LOMAS PARK OPPORTUNITY ANALYSIS

Vista Lomas Park is neighborhood park on the east side of the city. The park has two basketball half-courts, a playground area for ages 2-5 and 5-12 years old, and an open grassy area with backstops.

Two opportunity areas were identified along Iris Avenue. Recommended amenities include a walking loop, an outdoor exercise area, group picnic areas, a pickleball court, and a youth rectangular soccer field.

FIGURE 4-24: Vista Lomas Park Opportunity Areas



Pickleball


Youth Rectangular Soccer Field

TABLE 4-24: Vista Lomas Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & 24,920 \end{aligned}$ | AREA 2: $6,280$ |
| :---: | :---: | :---: | :---: |
| W Walking Loop | varies | x |  |
| Outdoor Exercise Area | 500-2,000 |  | x |
| Group Picnic Areas (12+ people) | 500-1,500 | x |  |
| $\ddagger$ Pickleball | 1,800 | x |  |
| Y Youth Rectangular Soccer Field | 4,500-28,350 | x |  |
| Upgraded Playground | 4,000-8,000 |  | x |
| Adventure Playground | varies |  | x |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 |  | x |
| Restrooms | 400-1,000 |  | x |
| Splashpad / Water Play Feature | 800-4,000 |  | x |

### 4.13.24 WESTBLUFF PARK OPPORTUNITY ANALYSIS

Westbluff Park is a small neighborhood park located in the north part of the city between Vista Heights Middle School and Canyon Springs High School. The park contains a playground, picnic areas with barbecues, and a walking path.

Two opportunity areas were identified are on the east and west sides of the park. The amenities desired by the community members through the planning process are a skate park (being considered by the City), a pickleball court, a volleyball court, a basketball court, and an outdoor exercise area.

FIGURE 4-25: Westbluff Park Opportunity Areas



Skate Park


Pickleball


Volleyball

TABLE 4-25: Westbluff Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICALSF | $\begin{aligned} & \text { AREA 1: } \\ & \text { 13,730 } \end{aligned}$ | $\begin{aligned} & \text { AREA 2: } \\ & 52,500 \end{aligned}$ |
| :---: | :---: | :---: | :---: |
| *Skate Park | 12,000-18,000 |  | x |
| Pickleball | 1,800 | x | x |
| Volleyball | 4,000 |  | x |
| Basketball | 6,300 |  | x |
| Outdoor Exercise Area | 500-2,000 | x | x |
| Community Garden | 3,000-12,000 |  | x |
| Adventure Playground | varies | x | X |
| Splashpad / Water Play Feature | 800-4,000 | X |  |
| Group Picnic Areas (12+ people) | 500-1,500 | x | x |
| Tennis | 7,200 |  | x |
| Youth Rectangular Soccer Field | 4,500-28,350 |  | x |
| Youth Baseball | 50,000-77,000 |  | x |
| Youth Softball | 35,000-50,000 |  | X |

### 4.13.25 WESTON PARK OPPORTUNITY ANALYSIS

Weston Park is a neighborhood park located on the northeast side of the city and is near Bear Valley Elementary School, Butterfield Language Academy, Valley View High School, and Moreno Elementary School. The park offers a large variety of amenities, including a full basketball court, a playground area, a picnic area, a walking path, and restrooms.

Two opportunity areas were identified as having the potential to further enhance the park. The top recommended amenities include an upgrade to the existing playground, a tot-lot playground, a dog park, a skate park, a community garden, a youth rectangular soccer field, a multi-purpose field, and a group picnic area.

FIGURE 4-26: Weston Park Opportunity Areas


Playground


Multi-purpose Field


Tot-lot Playground


Group Picnic Areas (12+ people)


