emwd EASTERN MUNICIPAL WATER DISTRICT

Initial Study and Mitigated Negative Declaration
Perris North Groundwater Monitoring Project











April 2020

WOODARD &CURRAN

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Initial Study and Mitigated Negative Declaration

Perris North Groundwater Monitoring Project

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TABLE OF CONTENTS

SECTION		PAGE NO.
1.	**INTRODUCTION**	**1-1**
1.1	Purpose of this Document	1-1
1.2	Scope of this Document	1-1
1.3	CEQA Process	1-2
1.4	Impact Terminology	1-2
2.	**PROJECT DESCRIPTION**	**2-1**
2.1	Project Location	2-1
2.2	Project Overview	2-1
2.3	Environmental Setting and Existing Conditions	2-16
2.4	Proposed Project Description	2-18
2.4.1	Description of Monitoring Wells	2-18
2.4.2	Well Construction	2-18
2.4.3	Construction Vehicle Trips	2-20
2.4.4	Construction Schedule	2-20
2.4.5	Equipment / Staging Areas	2-20
2.4.6	Operations and Maintenance	2-21
2.4.7	Operation and Maintenance Vehicle Trips	2-21
2.4.8	Environmental Commitments	2-21
2.5	Required Permits and Approvals	2-22
3.	**ENVIRONMENTAL CHECKLIST FORM**	**3-1**
3.1	Aesthetics	3-5
3.2	Agriculture and Forestry Resources	3-8
3.3	Air Quality	3-11
3.4	Biological Resources	3-22
3.5	Cultural Resources	3-28
3.6	Energy	3-31
3.7	Geology and Soils	3-35
3.8	Greenhouse Gas Emissions	3-44
3.9	Hazards and Hazardous Materials	3-48
3.10	Hydrology and Water Quality	3-57
3.11	Land Use and Planning	3-65
3.12	Mineral Resources	3-67
3.13	Noise	3-69
3.14	Population and Housing	3-85
3.15	Public Services	3-86
3.16	Recreation	3-90
3.17	Transportation	3-91
3.18	Tribal Cultural Resources	3-96

3.19 Utilities and Service Systems 3-101
3.20 Wildfire 3-106
3.21 Mandatory Findings of Significance 3-109

4. FEDERAL CROSS-CUTTING ENVIRONMENTAL REGULATION EVALUATION 4-1

4.1 Federal Endangered Species Act 4-1
4.2 National Historic Preservation Act 4-2
4.3 Clean Air Act 4-3
4.4 Coastal Zone Management Act 4-3
4.5 Farmland Protection Policy Act 4-4
4.6 Executive Order 11988 – Floodplain Management, as amended by Executive Orders 12148 and 13690 4-4
4.7 Federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Executive Order 13168 4-4
4.8 Fish and Wildlife Coordination Act 4-5
4.9 Executive Order 11990 – Protection of Wetlands 4-5
4.10 Executive Order 13112 – Invasive Species 4-6
4.11 Wild and Scenic Rivers Act 4-6
4.12 Safe Drinking Water Act, Sole Source Aquifer Program 4-6
4.13 Executive Order 13195 – Trails for America in the 21st Century 4-7
4.14 Executive Order 13007 – Indian Sacred Sites 4-7
4.15 Magnuson-Stevens Fishery Conservation and Management Act 4-7
4.16 Environmental Justice 4-8

5. REPORT PREPARATION 5-1

5.1 Report Authors 5-1
5.2 References 5-1

Tables

Table 2-1: Well Depth and Construction Timeline 2-19
Table 2-2: Estimated Construction Vehicle Fleet for Well Construction 2-19
Table 2-3: Permits and Approvals 2-22
Table 3-1: Criteria Pollutant Attainment Status – SCAB 3-13
Table 3-2: SCAQMD Air Quality Significance Thresholds 3-13
Table 3-3: SCAQMD LSTs for Construction and Operation 3-14
Table 3-4: General Conformity De Minimis Emission Rates for the South Coast Air Basin 3-15
Table 3-5: Summary of Model Runs Conducted 3-16
Table 3-6: Equipment List Per Construction Phase and Daily Operational Hours 3-17
Table 3-7: Maximum Daily Construction Emissions (pounds/day) 3-19
Table 3-8: Maximum Daily Construction Emissions (pounds/day) with Environmental Commitments 3-19
Table 3-9: Maximum Daily Emissions Compared to LSTs (pounds/day) 3-20

Table 3-10: Annual Project Construction Emissions Compared to De Minimis Thresholds (tons/year) 3-20
Table 3-11: Maximum Daily Project Operational Emissions Compared to SCAQMD Thresholds 3-21
Table 3-12: Construction Fleet Summary 3-33
Table 3-13: Proposed Project GHG Emissions per Year ($MTCO_2e$/year) 3-47
Table 3-14: Zoning of Proposed Monitoring Well Sites 3-66
Table 3-15: City of Moreno Valley Non-Impulsive Noise Guidelines 3-72
Table 3-16: Noise Shielding Guidance References 3-77
Table 3-17: Existing Attenuation Features at Proposed Well Sites 3-77
Table 3-18: Distance to Nearest Residences at Proposed Well Sites 3-78
Table 3-19: Typical Construction Equipment Noise Levels 3-79
Table 3-20: Vibration Source Levels for Construction Equipment 3-82

Figures

Figure 2-1: Project Vicinity 2-3
Figure 2-2: Perris North Sub-Basin / Perris North Groundwater Management Zone 2-4
Figure 2-3: Co-mingled Areas of Concern and Perris North Groundwater Management Program 2-5
Figure 2-4: Project Overview 2-6
Figure 2-5: Moreno Valley Area Sites 2-9
Figure 2-6: North and East Area Sites 2-12
Figure 2-7: South Area Sites 2-14
Figure 2-8: Sentinel Well 2-15
Figure 3-1: Schedule Used for Air Quality Modeling 3-16
Figure 3-2: Flood Hazard Areas 3-64
Figure 4-1: USEPA EJScreen Map of Minority Population 4-10

Appendices

Appendix A: CalEEMod Results
Appendix B: Biological Resources Assessment
Appendix C: Cultural Resources Assessment
Appendix D: Paleontological Resource Assessment
Appendix E: Noise Measurements

Acronym List

Acronym	Definition
AB	Assembly Bill
APE	Area of Potential Effect
AQMP	Air Quality Management Plan
AWWA	American Water Works Association
Basin Plan	Water Quality Control Plan for the Santa Ana River Basin
BIOS	Biogeographic Information and Observation System
BMP	Best management practice
BO	Biological Opinion
BUOW	Burrowing owl
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal Fire	California Department of Forestry and Fire Protection
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	U.S. Code of Federal Regulations
CGS	California Geological Survey
CH4	Methane
CHRIS	California Historical Resources Information System
CMP	Congestion Management Program
CNDDB	California Natural Diversity Data Base

Acronym	Definition
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon monoxide
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
COC	Constituents of Concern
CWA	Federal Clean Water Act
CWSRF	Clean Water State Revolving Fund
DAC	Disadvantaged Community
dB	Decibel
DCE	dichloroethene
DDT	dichlorodiphenyltrichloroethane
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
DWSAP	Drinking Water Source Assessment Program
DWSRF	Drinking Water State Revolving Fund
EIR	Environmental Impact Report
EMWD	Eastern Municipal Water District
EOP	Emergency Operations Plan
ESA	Federal Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FRAP	Fire and Resource Assessment Program
FTA	Federal Transit Administration
g	acceleration
GHG	Greenhouse gas emissions
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan

Acronym	Definition
GSP	Groundwater Sustainability Plan
GWP	Global Warming Potential
H2S	Hydrogen sulfide
IBC	International Building Code
IPaC	Information, Planning, and Consultation
IS	Initial Study
kHz	kilohertz
L_{10}	Ten-Percentile Exceeded Sound Level
L_{dn}	Day-Night Average Sound Level
L_{eq}	Equivalent Sound Level
LHMP	Local Hazard Mitigation Plan
LOS	Level of service
LRA	Local Responsibility Area
LRTS	Long Range Transportation Study
LST	Localized Significance Threshold
LUST	Leaking underground storage tank
MARB	March Air Reserve Base
MBTA	Migratory Bird Treaty Act
mgd	Million gallons per day
MHI	Median household income
MND	Mitigated Negative Declaration
MRZ	Mineral Resource Zones
MSHCP	Multiple Species Habitat Conservation Plan
MT	Metric tons
MTBE	methyl tertiary butyl ether
MVU	Moreno Valley Utility
N2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission

Acronym	Definition
ND	Negative Declaration
NEPA	National Environmental Policy Act
NHMLAC	Natural History Museum of Los Angeles County
NHPA	National Historic Preservation Act
NO2	Nitrogen Oxide
NOx	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
O3	Ozone
OEM	Office of Emergency Management
OSHA	California occupational safety and Health Administration
Pb	Lead
PCB	polychlorinated biphenyl
PCE	Perchloroethylene
PFCs	perfluorinated compounds
pga	Peak Ground Acceleration
PM	Particulate Matter
PPV	Peak Particle Velocity
PRPA	Paleontological Resources Preservation Act
RCTC	Riverside County Transportation Commission
Rms	Root Mean Square
ROG	Reactive organic gases
RWQCB	Regional Water Quality Control Board
RWRF	Regional water reclamation facility
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison

Acronym	Definition
SDAC	Severely Disadvantaged Community
SEMS	Standardized Emergency Management System
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Officer
SMRA	Surface Mining and Reclamation Act
SO2	Sulfur Dioxide
SRA	Source receptor area
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic air contaminants
TBA	tertiary butyl alcohol
TCE	trichloroethene
TDS	Total dissolved solids
TMDL	total maximum daily load
U.S.C.	United States Code
US EPA	United States Environmental Protection Agency
USDA	US Department of Agriculture
USFS	Us Forest Service
USFWS	United State Fish and Wildlife Service
USGS	US Geological Survey
UWMP	Urban Water Management Plan
VdB	Vibration Decibels
VMT	Vehicle miles traveled
VOC	Volatile organic compounds
WRCOG	Western Riverside County of Governments

1. INTRODUCTION

1.1 Purpose of this Document

Eastern Municipal Water District (EMWD) is the lead agency under the California Environmental Quality Act (CEQA) for the Perris North Groundwater Monitoring Project (the "proposed Project," "proposed action," or "Project"). CEQA requires that the lead agency prepare an initial study (IS) to determine whether an Environmental Impact Report (EIR), Negative Declaration (ND), or Mitigated Negative Declaration (MND) is needed. EMWD has prepared this IS to evaluate the potential environmental consequences associated with the proposed Project, and to disclose to the public and decision makers the potential environmental effects of the proposed Project. Based on the analysis presented herein, an MND is the appropriate level of environmental documentation for the proposed Project.

EMWD has prepared this IS/MND to evaluate the potential environmental impacts related to implementation of the proposed Project, which consists of construction and operation of groundwater monitoring wells in the Perris North groundwater basin.

1.2 Scope of this Document

This IS/MND has been prepared in accordance with CEQA (as amended) (Public Resources Code §§21000 et. seq.) and the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, §§15000 et. seq.), as updated on December 28, 2018. CEQA Guidelines §15063 describes the requirements for an IS and §§15070-15075 describe the process for the preparation of an MND. Where appropriate, this document makes reference to either the CEQA Statute or State CEQA Guidelines (as amended in December 2018). This IS/MND contains all of the contents required by CEQA, which includes a project description, a description of the environmental setting, potential environmental impacts, mitigation measures for any significant effects, consistency with plans and policies, and names of preparers.

This IS/MND evaluates the potential for environmental impacts to resource areas identified in Appendix G of the State CEQA Guidelines (as amended in December 2018). The environmental resource areas analyzed in this document include:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources

- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance

To support compliance with the federal environmental review requirements of potential funding programs, this document includes analysis pertinent to federal regulations (also referred to as federal cross-cutters or CEQA-Plus). Guidelines for complying with cross-cutting federal authorities can be found in the Drinking Water State Revolving Fund (DWSRF) regulations at 40 Code of Federal Regulations (CFR) §35.3575.

The federal cross-cutters analyzed in this document include:

- Archaeological and Historic Preservation Act (AHPA)
- Clean Air Act
- Coastal Zone Management Act
- Environmental Justice
- Executive Order 11988 - Floodplain Management, as amended by Executive Orders 12148 and 13690
- Executive Order 11990 - Protection of Wetlands
- Executive Order 13007 – Indian Sacred Sites
- Executive Order 13195 – Trails for America in the 21st Century
- Farmland Protection Policy Act
- Federal Endangered Species Act (ESA)
- Federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Executive Order 13168
- Fish and Wildlife Coordination Act (FWCA)
- Magnuson-Stevens Fishery Conservation and Management Act
- National Historic Preservation Act (NHPA)
- Rivers and Harbors Act, Section 10
- Safe Drinking Water Act, Sole Source Aquifer Protection
- Wild and Scenic Rivers Act Executive Order 13122 – Invasive Species
- Environmental Alternative Analysis

1.3 CEQA Process

In accordance with CEQA Guidelines §15073, this IS/MND will be circulated for a 30-day public review period (April 20, 2020 – May 20, 2020) to local and state agencies, and to interested organizations and individuals who may wish to review and comment on the

report. EMWD will circulate the IS/MND to the State Clearinghouse for distribution to State agencies. In addition, EMWD will circulate a Notice of Intent to Adopt a Mitigated Negative Declaration to the Riverside County Clerk, responsible agencies, and interested entities. A copy of the IS/MND is available for review at: https://www.emwd.org/public-notices.