Dog Park / Dog Run


Community Garden


Skate Park


Youth Rectangular
Soccer Field

TABLE 4-26: Weston Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | AREA 1: 11,280 | AREA 2: 67,940 |
| :---: | :---: | :---: | :---: |
| U Upgraded/Updated Playground | 4,000-8,000 | X | X |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 | X | X |
| Dog Park | 43,000+ |  | x |
| Skate Park | 12,000-18,000 |  | x |
| Community Garden | 3,000-12,000 | X |  |
| Youth Rectangular Soccer Field | 4,500-28,350 |  | X |
| Multi-purpose Field | 30,000-95,000 |  | X |
| Group Picnic Areas (12+ people) | 500-1,500 | X | X |
| Outdoor Exercise Area | 500-2,000 | X | X |
| Adult Rectangular Soccer Field | 65,000-85,000 |  | X |
| Community Garden | 3,000-12,000 | X |  |
| Walking Loop | varies |  |  |
| Splashpad / Water Play Feature | 800-4,000 | X |  |
| Restrooms | 400-1,000 | X | X |
| Adventure Playground | varies | X | X |
| Volleyball | 4,000 |  | X |

### 4.13.26 WOODLAND PARK OPPORTUNITY ANALYSIS

Woodland Park is a community park found in the center of Moreno Valley. Park amenities include two separate playground areas for people of ages 2-5 and 5-12 years old, a lighted softball field, four tennis courts with pickleball courts overlaid on the tennis courts, four basketball half-courts, a walking path, an area with chess tables, and restrooms.

Seven opportunity areas were identified around the perimeter of the park. While the park already offers a variety of amenities, it still has potential to add more to meet community needs. The most desired amenities include group picnic areas, a full-sized basketball court, an outdoor exercise area, a community garden, volleyball courts, and pickleball courts.

FIGURE 4-27: Woodland Park Opportunity Areas



Group Picnic Areas (12+ people)


Community Garden


Basketball


Volleyball


Outdoor Exercise Area


Pickleball

TABLE 4-27: Woodland Park Recommended Infill Amenities

| RECOMMENDED AMENITIES FOR INFILL | TYPICAL SF | $\begin{aligned} & \text { AREA 1: } \\ & 13.050 \end{aligned}$ | $\begin{aligned} & \text { AREA 2: } \\ & \text { 10,090 } \end{aligned}$ | AREA 3: <br> 16,560 | AREA 4: 7,950 | AREA 5: <br> 17,410 | AREA 6: $12,240$ | $\begin{aligned} & \text { AREA 7: } \\ & \text { 14,240 } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| W Group Picnic Areas (12+ people) | 500-1,500 | x | x | x | x | x | x | x |
| Full-Sized Basketball Court | 6,300 | $x$ |  | x |  |  |  | x |
| ) Outdoor Exercise Area | 500-2,000 | $x$ | x | x | x | x | x | x |
| Community Garden | 3,000-12,000 | $x$ | x | x | x | x | x | x |
| ) Volleyball | 4,000 | x | x | x |  |  |  | x |
| P Pickleball | 1,800 | x | x | x |  |  |  | x |
| Adventure Playground | varies | x | x | x | x | x | x | x |
| Splashpad / Water Play Feature | 800-4,000 |  | x | x |  |  | x |  |
| Tot-lot Playground (ages 2-5) | 1,500-4,000 |  | x | x | x |  |  |  |
| Walking Loop | varies |  |  |  | x |  |  |  |

### 4.14 POTENTIAL FUTURE LEVEL OF SERVICE WITH RECOMMENDED PROJECTS

It is important to evaluate how the potential new park sites can affect the level of service analysis described in Chapter 2. The following section analyzes the improvements to both the population-based level of service and the geographic level of service for the projected 2045 population. Although these improvements do not completely fulfill the park level of service goals previously outlined, they do have the potential to make a significant impact to the City's parks and recreation system.

### 4.14.1 FUTURE POPULATION LOS WITH RECOMMENDED NEW PARKS

The proposed seven park sites would bring an additional 94 acres which would help decrease the projected park acre deficit in 2045 from 389 acres to 296 acres. This would also bring the City to a 1.89 park acres for every 1,000 residents status, as shown in Table 4-3.

TABLE 4-28: Future Population LOS with Recommended Park Projects

| 2045 LOS | ALL CITY PARKS |
| :--- | :---: |
| Existing Park Acreage | 411.16 |
| Potential Future Park Acreage | 94.15 |
| Recommended Adopted Standard <br> per 1,000 Population | 3.00 |
| Acres per 1,000 Population (2045) | 1.89 |
| Total Surplus/Deficit Acres per 1,000 <br> Population (2045) | -1.11 |
| Acres in Deficit | 296.00 |

## Future Geographic LOS

Figure 4-28 displays the seven potential new parks, the existing park system, and the half-mile travelsheds for both the existing and potential future parks. This map shows that the seven potential new parks will help fill several geographic travelshed gaps in the western, northern, eastern, and central areas of Moreno Valley. The potential new park travelsheds are displayed as an orange shade and the existing travelsheds are displayed as light green shade on the map. Although the seven new parks do make a positive impact, there are several more geographic gaps that the City will need to continue to focus on. The City is encouraged to pursue purchasing additional land for new parks in these gap areas.