Written comments can be submitted to EMWD by 5:00 PM on May 20, 2020 and addressed to:

Joseph Broadhead, Principal Water Resources Specialist – CEQA/NEPA
Eastern Municipal Water District
2270 Trumble Road
P.O. Box 8300
Perris, CA 92572-8300
broadhej@emwd.org

Following the 30-day public review period, EMWD will evaluate written comments and telephone calls received on the IS/MND and incorporate any substantial evidence that the proposed project could have an impact on the environment into the final IS/MND and prepare a Mitigation Monitoring and Reporting Program (MMRP).

The IS/MND will be considered by the EMWD Board of Directors at a future publicly noticed hearing, which are held on the 1st and 3rd Wednesday of each month at EMWD's headquarters.

1.4 Impact Terminology

The level of significance for each resource area uses CEQA terminology as specified below:

- **No Impact.** No adverse environmental consequences have been identified for the resource or the consequences are negligible or undetectable.
- **Less than Significant Impact.** Potential adverse environmental consequences have been identified. However, they are not adverse enough to meet the significance threshold criteria for that resource. No mitigation measures are required.
- **Less than Significant with Mitigation Incorporated.** Adverse environmental consequences that have the potential to be significant but can be reduced to less than significant levels through the application of identified mitigation strategies that have not already been incorporated into the proposed project.
- **Potentially Significant.** Adverse environmental consequences that have the potential to be significant according to the threshold criteria identified for the resource, even after mitigation strategies are applied and/or an adverse effect that could be significant and for which no mitigation has been identified. If any potentially significant impacts are identified, an Environmental Impact Report (EIR) must be prepared to meet the requirements of CEQA.

2. PROJECT DESCRIPTION

2.1 Project Location

The Perris North Groundwater Monitoring Project (proposed Project) is located in the City of Moreno Valley and the City of Perris, in the western portion of Riverside County, California (**Figure 2-1**). It overlies the Perris North Sub-Basin of the San Jacinto Groundwater Basin, which is also referred to as the Perris North Groundwater Management Zone. **Figure 2-2** shows the Perris North Sub-Basin in relation to EMWD's service area. Ten wells would be constructed at various locations in the two cities. seven of the wells would be construction within the City of Moreno Valley, while three wells would be constructed in the City of Perris. As shown in **Figure 2-1**, the project vicinity is generally bounded on the west by Interstate 215 and to the north by Gregory Lane. It is generally bounded to the south by Rider Street, and to the east by Laselle Street. Land use in the proposed Project area is predominantly residential, with commercial areas located along major roadways (Highway 60, Alessandro Boulevard, Perris Street, Ramona Expressway), and business park/light industrial in areas bordering March Air Reserve Base and in the northern area of the City of Perris (City of Moreno Valley, 2019; City of Perris, 2018).

2.2 Project Overview

The proposed Project involves construction and operation of up to 10 monitoring wells in the Perris North Sub-basin, which will allow for long term monitoring of groundwater quality. Currently, groundwater in the Perris North Sub-basin contains Contaminants of Concern (COC), leading EMWD to implement management measures in the basin in support of improved water quality as well as development and protection of safe water supplies. These management measures include monitoring groundwater quality and level, capping/sealing inactive wells to protect groundwater quality, groundwater extraction/ (and treatment, when needed) and data collection on water supplies/uses in the basin. The Perris North Sub-basin is an important resource to the region. The monitoring wells installed by the proposed Project would improve EMWD's understanding of the type, concentrations and extent of COCs. The proposed Project would also help create informed management decisions related to the Perris North Sub-basin.

Contaminants of concern include perchloroethylene (PCE) or Volatile Organic Compounds (VOCs), nitrate, perchlorate, total dissolved solids (TDS), fluoride, and manganese (co-mingled VOC-Nitrate Plume). Potential contamination sources were identified by EMWD through direct experience at wells that are currently offline, monitoring of unpumped older wells in the area, the Drinking Water Source Assessment Program (DWSAP), as well as identified through the State Water Resources Control Board the Department of Toxic Substances Control databases. As shown in **Figure 2-3**, there are two estimated comingled areas of concern, one generally north of March Air Reserve Base and one generally east of March Air Reserve Base. The northern comingled area of concern includes nitrate, VOC, and perchlorate to varying estimated

extents, while the southern comingled area of concern includes nitrate and VOCs, estimated to have similar extents (see **Figure 2-3**). **Figure 2-4** shows that within the two comingled areas of concern, three areas have been identified for nine of the 10 monitoring wells. One of these areas would be located in both comingled areas of concern ("North and East Area"), while one would be located entirely in the northern comingled area of concern ("Moreno Valley Area"), and one entirely in the southern comingled area of concern ("South Area"). Each of the three areas would have two to three monitoring wells. One additional well would be located south of the estimated extent of contamination and is referred to as a "sentinel well" whose primary purpose is to determine if the contaminants of concern are moving further south. **Figure 2-4** shows the location of these wells within the co-mingled areas of concern and their respective sub-areas.

Figure 2-1: Project Vicinity

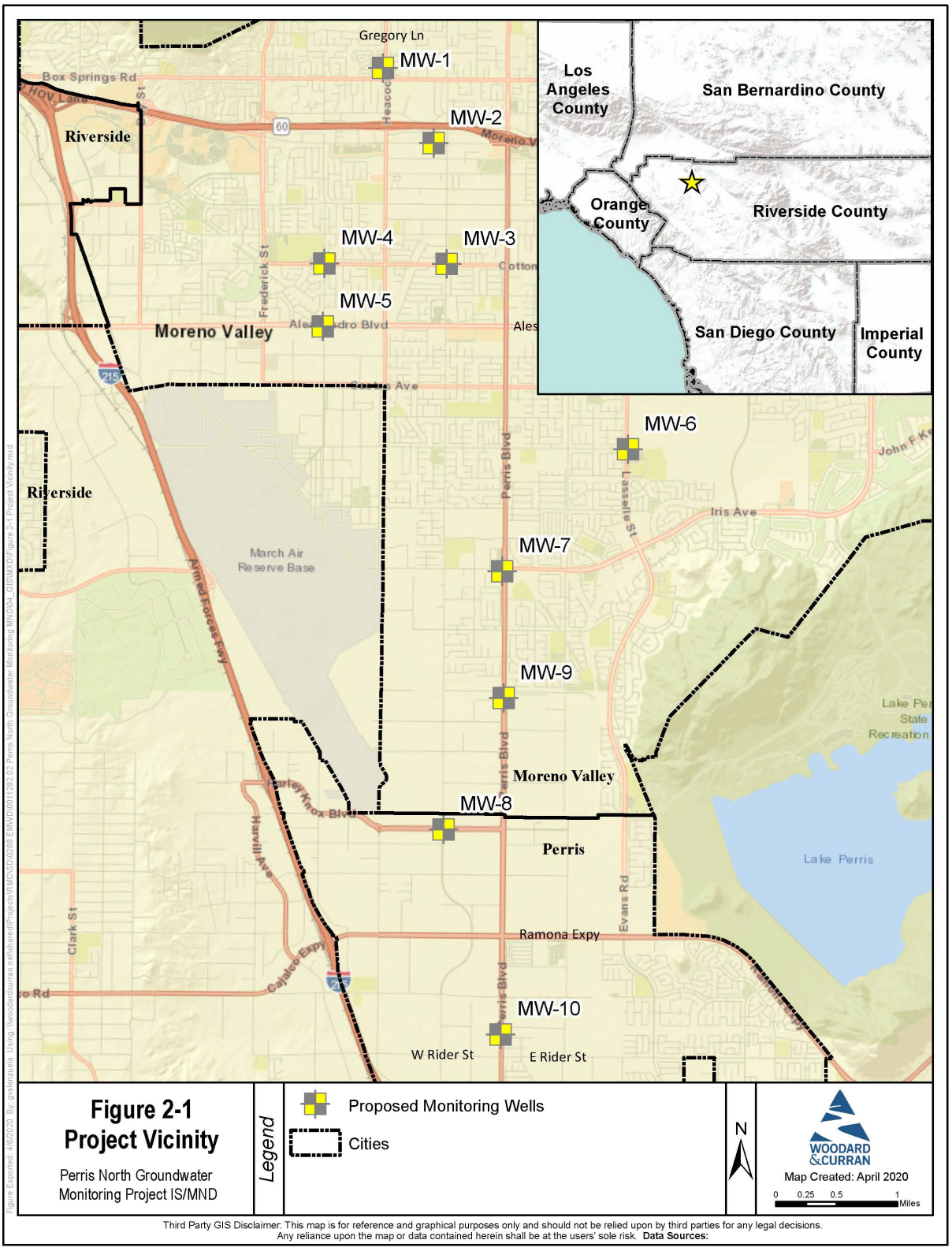


Figure 2-2: Perris North Sub-Basin / Perris North Groundwater Management Zone

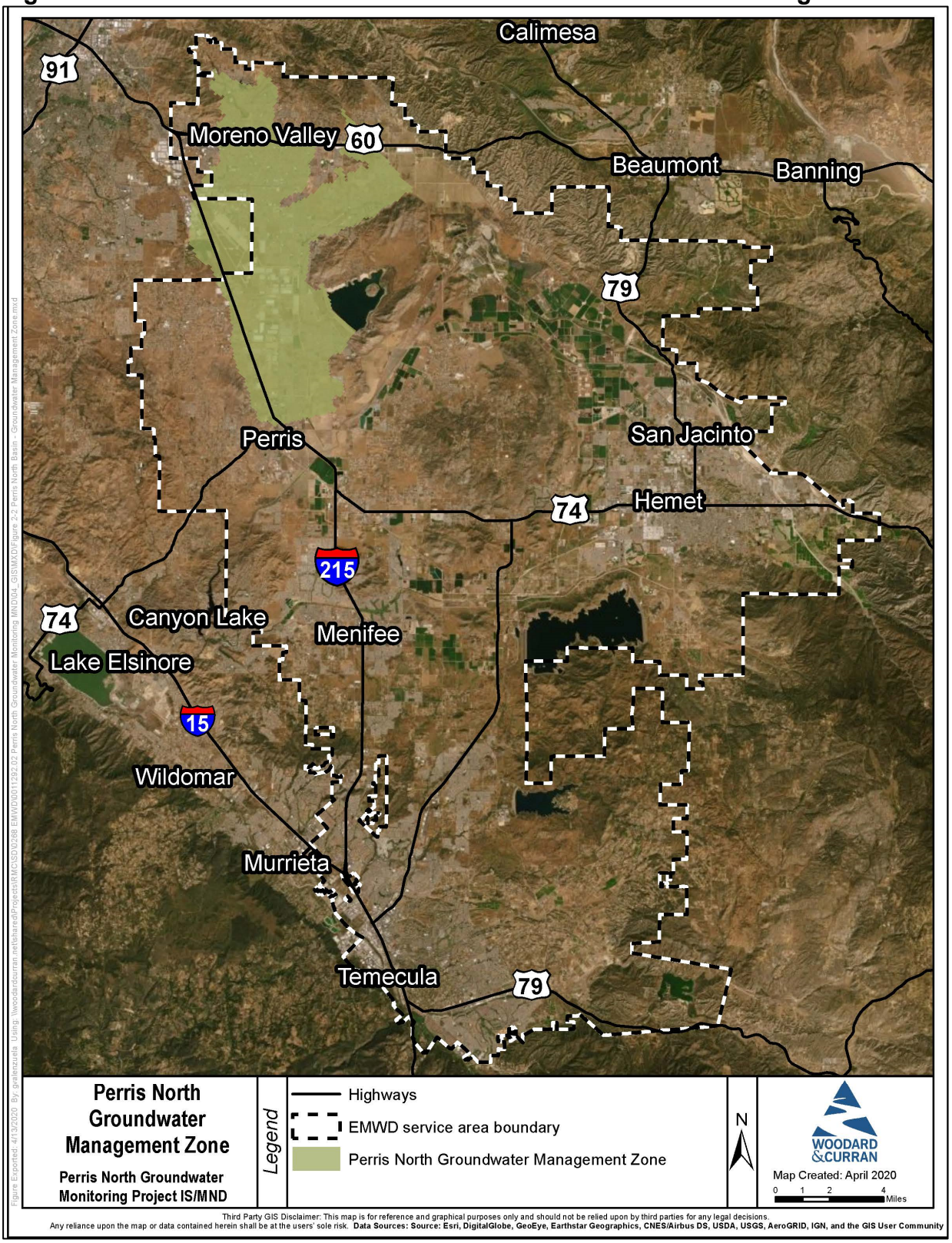


Figure 2-3: Co-Mingled Areas of Concern and Perris North Groundwater Management Program