Future Parks \& Recreation Facilities
Future Half-Mile Parks Travelshed
Parks
Half-Mile Parks Travelshed
Schools
City Boundary
Sphere of Influence

### 4.15 FUTURE PARK PRIORITY AREAS

The following section describes Park Priority Areas throughout the city. These areas are located within the remaining geographic level of service gaps that require the City to do more detailed analyses. The maps represented in Figure 4-29 through Figure 4-32 highlight the general location of undeveloped sites that the City would need to evaluate further.

Community members at the third public workshop were asked what types of park facilities they would like to see added in these priority areas and if there were any specific properties they would like the City to develop into a park.

Community feedback included the desire for additional facilities such as a new library, performing arts center, amphitheaters, a museum as well as park spaces such as a wilderness park, a nature center, passive park spaces, and trails with outdoor fitness areas. The City is encouraged to continue to search for new park and facility opportunities in these priority areas. The City may consider purchasing vacant land from private owners or creating partnerships / joint-use agreements to bring new park access to the residents.

FIGURE 4-31: Park Priority Area: Central


FIGURE 4-32: Park Priority Area: Southwest


### 4.16 IMPLEMENTATION GOALS

The following section outlines short, mid, and long-term goals the City can explore to improve the parks and recreation system. They are based on the feedback collected from the community as well as the initiatives discussed earlier in this chapter.

## Short-Term Goals

Short-term project goals are those that can typically be implemented within a one to two-year time frame.

Improve park safety and security by adding items such as lighting, new fencing, or security cameras. Identify all sports fields maintenance needs and implement low to mid-cost renovations such as fencing, seating areas, or small areas of surface replacements (sod or decomposed granite).
" Identify and add low-cost passive park amenities such as picnic tables, bench seating, community gardens, or small walking paths.
" equestrian users as well as where to add animal crossing signage.
» Identify four locations for new dog parks (no less than 1-acre in size)
") Offer additional recreation programs and classes that surpass $100 \%$ registrations such as: Dance Exploration, Summer Youth and Teen Basketball, Valley Day Camp (11-14), CYSC All Stars Cheer, Valley Day Camp (7-8), Ballet/Acro, Winter Youth and Teen Basketball, and Art Expression.

## Mid-Term Goals

Mid-term project goals are those that can typically be implemented within a two to five-year time frame.
") Develop individual park master plans to help identify low to mid-cost park amenities (i.e. picnic areas, playgrounds and playground surfacing, or shade over existing playgrounds).
" Identify and add shade (trees or structure) to key amenities such as playgrounds, picnic areas, and grouped exercise stations.
" Identify all sports fields maintenance needs and implement mid to high-cost renovations such as lighting, large seating areas (bleachers) or large areas of sod/artificial turf enhancements.
" Design and install basketball, volleyball, tennis, and pickleball courts to help address the City's deficits identified in Chapter 2.
» Develop an aquatics center master plan to identify the location and amenities a large aquatics center can offer.
" Design and construct up to four new dog parks.
") Design and install multi-use trails that help close gaps between existing trailheads or provide direct access between destinations such as schools, parks, and commercial centers.
»> Perform a detailed facility and asset conditions assessment to determine deferred maintenance.
" Conduct a feasibility study to identify private sites that can be purchased and converted to park land.