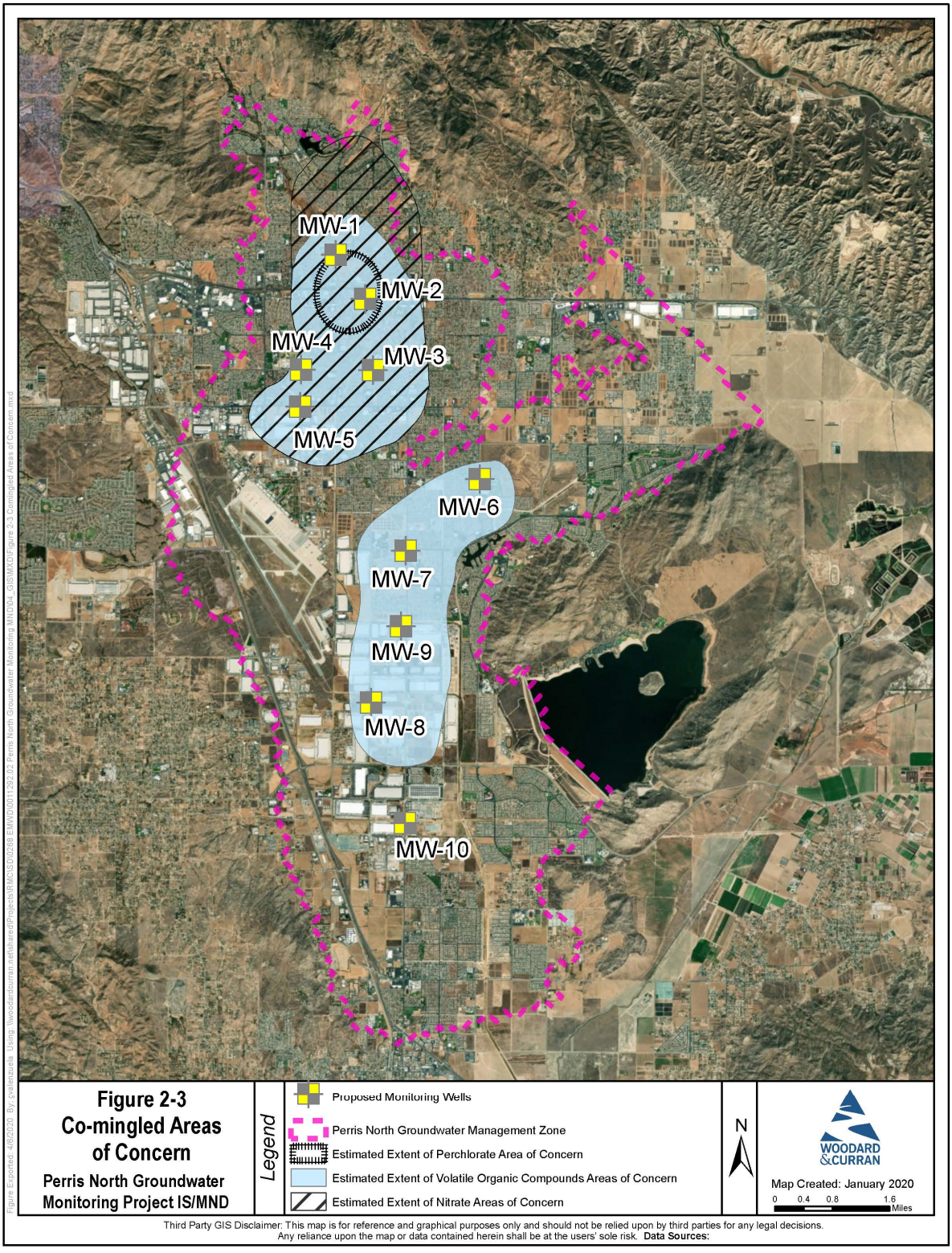
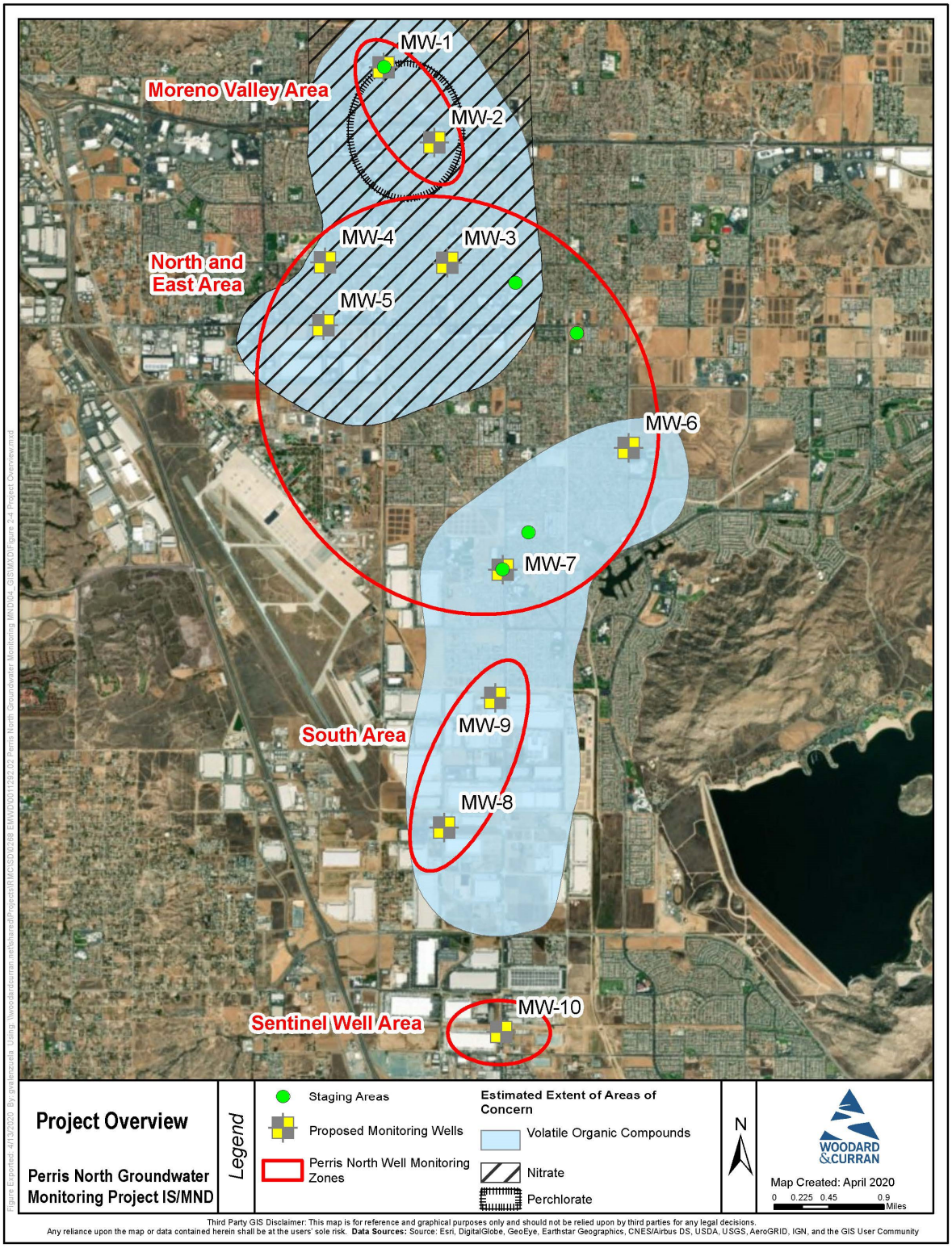


Figure 2-4: Project Overview



Overview of Monitoring Wells

The proposed Project would involve construction of up to 10 monitoring wells to establish baseline monitoring data for the co-mingled areas of concern including groundwater levels and quality, as well as track groundwater movement resulting from basin management decisions for the Perris North Groundwater Management Zone. Nine of the wells would be located within three sub-areas of the proposed Project area and a sentinel well would be located south of the sub-areas (see **Figure 2-4**). The goals of the proposed Project include:

- Assist in improving understanding of groundwater quality within the Perris North Groundwater Management Zone.
- Provide data to support understanding of the impacts of other management decisions in the region on the co-mingled areas of concern in the Perris North Groundwater Management Zone.
- Provide baseline data on groundwater contamination and quality prior to operation of other projects in the Perris North Groundwater Program for VOCs, perchlorate, and nitrate and other constituents of concern as may arise.

Proposed monitoring well sites were selected using siting criteria listed below and designed to capture data throughout the estimated co-mingled area of concern. These siting criteria were:

- Location on public land, including public parcels, streets, and existing rights-of-way; or property already owned by EMWD.
- Location within the co-mingled areas of concern, within the simulated capture zone, and upgradient/downgradient of the co-mingled areas of concern (with the exception of the sentinel well).
- Size and accessibility of parcel, with a minimum parcel size or access area of 12,000 square feet and adequate street size and access for large construction equipment.
- Consistent access to groundwater wells in order to collect monitoring well data, avoiding areas where modeling shows temporary dewatering is likely as a result of other activities in the basin.
- Avoidance of existing utilities and set-backs such that wells and construction equipment are able to avoid overhead and buried utilities, and maintain adequate regulatory set-backs (e.g., 50 feet from sewer, industrial, and stormwater mains and laterals).

<u>Moreno Valley Area</u>

Two monitoring wells (each up to 6-inch diameter) would be constructed in the Moreno Valley Area, both of which would be located within the City of Moreno Valley. The first of

these would be located on property owned by EMWD, while the other would be located within public roadway right-of-way. These wells would be located within the estimated extent of concern for perchlorate, nitrate, and VOCs, and are designated as MW-1 and MW-2 (**Figure 2-5**):

- **MW-1:** Located at a vacant lot on the east side of Heacock Street between Ironwood Avenue and Kenwood Drive. The site is owned by EMWD and is located adjacent to a commercial shopping center (Ironwood Plaza). Single family residential properties are located to the north, east, and west of the site. The site itself is primarily flat with no vegetative land cover, with the exception of one tree in the southwest corner of the site. The site has an approximately 6-foot wall on its north, east, and south sides. A chained entrance to the lot exists along the Heacock Street sidewalk.

- **MW-2:** Located in the roadway right-of-way of Sunnymeade Boulevard between Indian Street and Back Way. The area is generally commercial land uses, with a hotel and office space immediately across Sunnymeade Boulevard from the proposed well site, a shopping center and church immediately east of the site, and additional commercial space west of the site. Residential properties are located less than 0.1 miles from the proposed site but are not immediately adjacent to the proposed site.

Figure 2-5: Moreno Valley Area Sites



North and East Area

Five monitoring wells (each up to 6-inch diameter) would be constructed in the North and East Area, all of which would be located within the City of Moreno Valley. Four of these monitoring wells would be located within public roadway rights-of-way, and are designated as MW-3, MW-4, MW-5, and MW-6. The fifth would be located on an EMWD-owned property, and is designated MW-7. MW-3, MW-4, and MW-5 would be located within the estimated extent of concern for nitrate and VOCs in the northern co-mingled area of concern, while MW-6 and MW-7 would be located within the estimated extent of concern for nitrate and VOCs in the southern co-mingled area of concern (**Figure 2-6**).

- **MW-3:** Located in the roadway right-of-way at the intersection of Indian Street and Cottonwood Avenue. The site is adjacent to a large undeveloped parcel on the northeast corner of the intersection, and single-family residential properties on the remaining three corners. The undeveloped lot is currently vegetated with grass. Residences have fences along property lines adjacent to the intersections. Homes to the northwest and southeast have backyards that face the intersection back into the intersection and are accessed from other streets, enclosed by approximately 5-6 foot tall wooden fences (northwest of the intersection) and approximately 5 foot tall cement brick walls (southeast of the intersection). Homes to the southwest front Cottonwood Avenue and Indian Street. Moreno Valley Community Adult School, March Mountain High School, and Moreno Valley Adult Education, at Indian Street and Dracaea Avenue are located approximately 0.15-0.25 miles north of the site.

- **MW-4:** Located in the roadway right-of-way at the northwest portion of the intersection of Cottonwood Avenues and Graham Street. MW-4 would be located immediately adjacent to Moreno Valley High School's parking lot (northwest of MW-4). The high school's parking lot is currently enclosed by a chain link fence. East and south of the intersection are single-family residences, with backyards facing the intersection and enclosed by 5-6 foot tall cement brick walls.

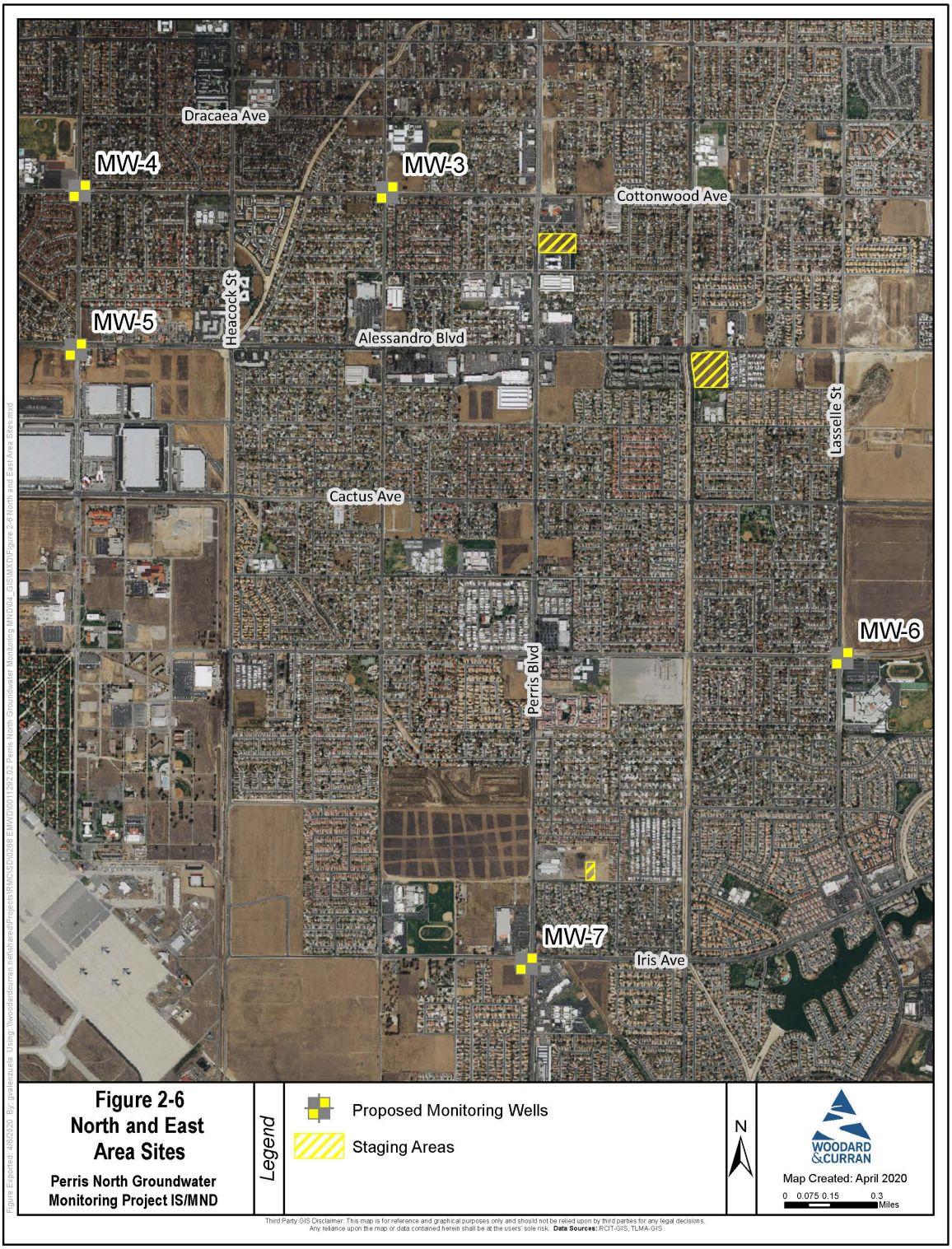
- **MW-5:** Located at the intersection of Graham Street and Alessandro Boulevard, MW-5 would be constructed within the right-of way on the southwest corner of the intersection. Land use in the area is primary commercial to the east and a mix of commercial and light industrial to the south. Single-family residences are located to the northwest of the intersection, and have backyards facing Graham Street and Alessandro Boulevard. Residential properties adjacent to the intersection are enclosed by 6-foot tall wooden fences, which are visually obscured by vegetation. The southwest corner of the intersection is an undeveloped lot currently vegetated with grass. Gas stations are located on the northeast and southeast corners of the intersection.

- **MW-6:** Located at the intersection of Lasselle Street and John F. Kennedy Drive. The northeast corner of the site is a large undeveloped lot. To the southeast is a parking lot for Vista del Lago High School. The northwest and southwest corners

of the site are residential, with homes backing up to Lasselle Street and John F. Kennedy Drive. Residences have approximately 5- to 6-feet high walls bordering their properties, composed of cement or cinder block, and on some properties, topped by wooden fencing.

- **MW-7:** Located on an EMWD-owned property at the southwest corner of Iris Avenue and Perris Boulevard. The site is fully fenced, unpaved, with a dirt/gravel surface. It currently houses the Moreno I Booster Station and the Iris Valve facility. The Iris Valve facility is located in a belowground vault under the sidewalk along Perris Boulevard, but is in the process of being relocated aboveground within the Moreno I Booster Station site. The site is in the northeast corner of an undeveloped lot that is vegetated with grass. North and east of the site are commercial areas, with single family residences located approximately 0.1 miles south and west of the site on the far side of the undeveloped lot, and 0.1 miles northeast of the site, on the far side of existing commercial development.

Figure 2-6: North and East Area Sites



South Area

EMWD would construct two monitoring wells (each up to 6-inch diameter) in the South Area, all of which would be located within the public roadway right-of-way. These wells would overlie the estimated extent of concern for nitrate and VOCs, and are designated MW-8 and MW-9 (**Figure 2-7**). MW-8 would be located within the City of Perris, while MW-9 would be located in the City of Moreno Valley.

- **MW-8:** Located at the intersection of Harley Knox Boulevard and Indian Avenue. The area is industrial, with undeveloped lot at the southeast of the site, an asphalt operation to the southwest (All American Asphalt), and warehouses to the northeast and northwest.

- **MW-9:** Located in the roadway right-of-way along Rivard Road, just west of the intersection of Rivard Road and Perris Boulevard. The area is zoned industrial/business, however, two single-family residences exist adjacent to the site; one residence is located on the north side of Rivard Road and one is located on the south side of Rivard Road. To the east, across Perris Boulevard, is an automotive manufacturing facility. Mariposa Avenue to the north is a stormwater channel in the vicinity of MW-9, with single-family residences northeast of the channel, and undeveloped land northwest of the channel. Additional industrial and business land uses are located further west along Rivard Road and south along Perris Boulevard.

Sentinel Well

EMWD would construct one monitoring well (up to 6-inch diameter) south of the South Area, to serve as a Sentinel Well. This well, designated MW-10, would allow EMWD to monitor potential movement of the plume. MW-10 would be located within the public roadway right-of-way and in the City of Perris (**Figure 2-8**).

- **MW-10:** Located in the roadway right-of-way along Perris Boulevard just north of Commerce Drive. The area is zoned light industrial. The east of the site is bounded by undeveloped lots, while west of the site is a large warehouse. The nearest residential properties are 0.2 miles south of the proposed well.

Figure 2-7: South Area Sites



Figure 2-8: Sentinel Well



2.3 Environmental Setting and Existing Conditions

Land Uses and Sensitive Receptors

There are no state-designated scenic highways in the proposed Project vicinity. Ramona Expressway, located within the South Area, is a County-eligible scenic highway, but is not designated as a scenic highway (Riverside County, 2017). The nearest state-designated scenic highway is State Route 243, approximately 20 miles east of the project site (Caltrans, 2019).

The March Air Reserve Base/March Inland Port is located southwest of the City of Moreno Valley, roughly one-half mile from the proposed Project site. It is currently active as a center for military reserve activities and as a military communication center. The runways at the base are located along the western edge of the base, approximately 1.75 miles from the proposed Project site. Other municipal airports in the region are not near the proposed Project site; the nearest is the Perris Valley Airport which is located approximately five miles south of the proposed Project site.

Sensitive receptors within the project vicinity include single-family residences, multi-family residences, schools, churches, and day care centers. In some cases, residences or schools are located adjacent to the monitoring well sites, as noted in the site descriptions above. The following schools are located within one-quarter mile of the proposed Project site: Moreno Valley Community Adult School, March Mountain High School, Moreno Valley Adult Education, Moreno Valley High School, Vista del Lago High School. Two hospitals in Moreno Valley, the Riverside County Regional Medical Center and Kaiser Permanente Moreno Valley Medical Center, are both at least one mile from the proposed Project site.

Public Services

Southern California Edison is the electric utility in the City of Moreno Valley and the City of Perris. Natural gas is provided by the Southern California Gas Company. The City of Moreno Valley, through the Moreno Valley Electrical Utilities, also provides electricity to southern and eastern portions of the City of Moreno Valley. EMWD provides water and wastewater services in the proposed Project area. Solid waste services are provided by Waste Management of Inland Valley for the City of Moreno Valley, and CR&R for the City of Perris.

The Riverside County Transportation Commission owns a rail line located west of the City of Moreno Valley parallel to I-215 (roughly two miles west of the project site), which carries commuter rail service and a low volume of freight trains. Riverside Transit Agency operates multiple bus routes within the proposed Project area, including Routes 11, 18, 19, 31, 20, and 41 (Riverside Transit Agency, 2020). Bikeways also exist in the project vicinity. Those nearest to the project site are Class 2 bike lanes along John F. Kennedy Drive, Laselle Street, and Iris Avenues; intermittent Class 2 bike lanes on Alessandro Boulevard; and Class 3 bike routes along Ironwood Avenue, Indian Street, Cottonwood

Avenue, and Graham Street (City of Moreno Valley, 2014; Google Maps, 2019). While no bike paths exist in the immediate vicinity of the wells located in the South Area, the City of Perris's 2013 Trails Master Plan calls for a Class 2 bikeway along Perris Boulevard within the vicinity of MW-9 and MW-10 (City of Perris, 2013).

Environmental Jurisdictions

The proposed Project is located within the South Coast Air Quality Management District, within the South Coast Air Basin. The City and proposed Project site lie within the San Jacinto subwatershed of the Santa Ana River watershed. Water quality issues in the area are regulated by the Regional Water Quality Control Board (RWQCB), Santa Ana Region. Concrete-lined drainage channels exist in the proposed Project area; notable drainage channels in the project vicinity along Kitching Street, Heacock Street, Camino Flores, and East Oleander Avenue. An additional drainage channel runs southeast from approximately Frederick Street and Cottonwood Avenue just south of the Moreno Area to approximately Kitching Street and Krameria Avenue, in the East Area. Another drainage channel runs southwest from approximately Highway 60 and Perris Boulevard to Alessandro Boulevard and Heacock.

The proposed Project area is within the area covered by the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP was developed by Riverside County to aid in maintaining biological and ecological diversity within the region, while addressing requirements of the State and federal Endangered Species Acts. The Plan was completed in 2003, and associated permits were issued in 2004. The MSHCP defines a reserve system that includes existing and proposed core habitat blocks and habitat linkages to accommodate the needs of wildlife and plant species. EMWD is not a signatory to the MSHCP. None of the proposed Project features are located within existing or proposed reserve or criteria areas of the MSHCP.

Geology and Groundwater

The Perris North Subbasin is located in the San Jacinto Groundwater basin (DWR Bulletin 118 Basin 8-005) and is one of five subbasins within EMWD's service area. The San Jacinto Groundwater Basin has been designated a High Priority Basin under the State of California's Sustainable Groundwater Management Act (SGMA) 2019 Basin Prioritization. SGMA was adopted in 2014 and empowers local agencies to achieve sustainable management of groundwater basins across the State. Sustainability goals are intended to halt decreasing groundwater levels and protect existing groundwater uses and are being rolled out first in high and medium priority basins. High priority basins are generally those that serve as an important and significant source of water for a region, have water quality concerns, or are facing management concerns such as subsidence or declining groundwater levels.

The proposed Project site lies on bedrock known as the Perris Block. The Perris Block is a large mass of granitic rock generally bounded by the San Jacinto Fault, the Elsinore Fault, and the Santa Ana River (with a non-defined southeast boundary). The San Jacinto

Fault is the closest fault zone and is located just over four miles from the proposed Project site.

2.4 Proposed Project Description

The proposed Project includes construction and operation of monitoring wells, as generally described in *Section 2.1 Project Overview*, and as described in more detail in the following sections.

2.4.1 Description of Monitoring Wells

Ten monitoring wells are proposed within the proposed Project area, as shown in **Figure 2-4**. For each well, a borehole of up to 30-inch diameter would be drilled, and a 6-inch casing per well completion would be installed, along with a sampling pump located inside the well. For wells within public rights-of-way, well heads would be flush-mounted to the road or sidewalk. Wells located within parcel lots would either have well heads flush-mounted to the sidewalk or pavement, or would include a standpipe surrounded by bollards. Standpipes would be aboveground completions extending two to three feet above grade, with traffic bollards installed around each for the protection of the well head. Wells would be drilled to a maximum depth of 200-800 feet deep, depending on where in the proposed Project area they are located (see **Table 2-1**, below). During operation of the wells, an approximately 1,600 +/- square foot area would be required to provide access for temporary monitoring equipment for semi-annual data collection visits as described in *Section 2.4.6*.

2.4.2 Well Construction

Monitoring well construction would involve asphalt removal in roadway right-of-ways or site clearing and grading on vacant parcels, well drilling and installation, and restoration of the site to pre-construction conditions. Each well would have an up to 30-inch borehole, and a 6-inch maximum casing per well completion. Construction of each well would require four weeks from mobilization to demobilization. Well drilling would require 24-hour drilling, including weekends, for a duration of up to two weeks per well. Wells would be constructed to avoid existing underground and overhead utilities. **Table 2-1** summarizes the construction duration for each of the wells, based on maximum potential well depth.