Passive Amenities


Field Maintenance


Park Master Plans


Shaded Amenities


## Court Sports



Multi-use Paths

## Long-Term Goals

Long -term project goals are those that can typically be implemented within a five to ten-year time frame.
") Purchase private land to construct new park sites identified earlier in this Chapter.
" Construct a new multi-purpose recreation/teen center that offers spaces such as a large gymnasium for indoor basketball/volleyball/ pickleball, community rooms, rentable banquet spaces, exercise equipment rooms, quiet rooms for school work, and passive outdoor spaces such as picnic areas and gardens.
") Constructa new senior center that offers spaces such as game rooms, lounges, cafeteria, recreation rooms, and other multi-purpose rooms.
» Construct an aquatics center to help meet community demands of pool programs.
" Construct a large sports complex that includes baseball, softball, and multi-purpose rectangular fields to help address the City's deficits identified in Chapter 2.
") Construct a wilderness park that focuses on passive park amenities and experiences such as trails, picnic areas, nature playgrounds, gardens, habitat restoration areas, small amphitheaters, interpretive signage, and a small multi-purpose building that contains community rooms for people to gather.
") Continue making improvements to the Equestrian Center such as trails, restrooms, or a nature center building that houses community meeting spaces.
" Coordinate with the Library Services Department to identify a location for a new larger library that offers a variety of indoor spaces that can supplement recreation programming needs.


Aquatic Center


New Larger Senior Center


New Recreation/ Youth Center


Nature Center


New Larger Library

### 4.17 FUNDING RECOMMENDATIONS

The following section describes potential federal, state, regional, and local funding sources that can be pursued to advance the recommendations in the Plan. The funding sources vary in purpose and scope, but are intended to help an agency implement parks, recreation, and trails projects and programming. Table 4-29 includes information on the funding sources, a general description of the program, funding cycle, and project examples.

TABLE 4-29: Potential Funding Sources

|  |  |  |  |  |  | OJEC | CT TY |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | PROGRAM | SOURCE |  | CYCLE | INF | PLN | PGM | TRL | ES |
| FEDERAL PROGRAMS |  |  |  |  |  |  |  |  |  |
| 1 | Highway Safety Improvement Program | Federal <br> Highway Administration /Caltrans | The Highway Safety Improvement Program funds work on any public road or publicly owned bicycle or pedestrian pathway or trail, or on tribal lands for general use of tribal members, that improves the safety for its users. | Every 1 to 2 years | X |  |  | X | - Install hybrid pedestrian signals at trail crossings <br> - Install RRFBs at locations adjacent to parks, trails, and schools |
| 2 | Reconnecting <br> Communities <br> and <br> Neighborhoods <br> Grant Program | U.S. <br> Department of <br> Transportation | The Reconnecting Communities and Neighborhoods Program provides grant opportunities to redress the legacy of harm from transportation infrastructure including: construction-related displacement, environmental degradation, limited access to goods and services, degraded public health due to air and noise pollution, limited opportunities for physical activity, and hampered economic vitality of the surrounding community. | Annual (through 2026) | X | X |  | X | - Study for the removal, retrofit or mitigation of a transportation facility that acts as a barrier to community connectivity <br> - Replacement or mitigation of a transportation barrier with a linear park and trail |
|  |  |  | STATE PROGRAMS |  |  |  |  |  |  |
| 3 | Boat Launching Facilities Grant Program | California Department of Parks and Recreation | The Boat Launching Facility Grant Program provides funding to local government agencies for the construction or improvement of boat launching facilities. Grants can be used for costs associated with engineering, construction, inspections, and permits. | Annual | X |  |  |  | Construction or improvement of: <br> - Boat launching ramps <br> - Restrooms <br> - Boarding floats <br> - Shore protection <br> - Parking lots |