Table 2-1: Well Depth and Construction Timeline

Monitoring Well	Maximum Depth to Bedrock (ft)	Total Construction Duration (weeks)	24-Drilling Duration (weeks)	Volume of Drill Cuttings (cubic yards)	Total Volume of Material* (cubic yards)	Haul Trips**
MW-1	350	4	2	64	114	7
MW-2	300	4	2	55	105	7
MW-3	240	4	2	44	94	6
MW-4	340	4	2	62	112	7
MW-5	300	4	2	55	105	7
MW-6	600	4	2	109	159	10
MW-7	640	4	2	116	166	10
MW-8	750	4	2	136	186	12
MW-9	690	4	2	125	175	11
MW-10	650	4	2	118	168	11

*Assumes an additional 50 cubic yards of materials removed for grading, site preparation, and general wellhead construction activities outside of drilling
**Haul trucks with 16 cubic yard capacity

Construction of each well is anticipated to require construction equipment shown in **Table 2-2**.

Table 2-2: Estimated Construction Vehicle Fleet for Well Construction

Equipment	Number Required for Each Well
Backhoe/Loader	1
Drilling Rig	1
Crane	1
Utility Truck	1
Water Truck	1
Welder	1
Compressor	1
Pump	1
Pick-up Trucks	2
Concrete Pumper	1
Generator	1

Construction of the monitoring wells is assumed to temporarily disturb an area of approximately 10,000 square feet at each site, to allow for equipment and construction activities. In total, the proposed Project would disturb approximately 2.3 acres of surface area. Assuming a lane width of 13-feet, a total length of 770-feet of lane closure (385-feet on either side of the well) would need to be closed for a period of one month for the seven wells within the public right-of-way. **Table 2-1** shows the volume of drill cuttings to be exported from each well site, assuming a 30-inch borehole and maximum potential depth of each well. Additional material would be exported from each well site during grading and wellhead construction. The total material export associated with each well would range from 94 to 186 cubic yards, averaging 140 cubic yards for drilling (see **Table 2-1**), and an additional approximately 50 cubic yards for grading and wellhead construction at

each well. In total, the proposed Project would generate approximately 1,400 cubic yards for all 10 of the proposed wells. Material from drilling activities would be disposed to the nearest landfill permitted to accept these materials, typically Badlands or El Sobrante Landfills (see *Section 3.19*). During construction, dewatering may be required. Where the quality of groundwater recovered during construction fails to meet regulatory standards for discharge to surface waters, discharge to sewer may be required. If required, the connection to the sewer is typically accommodated by directly discharging to the sewer, or by utilizing temporary onsite storage through a holding tank that would be pumped to the sewer.

2.4.3 Construction Vehicle Trips

Construction would require the use of the construction equipment listed in **Table 2-2**. Each well is estimated to require 50 workers during construction. Workers would carpool to the site from EMWD's offices, resulting in 28 one-way trips per day for worker transportation to each well. In addition, construction would require up to six one-way trips per day to collect materials and equipment from the nearest staging area. Based on a haul truck capacity of 16 cubic yards per truck and the anticipated volume of material removed during drilling and construction, a total of 88 haul truck trips would be required across all 10 wells, with an average of 9 total haul trips per well (see **Table 2-1**).

2.4.4 Construction Schedule

In total, construction of the proposed Project is estimated to take seven months, with anticipated commencement in January 2022 and completion in July 2022. Although well construction would be staggered, up to two wells would be under construction at a given time.

2.4.5 Equipment / Staging Areas

For equipment and materials that cannot be accommodated within the project footprint for each well, EMWD properties would be used for equipment storage and staging. Anticipated staging areas include the two EMWD-owned proposed monitoring well sites (MW-1 and MW-7), the City of Moreno Valley Corporate Yard on Santiago Drive between Nan Avenue and the intersection with Patricia Street, EMWD's Well 204 site on Nance Street between North Perris Boulevard and Las Palmas, and EMWD's treatment plant that will be constructed under the Cactus Avenue Corridor Groundwater Extraction Well Project. Three sites are being considered for the new treatment plant. Therefore, all three potential treatment plant sites are considered as possible staging areas. These sites are along Perris Boulevard between Bay Avenue and Buckland Lane, along Alessandro Boulevard between Kitching Street and Coleman Way, and at the City of Moreno Valley Corporate Yard. No more than six trips per day to and from each staging area would occur during construction. Anticipated staging areas are shown in **Figures 2-5** and **2-6**.

2.4.6 Operations and Maintenance

Once operational, manual groundwater sampling and routine maintenance work would occur at each monitoring well twice per year for one-week periods, which would require lane closures. Weekly groundwater readings would occur from truck-mounted monitoring equipment that would not necessitate lane closures. For the one-week lane closures needed twice per year, approximately 1,600 +/- square feet of street lane closure would be required around monitoring wells located in public rights-of-way. Assuming a typical lane width of 13-feet, one lane of roadway for a distance of approximately 62-feet on either side of the well would be closed. For MW-1 and MW-7, located within EMWD properties, monitoring visits would not require lane closures.

2.4.7 Operation and Maintenance Vehicle Trips

For each semi-annual well visit, two vehicles would visit each well: one for well sampling, inspecting, and maintenance, and one for traffic control. For a given well, the traffic control vehicle would remain at the well for the duration of the one-week (5 work days) maintenance visit, while the maintenance vehicle would travel to and from the well each day for the duration of the one-week maintenance period. This would result in a total of 24 one-way trips per well per year, or a total of 240 vehicle trips per year. Assuming each well visit originates separately from EMWD's headquarters, a total of approximately 3,390 vehicle miles per year would be traveled to service the 10 wells annually. Weekly data would be collected by a driving a single vehicle containing a data collection sensor past each well. Assuming weekly data collection from each well occurs in a single trip, this would be 52 vehicle trips per year, covering approximately 41.5 miles per trip (2,158 miles per year).

2.4.8 Environmental Commitments

The following measures are standard EMWD best management practices:

- Temporary sound walls would be required for well drilling construction due to 24-hour operation of the drilling rig for noise control
- The design and construction of the facilities would be based on a soils report and geotechnical investigation to minimize geological risk, and be consistent with applicable building codes and standards
- Groundwater encountered during construction would be discharged to land or the storm drain in accordance with applicable permits or discharged to EMWD's sewer for treatment and reuse. If groundwater quality does not meet permitted discharge requirements for the storm drain, it would be discharged to the sanitary sewer for treatment at EMWD's wastewater treatment plant, or would be temporarily stored in 55-gallon drums (on site or at one of the identified staging areas) until it could be properly disposed of to the sewer or other permitted disposal site.
- All construction work within public roadways would require the contractor to prepare and implement a traffic control plan.

- During operation, any temporary lane closures required for data collection at wells in roadway right-of-ways would require coordination with the cities of Moreno Valley and Perris.
- All construction work would require the contractor to implement fire hazard reduction measures, such as having fire extinguishers located onsite, use of spark arrestors on equipment and using a spotter during welding activities
- Construction would comply with SCAQMD Rule 403 Fugitive Dust Control requirements
- Construction would implement best management practices (BMPs) to control water quality of stormwater discharges offsite, including but not limited to placing drip pans under stationary equipment, installing temporary erosion and sedimentation control measures (e.g., straw wattle), using tarps to cover stockpiled soil, following site housekeeping practices such as trash control and sweeping, avoid storing equipment and materials within 50-feet of waterways, as appropriate for the site and construction activities

2.5 Required Permits and Approvals

Anticipated permits are identified in **Table 2-3**. No South Coast Air Quality Management District permits for new stationary sources are anticipated.

Table 2-3: Permits and Approvals

Agency	Permit/ Approval
City of Moreno Valley	Encroachment Permit for work in right-of-way
City of Perris	Encroachment Permit for work in right-of-way
South Coast Air Quality Management District	Permit to Construct, Dust Control Permits
Riverside County Department of Environmental Health	Well Drilling Permit
State Water Resources Control Board	NPDES Construction General Permit for Storm Water Discharges
Regional Water Quality Control Board	NPDES permit for dewatering and test water discharges during construction

3. ENVIRONMENTAL CHECKLIST FORM

1. **Project title:** Perris North Groundwater Monitoring Project

2. **Lead agency name and address:** Eastern Municipal Water District
   2270 Trumble Road
   P.O. Box 8300
   Perris, CA 92572-8300

3. **Contact person and phone number:** Joseph Broadhead,
   Principal Water Resources Specialist
   broadhej@emwd
   (951) 928-3777 ext. 4545

4. **Project location:** City of Moreno Valley and City of Perris, Riverside County, California

5. **Project sponsor's name and address:** Same as Lead Agency

6. **General plan designations:** Commercial, Office, Open Space, Residential/Office, Residential (5 du/ac, 10 du/ac), Public Facilities, Light Industrial

7. **Zoning:** Neighborhood Commercial, Open Space, Office, Public, Light Industrial, Residential

8. **Description of project**: The Perris North Groundwater Monitoring Project consists of development and operation of groundwater monitoring wells in the Perris North Sub-basin. The proposed Project includes construction and operation of 10 monitoring wells – seven in the City of Moreno Valley, and three in the City of Perris. Two wells would be constructed on sites owned by EMWD and the remaining eight wells would be constructed within public rights-of-way. Wells would be drilled to a maximum depth of 240-750 feet below ground surface. Once operational, well data would be collected twice per year and used to help EMWD's understanding of the basin groundwater quality and help in making informed decisions on management of the basin.

9. **Surrounding land uses and setting:** The proposed Project sites are located in the cities of Moreno Valley and Perris. The proposed Project area is generally built-out. Surrounding land uses include single-family residential, multi-family residential, schools, churches, libraries, neighborhood commercial, office, public facilities, business parks and light industrial. There are several storm channels in the proposed Project area, including one along Kitching Street and one that crosses Cottonwood Avenue to the intersection of Heacock Street and Alessandro Boulevard.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

- City of Moreno Valley and City of Perris: Encroachment Permit
- Riverside County Department of Environmental Health: Well Drilling Permit
- South Coast Air Quality Management District: Permit to Construct, Dust Control Permits
- State Water Resources Control Board: NPDES Construction General Permit for Storm Water Discharges
- Regional Water Quality Control Board: NPDES Permit for Groundwater Dewatering and NPDES Permit for Discharge of Well Test Water

11. Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code section 2180.3.1? 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.?

EMWD has consulted with Native American tribal representatives through written correspondence, based on a contact list of tribes who indicated to EMWD that they are interested in receiving notification. Additionally, EMWD staff has undertaken consultation with representatives from the Morongo Band of Mission Indians, Pechanga Band of Luiseño Indians, Soboba Band of Luiseño Indians, Rincon Band of Luiseño Indians and Agua Caliente Band of Cahuilla Indians to discuss the Project and potential effects on significant cultural resources.

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.

[X]	Aesthetics	[ ]	Agriculture and Forestry Resources	[ ]	Air Quality
[ ]	Biological Resources	[X]	Cultural Resources	[ ]	Energy
[X]	Geology/Soils	[ ]	Greenhouse Gas Emissions	[X]	Hazards and Hazardous Materials
[ ]	Hydrology/Water Quality	[ ]	Land Use/Planning	[ ]	Mineral Resources
[X]	Noise	[ ]	Population/Housing	[X]	Public Services
[ ]	Recreation	[X]	Transportation	[X]	Tribal Cultural Resources
[ ]	Utilities/Service Systems	[X]	Wildfire	[X]	Mandatory Findings of Significance

DETERMINATION: (To be completed by 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.

[X] 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 impact” 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.



April 17, 2020

Signature | Date

Alfred Javier

Printed Name | For

3.1 Aesthetics

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Except as provided in Public Resources Code Section 21099, would the Project:				
a) Have a substantial adverse effect on a scenic vista?	[ ]	[ ]	[X]	[ ]
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	[ ]	[ ]	[ ]	[X]
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?	[ ]	[ ]	[X]	[ ]
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	[ ]	[X]	[ ]	[ ]

Discussion

The City of Moreno Valley occupies a flat valley floor that is surrounded by mountains and hills. The primary scenic views, as defined by the City of Moreno Valley and County of Riverside, that can be seen at the proposed Project area are the foothills and mountains located around the northern, eastern, and southern edges of Moreno Valley, including the Box Spring Mountains to the north, the Badlands foothills to the east, and the mountains

of Lake Perris State Recreation Area to the southeast (City of Moreno Valley 2006b; County of Riverside 2017b). In its General Plan, the City of Moreno Valley describes the importance of maintaining a natural setting in rural and remotes areas, including the hills and mountains that surround the City, to preserve the scenic quality of the region (Moreno Valley 2006b). However, there are already obstructions to the scenic view from pre-existing developments because it is an urban area.

The City of Perris is located in between the San Jacinto and Santa Ana Mountains and encompasses approximately 40 square miles in northwestern Riverside County. Perris is immediately south of the City of Moreno Valley and the March Air Reserve Base. Most of the developable land within the City of Perris is located in a flat, broad basin that is surrounded by foothills to the east and west of the basin (City of Perris 2005a). With the flatness of the basin, scenic vistas are preserved for miles along the current and planned roadways. In the west-central area of the City there are large rocks scattered among the undeveloped, rolling topography. However, there is no one rock or collection of rocks within this landscape that is notable for its unique formation, size, or character (City of Perris 2005a). In the western and eastern horizon that are rolling hills that contrast the generally flat topography within the City.