[^35]|  | FUNDING PROGRAM | FUNDING SOURCE | PURPOSE/DESCRIPTION | FUNDING CYCLE | PROJECT TYPE |  |  |  | PROJECT EXAMPLES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | INF | PLN | PGM | TRL |  |
| 4 | Coastal <br> Conservancy <br> Grant Program | State of California Coastal Conservancy | The Coastal Conservancy funds a wide variety of projects along the California coast, San Francisco Bay, and in coastal watersheds to increase availability of beaches, parks and trails for the public, protect and restore natural lands and wildlife habitat, preserve working lands, and increase community resilience to the impacts of climate change. | Ongoing | X | X | X | X | - Provide coastal experiences for communities who face barriers to coastal access <br> - Build a regional trail increasing coastal access <br> - Enhance coastal recreational amenities, such as restrooms, parking, picnic areas, interpretive centers, shade structures, etc. |
| 5 | Habitat Conservation Fund Program | California Department of Parks and Recreation | The Habitat Conservation Fund provides funding to protect fish, wildlife, and native plant resources; to acquire or develop wildlife corridors and trails; and to provide for nature interpretation programs and other programs which bring urban residents into park and wildlife areas. | Annual | X |  | X | X | - Build new trails <br> - Rehabilitate existing trails <br> - Install interpretive trail elements <br> - Install seating or lighting along trails <br> - Develop educational or interpretive activities or trips |
| 6 | Land and Water Conservation Fund | National <br> Park Service/ <br> California <br> Department of Parks and Recreation | The Land and Water Conservation is a federal National Park Service grant program administered by the California Department of Parks and Recreation. The program provides funding for the acquisition or development of land to conserve irreplaceable lands and to create new outdoor recreation opportunities for the health and wellness of Californians. | Annual | X |  |  | X | - Land acquisition for a new park, an existing park expansion, a wildlife corridor with public viewing and outdoor recreational use, and/or a recreational/active transportation corridor <br> - Development of recreation features and amenities for outdoor recreation |
| 7 | Non- <br> Motorized <br> Boat <br> Launching <br> Facility Grant <br> Program | California Department of Parks and Recreation | The Statewide Non-Motorized Boat Launching Facility Grant Program provides funding to create or improve public non-motorized boating access. Grants can be used for costs associated with engineering, construction, inspections, and permits. | Annual | X |  |  |  | Construction or impovement of: <br> - Small, handlaunched boat ramps <br> - Small parking lots <br> - Restrooms |


|  | FUNDING PROGRAM | FUNDING SOURCE | PURPOSE/DESCRIPTION | FUNDING CYCLE | PROJECT TYPE |  |  |  | PROJECTEXAMPLES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | INF | PLN | PGM | TRL |  |
| 8 | Outdoor <br> Equity Grants <br> Program | California <br> Department of Parks and Recreation | The Outdoor Equity Grants Program provides funding to improve the health and wellness of Californians through new educational and recreational activities, service learning, career pathways, and leadership opportunities that strengthen a connection to the natural world. The program funds the creation, operation, and transportation costs of outdoor programs in underserved communities. | Annual |  |  | X |  | - Programs must include both community activities AND trips to natural areas. <br> - Community activities can include environmental education, nature discovery walks, and more. <br> - Natural area trips can include traveling to a regional, state, national park, tribal land, river or lake, beach, forest, mountain, or desert area for day or overnight trips within California. |
| 9 | Outdoor <br> Recreation <br> Legacy <br> Partnership <br> Program | National <br> Park Service/ <br> California <br> Department of Parks and <br> Recreation | The Outdoor Recreation Legacy Partnership Program is a federal National Park Service grant program administered by the California Department of Parks and Recreation. The program focuses on communities with little to no access to publicly available, close-by, outdoor recreation opportunities in urban areas. The program funds the acquisition or development of new parks, or substantial renovations to parks in economically disadvantaged cities or towns of at least 30,000 people. | Annual | X |  | X |  | - Land acquisition for outdoor recreation <br> - Development of recreation features and amenities for outdoor recreation |


|  | FUNDING PROGRAM | FUNDING SOURCE | PURPOSE/DESCRIPTION | FUNDING CYCLE | PROJECT TYPE |  |  |  | PROJECT EXAMPLES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | INF | PLN | PGM | TRL |  |
| 10 | Ramp <br> Repair and Modification Grant Program | California Department of Parks and Recreation | The Statewide Ramp Repair and Modification Grant Program provides funding to quickly restore safe and convenient public boating access by correcting public health and safety issues caused by unexpected damage due to flood, accidents, wildfires or by extending existing boat ramps as needed due to drought conditions at DBW-funded boat launching facilities. | Annual | X |  |  |  | - Restore boating access and launching facilities <br> - Address health or safety issues |
| 11 | Recreational Trails Program | U.S. <br> Department of <br> Transportation <br> Federal <br> Highway <br> Administration <br> /California <br> Department of Parks and Recreation | The Recreational Trails Program is a federal U.S. Department of Transportation grant program administered by the California Department of Parks and Recreation. The program provides funding to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. | Annual | X |  |  | X | - Land acquisition <br> - Development/ rehabilitation of trails, trailheads, and trail amenities <br> - Construction of new trails <br> - Maintenance of existing trails |
| 12 | Statewide Park <br> Development and <br> Community Revitalization Program | California Department of Parks and Recreation | The Statewide Park Program provides funding to create new parks and recreation opportunities in critically underserved communities across California. Project selection is based on several criteria, including need-based criteria, such as critical lack of park space, significant poverty, community challenges, and more. | Annual | X |  |  | X | - Land acquisition <br> - Rehabilitation of existing or development of new recreation features, such as, an aquatic center, athletic fields, amphitheater, community gardens, dog parks, open space, trails, skate parks, public art, picnic areas, etc. |