The monitoring well sites are distributed across the proposed Project area and surrounded by development. The proposed Project area would not be considered rural and remote. Views of surrounding mountains and hills are visible from the proposed Project sites; however, the views are partially obstructed by the existing, surrounding development.

The City of Moreno Valley Municipal Code Section 9.16.280 and the City of Perris Zoning Ordinance Section 19.02.110 A and B and 19.69.030.C.5.h provides guidelines for proposed lighting with the purpose of reducing unnecessary light pollution and maintaining dark skies, while promoting safety and aesthetics. This Section of the City of Moreno Valley's Municipal Code states that light and glare should not be unnecessarily deflected onto surrounding properties; high-intensity security lighting fixtures should be concealed by landscaping or building architectural elements; and lighting fixtures placed lower than five feet in height should not produce glare. The City of Perris' Zoning Ordinance minimizes the amount of light cast on adjoining properties, the public right-of-way, and into the night sky as well as requires certain types of light fixtures on non-residential properties.

Riverside County Ordinance Number 655 regulates light pollution by restricting the permitted use of certain outdoor light fixtures that emit light into the night sky which have a detrimental effect on astronomical observation and research. It defines various zones relative to the distance between the light source and Palomar Observatory and sets requirements for shielding for various types of outdoor lighting (e.g., decorative, parking lots, walkways, security) (County of Riverside 1988).

The Riverside County Integrated Plan (RCIP) provides a range of land use policies that preserve scenic resources and visual quality (City of Perris 2005a). However, these

policies do not apply to development within the City (City of Perris 2005a). Relevant County policies encourage growth to occur near or within existing urban boundaries to preserve the natural and scenic resources, open spaces, and vistas (City of Perris 2005a).

The State of California Department of Transportation manages the State Scenic Highway Program (Caltrans n.d.), which was created by the State Legislature in 1963 with the purpose of protecting the natural scenic beauty of California highways. State-designated scenic highways have locally adopted policies to preserve the scenic quality of the corridor. Highways receive designation based on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. The nearest State-designated scenic highway is State Route 243, approximately 20 miles east of the proposed Project area (Caltrans 2019). Ramona Expressway, three miles south of the proposed Project area, is a County-eligible scenic highway, but is not designated as a State scenic highway (County of Riverside 2017).

a) Less than Significant

The primary scenic impairments associated with the Project would be temporary and would occur during construction (January 2022 to July 2022). Once the Project is completed, the monitoring wells would be underground and the area of temporary disturbance would be restored to its almost original condition, thus having no long-term impact on scenic vistas. The proposed monitoring wells located in right-of-ways would not be protruding out of the ground because the well heads would be flush-mounted to the road or sidewalk. Proposed wells located on EMWD parcel lots may either have well heads flush-mounted to the sidewalk or pavement or may include a standpipe no taller than three feet above ground surrounded by traffic bollards.

During construction, scenic vistas near the proposed monitoring well sites would be temporarily altered by the construction equipment such as a crane and drilling rig, or potential noise mitigation measures (e.g., sound walls). However, once construction is complete, the proposed monitoring wells would not be noticeable to the general public. Therefore, the Project would not substantially adversely impact local scenic vistas of surrounding foothills and mountains, and impacts would be less than significant.

b) No Impact

None of the proposed monitoring wells are located within the viewshed of a State scenic highway. Therefore, there would be no impact on scenic resources associated with a State scenic highway.

c) Less than Significant Impact

The proposed Project sites are located within built-out areas of Moreno Valley and Perris. EMWD, as a public agency, is not subject to other jurisdictional agencies' established standards or ordinances. Nonetheless, the proposed monitoring wells would be barely

noticeable to the public eye once constructed and therefore would not affect public views. The wells would either be flush-mounted to the pavement or have a short standpipe no taller than 3 feet with traffic bollards. Construction activities would temporarily impact the visual character and quality of the Project sites. However, once construction is complete all construction related visual impacts would be removed. Therefore, Project impacts on visual character and public views would be less than significant.

d) Less than Significant with Mitigation Incorporated

Construction for each well would require up to four weeks from mobilization to demobilization. Well construction would require up to two weeks of continuous drilling, including weekends. Well drilling requires drill operation for 24 hours/day to prevent borehole collapse. During nighttime drilling, lights would be required for construction and security. Once construction is complete, no permanent lighting would be required for the proposed Project sites. The proposed Project would be located within the 45-mile zone radius of the Palomar Observatory, which under the County of Riverside's Ordinance No. 655 would be subject to the Mount Palomar Nighttime Lighting Policy's Zone B regulations. As a public agency, EMWD is not subject to these regulations, but temporary construction lighting impacts would have potential impacts on nighttime viewing from the Mount Palomar Observatory. Implementation of **Mitigation Measure AES-1** would ensure all nighttime construction lighting would be shielded and directed downward to minimize impacts on neighboring residents and areas in accordance with Riverside County Ordinance No. 655. With incorporation of mitigation measures, impacts would be less than significant.

Mitigation Measures:

AES-1: Low Illumination Nighttime Construction Lighting. All nighttime construction lighting shall be of the lowest illumination necessary for Project construction, attached to motion sensors, and shielded and directed downward to avoid light spillage onto neighboring properties.

3.2 Agriculture and Forestry Resources

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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	[ ]	[ ]	[ ]	[X]

	and Monitoring Program of the California Resources Agency, to non-agricultural use?				
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	[ ]	[ ]	[ ]	[X]
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(g))?	[ ]	[ ]	[ ]	[X]
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	[ ]	[ ]	[ ]	[X]
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	[ ]	[ ]	[ ]	[X]

Discussion

The proposed Project area is designated primarily as Urban and Built-Up Land by the California Department of Conservation (CDOC) Farmland Mapping and Monitoring Program (FMMP) (CDOC 2016). There are scattered parcels near the proposed Project area that are designated as Prime Farmland, Farmland of Statewide Importance, or Farmland of Local Importance. There is no Unique Farmland in the proposed Project area (CDOC 2016). There are no Williamson Act contracts within the City of Moreno Valley (City of Moreno Valley 2006a). The City of Perris redesignated all agricultural lands for uses other than agriculture with its 1991 General Plan. Notices of non-renewal have been filed for remaining Williamson Act lands in Perris, indicating that the land will be taken out of agricultural production (City of Perris 2005a).

There are no parcels zoned for agricultural use in the proposed Project area. The City of Moreno Valley does not employ zoning designations related to agricultural uses.

According to the City of Moreno Valley's municipal code, agricultural uses (crops only) are permitted in any zoning designation (City of Moreno Valley n.d.a). Agricultural uses involving structures are limited to areas zoned for industrial use; no industrial areas fall within the proposed Project area in the City of Moreno Valley. The City of Perris has one zoning designation related to agriculture, the light agricultural/interim designation (A-1). This zone is intended to provide for existing agricultural use and act as a holding zone or interim designation until a property can be developed consistent with the General Plan. The nearest parcel zoned A-1 is roughly 0.8 miles from the closest well site.

There is no designated forest land or timberland within the City of Moreno Valley or the City of Perris (City of Moreno Valley 2006a; City of Moreno Valley 2019a; City of Perris 2013a; City of Perris 2016a).

a) No Impact

None of the proposed well sites are classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. All proposed well sites except for MW-1 and MW-7 are located in the roadway right-of-way, where construction and operation of a monitoring well would not cause conversion of farmland to non-agricultural use. Well M-1 is located on land designated as Urban and Built-Up Land (CDOC, 2016). Well MW-7 is located on a parcel designated as Farmland of Local Importance, but the well would be located at a property which is currently occupied by EMWD facilities and not used for agriculture. Farmland of Local Importance is a classification given to land that is important to the local agricultural economy, as determined by each county. Unlike the Prime Farmland, Unique Farmland, and Farmland of Statewide Importance designations, Farmland of Local Importance has not been identified under the FMMP as having physical and chemical features (e.g., soil quality, growing season, and moisture supply) necessary for production of the State's leading agricultural crops. In Riverside County, Farmland of Local Importance includes soils that could be classified as Prime and Statewide but lack available irrigation water; and lands producing major crops for Riverside County, including pasture, summer squash, okra, eggplant, radishes, and watermelons (CDOC 2017). The proposed Project would not convert farmland to non-agricultural use; therefore, there would be no impact.

b) No Impact

None of the proposed well sites are located on land zoned for agricultural use or protected by a Williamson Act Contract (City of Moreno Valley 2019a; City of Moreno Valley n.d.a; City of Perris 2005a, City of Perris 2013a). Therefore, no impact would occur as a result of the proposed Project.

c) No Impact

There is no land zoned for forest land or timberland within the City of Moreno Valley or the City of Perris; therefore, the proposed Project would have no impact.

d) No Impact

There is no designated forest land or timberland within the City of Moreno Valley or City of Perris. The proposed well sites options are either located in the roadway right-of-way or on vacant, disturbed parcels. There are no forestry or timberland resources at any of the proposed well sites. Therefore, the proposed Project would have no impact related to the loss of forest land or timberland.

e) No Impact

The proposed Project would install wells for groundwater monitoring. No groundwater extraction would occur as part of the proposed Project; therefore, the project would not affect groundwater levels of private wells in the Perris North Basin that may be used for agricultural irrigation. Additionally, little to no private production occurs in the Basin due to groundwater contamination. Therefore, the proposed Project would not impede the ability of farmers to pump groundwater for irrigation use if needed. The proposed Project would not induce other changes in the environment that would result in conversion of agricultural land to non-agricultural use. The proposed Project would have no impact related to potential conversion of agricultural land.

Mitigation Measures: None required or recommended.

3.3 Air Quality

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	[ ]	[ ]	[X]	[ ]
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?	[ ]	[ ]	[X]	[ ]
c) Expose sensitive receptors to substantial pollutant concentrations?	[ ]	[ ]	[X]	[ ]
d) Result in other emissions (such as those leading to odors or	[ ]	[ ]	[X]	[ ]

adversely affecting a substantial number of people?

Discussion

The City of Moreno Valley, City of Perris, and EMWD service area are within Riverside County and bounded by the City of Riverside to the west, the City of Menifee to the south, and unincorporated Riverside County on the remaining boundaries. The proposed Project area is located within the South Coast Air Basin (SCAB), which is within the South Coast Air Quality Management District (SCAQMD). The SCAQMD monitors air pollutant levels to ensure the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are met and, if they are not met, to develop strategies to meet the standards. Air pollution is monitored at stations located in in the proposed Project area within the City of Perris, as well as in nearby Redlands (approximately 10 miles away) and Banning (approximately 19 miles away).

The NAAQS, which are required to be set by the United States Environmental Protection Agency (US EPA) under the Clean Air Act (CAA), provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly (US EPA 2019). Similarly, the CAAQS are established to protect the health of the most sensitive groups and are mandated by State law. US EPA has set NAAQS for six pollutants, which are called "criteria pollutants": Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO_2), Ozone (O_3), Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2). In addition to these, California has added three additional criteria pollutants: Hydrogen Sulfide (H_2S), Visibility Reducing Particles, and Vinyl Chloride. In addition, California regulates about 200 different chemicals, referred to as toxic air contaminants (TACs) (CARB 2019a).

Depending on whether the NAAQS or CAAQS are met or exceeded, the SCAB is classified as being in "attainment" or "nonattainment" for a given pollutant. The 2016 Air Quality Management Plan (AQMP; SCAQMD 2017) assesses the attainment status of the SCAB and is summarized in **Table 3-1**. As shown therein, the SCAB is in nonattainment for the State 1-Hour Ozone, 8-Hour Ozone, PM_{10}-24 hour, PM_{10}-Annual, and $PM_{2.5}$-Annual requirements and the Federal 1-hour Ozone, 8-Hour Ozone, $PM_{2.5}$-24 hour, $PM_{2.5}$-Annual, and lead requirements. Thus, the SCAB is required to implement strategies that would reduce pollutant levels to recognized standards, which is done through the Clean Communities Plan (formerly known as the Air Toxics Control Plan). The Clean Communities Plan is designed to examine the overall direction of the SCAQMD's air toxics control program and includes control strategies aimed to reduce toxic emissions.

Table 3-1: Criteria Pollutant Attainment Status – SCAB

Criteria Pollutant	State CAAQS	Federal (NAAQS)
1-Hour Ozone	Nonattainment	Nonattainment (Extreme)
8-Hour Ozone	Nonattainment	Nonattainment (Extreme)
CO	Attainment	Attainment (Maintenance)
NO_2	Attainment	Attainment (Maintenance)
SO_2	Attainment	Attainment
PM10 – 24 hour	Nonattainment	Attainment (Maintenance)
PM10 – Annual	Nonattainment	No Criteria Defined
PM2.5 – 24 hour	No Criteria Defined	Nonattainment (Serious)
PM2.5 - Annual	Nonattainment	Nonattainment (Serious)
Lead	No Criteria Defined	Nonattainment (partial)
Hydrogen Sulfide (H_2S)	Attainment	No Criteria Defined
Sulfates	Attainment	No Criteria Defined
Vinyl Chloride	Attainment	No Criteria Defined

Source: SCAQMD 2016

The SCAQMD provides numerical thresholds to analyze the significance of a project's construction and operational emissions on regional air quality. These thresholds are designed such that a project consistent with the thresholds would not have an individually or cumulatively significant impact on the SCAB's air quality. These thresholds are listed in **Table 3-2**.

Table 3-2: SCAQMD Air Quality Significance Thresholds

Pollutant	Mass Thresholds – Construction Thresholds (pounds/day)	Mass Thresholds – Operation Thresholds (pounds/day)
NO_x	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550
Lead	3	3
TACs	• Maximum Incremental Cancer Risk $\geq$ 10 in 1 million • Cancer Burden > 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million) • Chronic $ Acute Hazard Index $\geq$ 1.0 (project increment)	• Maximum Incremental Cancer Risk $\geq$ 10 in 1 million • Cancer Burden > 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million) • Chronic $ Acute Hazard Index $\geq$ 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	Project creates an odor nuisance pursuant to SCAQMD Rule 402

Source: SCAQMD 2019

In addition, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs have been developed for nitrogen oxides (NO_X), CO, PM_{10} and $PM_{2.5}$. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or State ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient

concentrations in each source receptor area, distance to the sensitive receptor, and project size. LSTs only apply to emissions within a fixed stationary location; they are not applicable to mobile sources. The use of LSTs is voluntary, to be implemented at the discretion of local agencies (SCAQMD 2008a).

The SCAQMD LSTs are defined for 37 source receptor areas (SRAs). The proposed Project area is located in SRA-24, the Cities of Moreno Valley and Perris (SCAQMD 2008a). LSTs have been developed for emissions within construction areas up to five acres in size. The SCAQMD provides lookup tables for sites that measure up to one, two, or five acres. The Project has 10 individual sites requiring a temporary disturbance area of 10,000 square feet which is roughly 0.2 acres per site. Pursuant to SCAQMD guidance, LSTs for the one-acre site should be used for sites that are less than one acre in size. LSTs for construction on one-acre sites in SRA-24 are shown in **Table 3-3**. LSTs are provided for receptors at a distance of 25 meters (82 feet) from the proposed Project site boundary, which is the most conservative LST distance (LSTs range from 25 to 500 meters).

Table 3-3: SCAQMD LSTs for Construction and Operation

Pollutant	Allowable emission from a one-acre site in SRA-24 for a receptor within 25 meters, or 82 feet (pounds/day)
Gradual Conversion of NO_x to NO_2	118
CO	602
PM_{10} – operation	1
PM_{10} – construction	4
$PM_{2.5}$ – operation	1
$PM_{2.5}$ – construction	3

Source: SCAQMD 2009

General Conformity with state implementation plans is a national (CAA) regulation that applies to most federal actions. The General Conformity Rule ensures that actions taken by federal agencies in nonattainment and maintenance areas do not interfere with the State's plans to meet NAAQS. 40 CFR Part 93.153 defines de minimis levels, which are the minimum threshold for which a conformity determination must be performed. If the proposed Project's annual emissions from construction and/or operation are below the applicable de minimis levels, the Project is not subject to a General Conformity determination.

Based on the federal attainment statuses for the SCAB, the de minimis levels that apply to the SCAB are listed in **Table 3-4**. These levels apply to all direct and indirect annual emissions generated during construction and operation of the Project.

Table 3-4: General Conformity De Minimis Emission Rates for the South Coast Air Basin

Pollutant	SCAB NAAQS Attainment Status Designation	De Minimis Emission Rate (tons/year)
1-Hour Ozone	Extreme Nonattainment	10
8-Hour Ozone	Extreme Nonattainment	10
CO	Maintenance	100
NO_2	Maintenance	100
PM_{10}	Maintenance	100
$PM_{2.5}$	Serious Nonattainment	70
Lead	Partial Nonattainment	25

Source: USEPA 2020

a) Less than Significant Impact

The SCAQMD's 2016 AQMP, which assesses the attainment status within the proposed Project area in the SCAB and provides a strategy for attainment of State and federal air quality standards, is the applicable air quality plan. The AQMP strategies are developed based on population, housing, and employment growth forecasts anticipated under local city general plans and the Southern California Association of Governments' (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (SCAG 2016).

A project would conflict with or obstruct an applicable air quality plan if it would lead to population, housing or employment growth that exceeds the forecasts used in the development of the applicable air quality plan. The proposed Project would construct 10 groundwater monitoring wells and does not provide any additional water or other utility service to customers in the area. Therefore, the proposed Project would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the AQMP. Potential for conflicts with the AQMP would be less than significant.

b) Less than Significant Impact

The proposed Project would result in emissions of criteria pollutants from short-term construction activities and long-term operation and maintenance activities. Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) 2016.3.2, which was developed by the SCAQMD and is used throughout California to quantify criteria pollutants and greenhouse gas emissions (GHGs).

The CalEEMod emissions scenarios were based on Project-specific information found in *Section 2 Project Description*. Below is a summary of the assumptions made during the CalEEMod modeling efforts.

Project Schedule and Modeling Phases

The proposed Project includes the installation of 10 wells, with an estimated four-week construction period per well. The approximate schedule for each well is as follows:

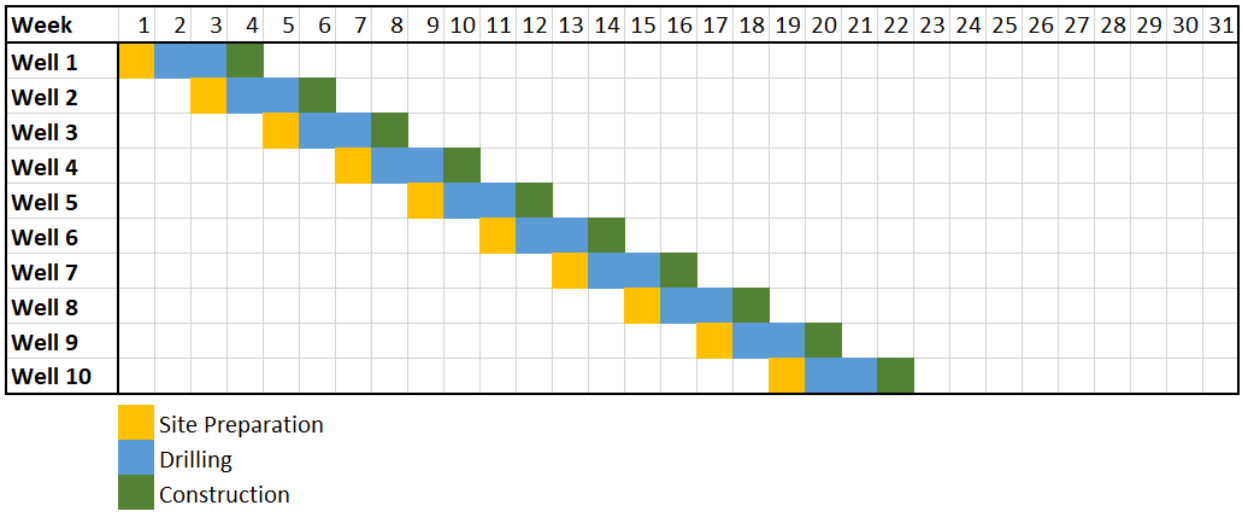
- Week 1 – site preparation (8-hour workdays)

- Week 2-3 – well drilling (24 hours/day)
- Week 4 – well head and site construction (8-hour workdays)

This schedule requires two crews: one crew for site preparation and construction, and one crew for drilling.

Construction is expected to begin in January 2022. Engineering estimates provide an overall project schedule lasting for seven months (until end of July 2022), however, for the model, the fastest potential schedule with full work shifts was used to estimate the maximum possible emissions. A full work schedule would mean the project is completed within five months. The schedule provided below, which is the fastest schedule with a minimum number of crews, was used to calculate emissions.

Figure 3-1: Schedule Used for Air Quality Modeling



Data tables and reporting requirements provide both construction and operational total maximum daily emissions, and annual emission totals. To simplify modeling for the project, the maximum daily emissions and total construction emissions are calculated independently. The following modeling runs were conducted:

Table 3-5: Summary of Model Runs Conducted

Model Runs	Model Run Used For:	Week(s) Used
Site Prep/Construction* and Drilling	Daily max emissions comparison**	20
Three phase model: 1) Site Prep 2) Drilling 3) Well head construction	Total construction emissions & operational emissions	Weeks 1-19 Weeks 2-21 Weeks 4-22

*Site prep and construction phases have the same equipment list and hours of equipment use, and thus will produce identical maximum daily emissions.

** This model run was performed twice, once with standard regulatory commitments, and once without regulatory commitments

CalEEMod accounts for seasonal changes and climatic conditions in modeling outputs. Model runs conducted for this project indicate that maximum emissions occur in summer months, which dictated which dates (shown in weeks in the above table) to utilize in order to calculate the maximum possible emissions.

Land Use Assumptions

CalEEMod has predetermined land use options that must be categorized for each modeling phase. Based on the project description, engineering input, and professional modeling experience, "other asphalt surface" was used. It is also assumed that each well would require ground disturbance area of 1,000 square feet, although it is more likely actual disturbance would be closer to 100 square feet.

Construction Fleet and Equipment Operation Hours

The construction fleet is separated into two groups, one for drilling and one for site preparation and construction activities. The following table provides the equipment and the estimated maximum potential daily hours of operation. Assumptions for daily operation of each equipment is provided in **Table 3-6**.

Table 3-6: Equipment List Per Construction Phase and Daily Operational Hours

Site Preparation and Construction Equipment	Max Daily Hours of Operation	Well Drilling	Max Daily Hours of Operation
Backhoe/Loader	6 hrs/day	Backhoe/Loader	18 hrs/day
Utility Truck	3 hrs/day	Drilling Rig	24 hrs/day
Water Truck	2 hrs/day	Crane	18 hrs/day
Welder	4 hrs/day	Utility Truck	9 hrs/day
Compressor	6 hrs/day	Water Truck	6 hrs/day
Pump	6 hrs/day	Welder	12 hrs/day
Pick-up Trucks (x2)	2 hrs/day	Compressor	18 hrs/day
Concrete Pumper	2 hrs/day	Pick-up Trucks (x2)	6 hrs/day
Generator	6 hrs/day	Generator	18 hrs/day

Vehicle Trips

CalEEMod uses a predetermined formula for calculating number of workers and estimated vehicle miles traveled based on the number of equipment. The number of workers is calculated by multiplying each piece of equipment by 1.25. There are currently 20 pieces of equipment for the proposed Project, which means that there would be an estimated 25 workers. However, because well drilling is expected to be conducted continuously and require three 8-hour shifts per day, the number of workers for the drilling crew is multiplied by three to provide a total of 50 workers. Below is the formula used to calculate the number of workers.

$$[(\#Site\ Prep\ \&\ Construction\ Equipment) * 1.25] + [(\#Drilling\ Equipment) * 1.25] * 3 =$$
$$(10 * 1.25) + [(10 * 1.25) * 3] =$$
$$12.5 + 37.5 = 50$$

Haul trips for disposal materials were also calculated based on maximum likely well depths and grading material for each well site. As described in **Table 2-1**, an estimated 88 haul trips would be required for the proposed project.

Operation and maintenance (O&M) activities including well sampling and well maintenance would also require workers to travel to and from the proposed Project well sites. As described in *Section 2.4.7*, O&M vehicle miles traveled was calculated by determining the likely route required to travel to each well and perform annual operation and maintenance tasks. Approximately 292 vehicle trips would occur annually traveling approximately 5548 miles in total. It should be noted that O&M of the proposed Project would not result in an increase in worker commute trips because existing staff would take over these tasks, thus no additional worker commuter trips were incorporated into the model.

All other values related to vehicle miles and worker trips, such as fleet mix, use model default values.

Other Model Assumptions

CalEEMod is used for a wide range of potential projects, including general construction, housing, etc. based on modeling experience, other values were either nulled or use model defaults values. For example, because the proposed Project does not require connection to the electrical grid or other energy sources for operation, operational energy use is zero.

Environmental and Regulatory Commitments

In general, construction projects utilize environmental and regulatory commitments regardless if mitigation is required through CEQA and/or NEPA. Regulatory commitments relevant to the project include SCAQMD Rule 403 Fugitive Dust Control requirements. SCAQMD's Rule 403 requires construction projects to implement measures to suppress fugitive dust emissions, such as watering of exposed soils and the preparation of a Fugitive Dust Control Plan. The construction contractor would be required to have a Fugitive Dust Control Plan approved by either the SCAQMD or Riverside County prior to grading or excavation activities. However, for comparison, modeling runs were conducted with and without these commitments incorporated.

Construction Emissions

Air emissions of criteria pollutants during construction would result from the use of construction equipment with internal combustion engines, as well as offsite vehicles to transport workers and deliver materials to the site, and to haul export material from the site. Project construction would also result in fugitive dust emissions, which would be lessened through the implementation of the fugitive dust control measures required by SCAQMD rules. **Table 3-7** summarizes the maximum daily pollutant emissions during construction, assuming two wells could be constructed concurrently, and without implementation of environmental commitments to control fugitive emissions.