|  | FUNDING PROGRAM | FUNDING SOURCE | PURPOSE/DESCRIPTION | FUNDING CYCLE | PROJECT TYPE |  |  |  | PROJECT EXAMPLES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | INF | PLN | PGM | TRL |  |
| 13 | Wildlife Conservation Board Grants | Wildlife Conservation Board | The Wildlife Conservation Board provides funding for habitat acquisition, conservation, and restoration, as well as development of compatible public access facilities. Project benefits should include one or more of the following: protected biodiversity, increased climate resilience, enhanced public access, conserved/ enhanced working landscapes, conserved/enhanced waterrelated projects, and/or support of the State Wildlife Action Plan. | Ongoing | X | X |  | X | - Open-space corridors or trail linkages <br> - Publicly accessible hunting, fishing, wildlife viewing, and other wildlifedependent recreational opportunities <br> - Climate adaptation and resilience projects <br> - Habitat restoration |
| PHILANTHROPIC PROGRAMS |  |  |  |  |  |  |  |  |  |
| 14 | Energize the Environment Grant Program | Quadratec | Quadratec offers small onetime grants for projects that promote environmental connection, responsibility, and/ or stewardship. | Annual |  |  | X |  | - Trail building or restoration projects <br> - Park beautification events <br> - Environmental education projects <br> - Youth educational engagement events |
| 15 | Fruit Trees For Your Community | The Fruit Tree Planting Foundation | The Fruit Tree Planting Foundation donates fruit orchards where the harvest will best serve communities for generations, at places such as community gardens, public schools, city/state parks, lowincome neighborhoods, Native American reservations, and other high impact areas. | Ongoing | X |  |  |  | - Planting of highquality fruit-trees and shrubs at a local park |


|  | FUNDING PROGRAM | FUNDING SOURCE | PURPOSE/DESCRIPTION | FUNDING CYCLE | PROJECT TYPE |  |  |  | PROJECTEXAMPLES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | INF | PLN | PGM | TRL |  |
| 16 | Hometown Grants | T-Mobile | Hometown Grants fund shovelready projects in rural towns (with populations <50,000) that foster local connections, including technology upgrades, outdoor spaces, the arts, and community centers. | Quarterly | X |  |  | X | - Improvements to outdoor parks or trails <br> - Adaptive uses of older buildings into community centers |
| 17 | Humanities Projects Grants | National Endowment for Humanities | The National Endowment for Humanities offers a range of different grant programs on an ongoing basis. Different grant programs provide funding for a variety of outputs, including but not limited to infrastructure, equipment, programming, curriculum, research, media, and more. | Ongoing | X | X | X |  | - Art or science exhibitions <br> - Community discussions <br> - Films and documentaries <br> - Climate adaptation planning <br> - Cultural preservation and resilience <br> - Trainings and workshops |
| 18 | PeopleForBikes Community Grant Program | PeopleForBikes | The PeopleForBikes Community Grant Program supports bicycle infrastructure projects and targeted initiatives that make it easier and safer for people of all ages and abilities to ride. | Annual | X |  |  | X | - Bike paths, lanes, trails and bridges <br> - Mountain bike facilities <br> - Bike parks and pump tracks <br> - BMX facilities <br> - End-of-trip facilities such as bike racks, bike parking, bike repair stations and bike storage |


|  | FUNDING PROGRAM | FUNDING SOURCE | PURPOSE/DESCRIPTION | FUNDING CYCLE | PROJECT TYPE |  |  |  | PROJECT EXAMPLES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | INF |  | Pem | TRL |  |
| 19 | Outdoor Access Initiative | Yamaha | Yamaha provides funding to non-profit or tax exempt groups (clubs \& associations), public riding areas (local, state and federal), outdoor enthusiast associations and land conservation organizations, and communities with an interest in protecting, improving, expanding and/or maintaining access for safe, responsible, and sustainable use by motorized off-road vehicles. | Quarterly | X |  |  | X | - Trail development <br> - Trail signage <br> - Trail mapping/ map production - Wildlife and habitat management - Establishing public access to land for outdoor recreation |
| 20 | Rails to Trails Grant Program | Rails to Trails | Rails to Trails provides funding to organizations and local agencies that are working to develop and connect equitable trail networks. | Annual | X | X |  | X | - Rail-trail <br> - Greenway <br> - Multi-use trail <br> - Shared-use path |
| 21 | The Skatepark Project Grants | The Skatepark Project | The Skatepark Project offers grants to help underserved communities create safe and inclusive public skateparks for youth. | Annual | X |  |  |  | - New Skatepark Construction <br> - New Skate Spot Construction <br> - Skateable Art Sculptures <br> - Active City Space Conversion (legalizing skateboarding in shared spaces) <br> - Accessibility Improvements/ Repairs |
| 22 | The Soccer Fund | U.S. Soccer Foundation | The Soccer Fund provides funding for mini-pitch and sports lighting projects. Minipitches are ideal for urban areas and other communities where finding a safe place to play can be difficult. These small, customized, hard-court surfaces are perfectly suited for organized soccer programs and pick-up games. | Ongoing | X |  |  |  | - Mini-pitch project <br> - Soccer lighting project |
| 23 | USTA Facility Funding Grant Program | United States Tennis Association | The United States Tennis Association offers grants to upgrade existing and build new tennis facilities. | Ongoing | X |  |  |  | - Construction of new tennis facility <br> - Resurfacing of existing tennis court <br> - Tennis court amenity improvements |


|  | FUNDING PROGRAM | FUNDING SOURCE | PURPOSE／DESCRIPTION | FUNDING CYCLE | PROJECT TYPE |  |  |  | PROJECTEXAMPLES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | INF | PLN | PGM | TRL |  |
| 24 | Youth Development Foundation | MLB／MLBPA | MLB－MLBPA Youth <br> Development Foundation（YDF） is a joint initiative by MLB and MLBPA to support efforts that focus on improving the caliber， effectiveness and availability of amateur baseball and softball programs across the United States and internationally． | Ongoing | X |  | X |  | －Field lighting， renovations，and construction <br> －Equipment and／or fees for baseball and softball programs －Programs to promote baseball and softball |

## 4．17．1 FUNDING TOOLS FOR LOCAL GOVERNMENTS

In addition to the funding programs provided in the previous tables，there are also a number of traditional funding and financing tools available to local governments that may be used to advance parks and recre－ ation projects．

These funding and financing tools include，but are not limited to：

》）Community Facilities District
》）Easement Agreements／Rules
》）Equipment Rental Fees
》）Facilities Benefit Assessment District

》）Facility Use Permit Fees
》）Recreation Service Fees
＞）Food and Beverage Tax
»）General Fund
》）General Obligation Bonds
》 Infrastructure Financing Dis－ trict
＞）In－Lieu Fees
＞Intergovernmental Agree－ ments
》）Lease Revenues
》 Mello Roos District
＞）Park Impact Fees
》）Pouring Rights Agreements
＞）Private Development Agree－ ments
》）Residential Park Improvement Fees

》）Revenue Bond Revenues
»）Sales Tax Revenues
》）Surplus Real Estate Sale Rev－ enues
＞）Traffic Impact Fees
》）Transient Occupancy Tax Revenues
》）Utility Taxes
》）Wastewater Fund Reserves
》 Business Improvement Dis－ trict
＞＞Maintenance Assessment District
＞＞Property Based Improvement District
》 Landscape Maintenance Dis－ trict
＂Targeted Fundraising Activi－ ties
＞）Special Habitat Conservation Programs
＞Special Parks and Recreation Bond Revenues


[^0]:    * Interest Earnings include the GASB 31 required recognition of gain/loss on investments to market value as of Fiscal Year End.

[^1]:    ADA Notice
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[^2]:    ${ }^{1}$ This table reflects Buyer's Fraction of Seller's Expected Energy by calendar month in the first Contract Year, as if the first Contract Year begins on January first. The first Contract Year may begin on another date, per the terms of this Agreement.

[^3]:    ${ }^{1}$ Public Resources Code §§ 21000-21177
    ${ }^{1} 14$ California Code of Regulations $\S \S 15000-15387$

[^4]:    1 The plan must (a) quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area; (b) establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable; (c) identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area; (d) specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level; (e) establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels; and (f) be adopted in a public process following environmental review (State CEQA Guidelines Section 15183.5).

[^5]:    RR ENE-2 The Project is subject to the California Green Building Standards Code (CALGreen) (CCR, Title 24, Part 11). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods.

[^6]:    Mitigated Construction

[^7]:    Notes:

[^8]:    [B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[^9]:    ${ }^{1}$ Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
    ${ }^{2}$ Cross Reference Table E. 1 above to populate this column.
    ${ }^{3}$ As documented in a Co-Permittee Approved Study and provided in Appendix 6.

[^10]:    Table 1 - Significant Faults in Proximity of the Project Site (Page 7)

[^11]:    ${ }^{6}$ The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

[^12]:    ${ }^{1}$ For more information on compost, visit the US Composting Council website at: http://compostingcouncil.org/

[^13]:    (1) PLAN 1B LEFT ELEVATION $\qquad$

[^14]:    Source: Highway Capacity Manual 6th Edition

[^15]:    Legend

[^16]:    12022 California Building Code, Chapter 2: Definitions, Section 202 Definitions

[^17]:    2 CFC Sec. 503.1.1, Exception 1.1

[^18]:    ${ }^{3}$ FRAP (Fire and Resource Assessment Program). 2008. California Department of Forestry and Fire Protection. Fire Hazard Severity Zones (Adopted in 2007). Accessed at: http://frap.cdf.ca.gov/.
    ${ }^{4}$ FRAP (Fire and Resource Assessment Program). 2020. California Department of Forestry and Fire Protection. Fire Perimeters through 2020. Accessed at: http://frap.cdf.ca.gov/.

[^19]:    ${ }^{5}$ Scott, Joe H. and Robert E. Burgan. 2005. Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 72 p.

[^20]:    ${ }^{6}$ National Fire Protection Association (NFPA) 2005: Protecting Life and Property from Wildfire. James C. Smalley, Editor.
    ${ }^{7}$ Quarles and Beall. 2022. Proceedings of the California 2001 Wildfire Conference. Accessed at https://fireecology.org

[^21]:    c: Riverside County Planning Department
    Attn: Timothy Wheeler
    EM:mm

[^22]:    ${ }^{1}$ Public Resources Code §§ 21000-21177
    ${ }^{2} 14$ California Code of Regulations §§15000-15387

[^23]:    ${ }^{1}$ USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2023)
    ${ }^{2}$ Phase I Cultural Resources Assessment prepared by Jean A. Keller, April 2023.

[^24]:    ${ }^{4}$ EMWD Will Serve Letter dated November 14, 2022
    ${ }^{5}$ Will Serve Letter from EMWD, November 14, 2022

[^25]:    ${ }^{6}$ CALFIRE FHSZ Viewer: https://egis.fire.ca.gov/FHSZ/

[^26]:    ${ }^{1}$ Public Resources Code §§ 21000-21177
    ${ }^{2} 14$ California Code of Regulations $\S \S 15000-15387$

[^27]:    " Prioritize clean air, water, fresh food, and community health.

[^28]:    Moreno Valley Equestrian Park: A Special-use Facility Photo credits to Moreno Valley Trailseekers

[^29]:    Moreno Valley CRC Reception Patio

[^30]:    * Indicated total count of youth and adult fields

[^31]:    ${ }^{1}$ PolicyLink. (2021). Advancing Park Equity in California. https://www.policylink.org/sites/default/ files/pl_brief_ca-parks-equity.pdf

[^32]:    *Note: Program listed twice because this program is offered at multiple weeks during the month

[^33]:    Source: ESRI Business Analyst

[^34]:    1
    Existing playground recommended to be renovated \& expanded with sepa-

[^35]:    * INF - Infrastructure PLN - Planning and Design PGM - Programming TRL - Trails