Table 3-7: Maximum Daily Construction Emissions (pounds/day)

Emissions Source	Reactive Organic Gases (ROG)	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Construction Equipment	8	68	63	<1	4	3
Offsite emissions	<1	<1	3	<1	1	<1
Fugitive dust (with required fugitive dust controls)	--	--	--	--	1	0
Total Maximum Daily Emissions	**8**	**68**	**66**	**<1**	**7**	**4**
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold exceeded?						

As described in *Section 2.4.8 Environmental Commitments*, EMWD implements standard best practices and complies with applicable regulatory requirements to control fugitive dust, which provides a level of emissions reductions before mitigation measures are implemented. **Table 3-8** summarizes the maximum daily pollutant emissions during construction of the proposed Project, with environmental and regulatory commitments incorporated, based on the well construction schedule.

Table 3-8: Maximum Daily Construction Emissions (pounds/day) with Environmental Commitments

Emissions Source	Reactive Organic Gases (ROG)	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Construction Equipment	8	68	63	<1	3	2
Offsite emissions	<1	<1	3	<1	1	<1
Fugitive dust (with required fugitive dust controls)	--	--	--	--	1	<1
Total Maximum Daily Emissions	**8**	**68**	**66**	**<1**	**5**	**3**
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Note: In CalEEMod, environmental commitments, including regulatory requirements to control fugitive dust, must be added as "mitigation measures." Therefore, these results reflect the mitigated scenario in the output tables in Appendix A.

As shown in **Table 3-8**, Project construction would not exceed SCAQMD regional thresholds for any constituents.

Additionally, while the use of LSTs is voluntary, the proposed Project emissions were compared to LSTs for the proposed Project area and are provided in **Table 3-9**. As noted above, LSTs are only applicable to emissions within a fixed, stationary location, such as construction sites, and vary based on project site size. **Table 3-9** provides applicable LSTs for the proposed Project. As explained above, SCAQMD provides LST lookup tables for sites that measure up to one, two, or five acres; LSTs for construction sites smaller than one acre should use the one-acre threshold.

Table 3-9: Maximum Daily Emissions Compared to LSTs (pounds/day)

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Proposed Project without Environmental and Regulatory Commitments	6	50	47	<10	3	2
Proposed Project with Environmental and Regulatory Commitments	6	50	47	0	3	2
Proposed Project LST (one-acre LST)	--	*118*	*602*	--	*4*	*3*
Threshold exceeded without Environmental and Regulatory Commitments?	**No**	**No**	**No**	**No**	**No**	**No**
Threshold exceeded with Environmental and Regulatory Commitments?	**No**	**No**	**No**	**No**	**No**	**No**

General Conformity Assessment

Table 3-10 summarizes the proposed Project's total, unmitigated annual construction emissions and compares those to the applicable de minimis threshold for the SCAB region. As shown in **Table 3-10**, the proposed Project's criteria air pollutant emissions would not exceed the applicable de minimis thresholds. Therefore, the general conformity requirements do not apply to these emissions and the proposed Project is exempt from a conformity determination.

Table 3-10: Annual Project Construction Emissions Compared to De Minimis Thresholds (tons/year)

Emissions Source	Ozone (VOC/ROG)	CO	PM_{10}	$PM_{2.5}$
Construction Emissions without Environmental and Regulatory Commitments	<1	<1	<1	<1
Construction Emissions with Environmental and Regulatory Commitments	<1	<1	<1	<1
De Minimis Threshold	*10*	*100*	*100*	*70*
Threshold Exceeded without Environmental and Regulatory Commitments?	**No**	**No**	**No**	**No**
Threshold Exceeded with Environmental and Regulatory Commitments?	**No**	**No**	**No**	**No**

Operations

Long-term emissions from the proposed Project would result almost exclusively from vehicle trips to and from the wells for inspections and monitoring, along with drive-bys to collect automatic data from the wells. CalEEMod only calculates direct emissions of criteria pollutants from energy sources that combust on-site, such as natural gas. The proposed Project does not propose to combust natural gas onsite or produce any other electricity on-site. Criteria pollutant emissions from power plants are associated with the

power plants themselves, which are stationary sources permitted by air districts and/or the US EPA, and are subject to local, state and federal control measures. Thus, CalEEMod does not calculate or attribute emissions of criteria pollutants from electricity consumption to individual projects.

Operational emissions of criteria pollutants from mobile and area sources associated with operation and maintenance of the proposed Project are included in **Table 3-11**. No SCAQMD mass daily thresholds would be exceeded by operation of the proposed Project.

Table 3-11: Maximum Daily Project Operational Emissions Compared to SCAQMD Thresholds

Emissions Source	(NO_x)	(VOC)	CO	SO_x	PM_{10}	$PM_{2.5}$
Operational Emissions with Environmental and Regulatory Commitments (pounds/day)	<1	<1	<1	<1	<1	<1
SCAQMD Mass Daily Threshold (pounds/day)	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded with Environmental and Regulatory Commitments?	**No**	**No**	**No**	**No**	**No**	**No**

Proposed Project emissions of criteria pollutants would be less than significant for both construction and operation and no mitigation would be necessary.

c) Less than Significant Impact

Sensitive receptors are typically defined as schools (preschool – 12th grade), hospitals, resident care facilities, senior housing facilities, day care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality (CARB 2018). Sensitive receptors within the project vicinity include single-family residences, multi-family residences, schools, churches, and day care centers. In some cases, residences or schools are located adjacent to the well sites. The following schools are located within one-quarter mile of the project site: Moreno Valley Community Adult School, March Mountain High School, Moreno Valley Adult Education, Moreno Valley High School, Vista del Lago High School. Two hospitals in Moreno Valley, the Riverside County Regional Medical Center and Kaiser Permanente Moreno Valley Medical Center, are both at least one mile from the project site.

LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or State ambient air quality standard at the nearest sensitive receptor. Therefore, projects that conform to the LSTs are assumed to have a less than significant impact on nearby sensitive receptors. As discussed under “b” above and shown in **Table 3-8, Table 3-9**, **Table 3-10**, **Table 3-11**, the proposed Project’s construction and operational emissions would not exceed SCAQMD regional thresholds or LSTs. Therefore, sensitive receptors would not be subjected to substantial pollutant concentrations and impacts would be less than significant.

d) Less than Significant Impact

The proposed Project would involve emissions of sulfur compounds from use of oil and diesel fuel during construction, which would potentially result in unpleasant odors. Construction would be temporary and odorous emissions from construction equipment tend to dissipate quickly within short distances from construction sites. Once the proposed Project is operational, well sites would not be associated with odors. The proposed wells are not a permanent land use that is typically associated with nuisance odors, such as a landfill or rendering plant (CARB 2005). Impacts would be less than significant.

Mitigation Measures: None required or recommended.

3.4 Biological Resources

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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?	[ ]	[ ]	[X]	[ ]
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	[ ]	[ ]	[ ]	[X]
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,	[ ]	[ ]	[ ]	[X]

	hydrological interruption, or other means?				
d)	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?	[ ]	[ ]	[ ]	[X]
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	[ ]	[ ]	[ ]	[X]
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	[ ]	[ ]	[X]	[ ]

Discussion

A Biological Resources Assessment Report was prepared in February 2020 for the proposed Project. A literature review and field survey were performed to assess the biological resources of the proposed Project area. The complete *Biological Resources Assessment Report* is provided in **Appendix B** and is relied upon for the analysis in this IS/MND.

Regulated or sensitive resources studied and analyzed included special status plant and wildlife species, nesting birds and raptors, wildlife movement, sensitive plant communities, jurisdictional waters and wetlands, and locally protected resources (i.e. trees). Potential impacts to biological resources were analyzed based on the following statutes:

- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- City of Perris Municipal Code

- City of Moreno Valley Municipal Code
- Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)

The literature review was completed to determine the environmental and regulatory setting of the proposed Project. The review included US Department of Agriculture (USDA) *Soil Survey for the Perris, Riverside East,* and *Sunnymead, CA* US Geological Survey (USGS) 7.5-minute topographic quadrangles; literature detailing the habitat requirements of subject species; aerial photographs; and topographic maps. The proposed Project area is within the boundaries of the Western Riverside County MSHCP. The MSHCP, species accounts, and other reference materials were reviewed for habitat assessment requirements and habitat suitability elements for special status species. The California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB), Biogeographic Information and Observation System (BIOS) and United States Fish and Wildlife Service (USFWS) Critical Habitat Portal and Information, Planning, and Consultation (IPaC) system were reviewed to see if any special status wildlife and/or plant or vegetation communities were previously recorded within five miles of the proposed Project area. National Wild and Scenic River System maps managed by the US Forest Service (USFS) were reviewed to determine if wild or scenic rivers occurred within the proposed Project area. The *National Wetlands Inventory* (NWI) was reviewed to assess if wetlands and/or non-wetland waters had been previously recorded and mapped within or near the proposed Project area. Additional resources reviewed included the California Native Plant Society (CNPS) online *Inventory of Rare and Endangered Plants of California*, and CDFW *Special Vascular Plants, Bryophytes, and Lichens List* (**Appendix B**).

A field reconnaissance survey was performed on February 4, 2020 to document site conditions and the potential presence of sensitive biological resources, such as plants, wildlife, nesting birds, and jurisdictional waters and wetlands on and adjacent to the study area. The construction of each monitoring well would require disturbance of approximately a 10,000 square foot area and the operation of each well is estimated to disturb a 1,600 square foot area. The study area was surveyed on foot and visually inspected with the aid of binoculars (8 x 40) when needed. Survey conditions were clear skies, winds of 5-20 miles per hour, and a temperature of 44-65 degrees Fahrenheit. The reconnaissance field survey included the identification of any potentially jurisdictional aquatic resources including any potential wetlands and non-wetland water that may constitute waters of the U.S., waters of the State, streambeds, and riparian, riverine, or vernal pool resources.

An additional burrowing owl (*Athene cunicularia*) (BUOW) habitat assessment and burrow survey were performed during the field survey between 8:30 a.m. and 1:00 p.m. to identify potential burrows and BUOW signs throughout the study area (where accessible). The survey included a systematic search for burrows and BUOW signs by walking through potential habitat or surveying inaccessible areas with binoculars. Potential habitat included all areas with low growing vegetation, grasslands, shrub lands, with low density shrub cover, earthen berms, and any large debris piles. Survey transects were spaced to

have 100% visual coverage of the ground. Potential burrow openings were assessed for BUOW presence through the presence of indicators such as prey remains, white-wash (owl excrement), cast pellets, and feathers. Any potential burrows, BUOWs, or signs were recorded and mapped with coordinates. No BUOW or signs of BUOW presence were observed within the study area.

The study area has limited habitat for wildlife species that commonly occur within urban communities for this region. Urban-adapted avian species including killdeer (*Charadrius vociferus*), red-tailed hawk (*Buteo jamaicensis*), Say's phoebe (*Sayornis saya*), black phoebe (*Sayornis nigricans*), mallard (*Anas platyrhynchos*), common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), California gull (*Larus californicus*), American kestrel (*Falco sparverius*), and western meadowlark (*Sturnella neglecta*) were observed on site during the survey. The live animals observed was the California ground squirrel (*Otospermophilus beecheyi*). The western fence lizard (*Sceloporus occidentalis*) was the only reptile observed. There were no sensitive species observed within the study area.

a) Less than Significant Impact

The proposed Project would be located in an urban, built-out setting with the proposed sites located on highly disturbed land and surrounded by existing development. The literature review identified 17 sensitive plant species and 35 special sensitive wildlife species recorded within five miles of the proposed Project area. No special status plant species were present on the proposed Project sites. Sensitive species are not expected to occur within the proposed Project area due to the lack of suitable habitat as well as historical and existing disturbances. Out of the 35 wildlife sensitive species identified, only two wildlife species were determined to have a low potential to occur within the proposed Project area, BUOW and the California horned lark (*Eremophila alpestris actia*).

Suitable habitat for BUOW and California horned lark has low-growing, non-native ruderal species. Active ground squirrel burrows that could potentially be used by BUOW were mapped at the proposed MW-6, MW-7, and MW-10 sites; however, these proposed Project sites are adjacent to highly disturbed areas. There is low potential for these two species to occur because the habitat is low quality and the site's location is within a heavily travelled urban transportation corridor with high levels of existing disturbances that would likely deter animals from long-term use. As such, indirect impacts are also not expected as any proposed Project related disturbances would not rise above the already existing levels of disturbance (e.g. streets, sidewalks, developed areas). No horned larks, BUOW or signs of either species (i.e. pellets or whitewash) were observed during the field survey.

The survey area contains trees that could provide suitable nesting habitat for several common avian species; however, the proposed Project sites do not contain trees and are primarily located within areas of high disturbance and surrounded by development. Proposed Project sites MW-1 and MW-7 are on EMWD-owned properties and MW-2

through MW-6 and MW-8 through MW-10 are located in the roadway right-of-way. Common species such as mourning doves and house finches that have the potential to nest in shrubs even in highly disturbed areas. However, the habitat is considered low quality due to existing disturbances and proximity to heavily travelled roadways. Additionally, some species, such as horned larks, are typically ground nesters and will nest on bare ground; however, there was no suitable habitat for ground nesting birds within the proposed Project sites observed during the field survey. All the common avian species, except the horned lark, are not candidate, sensitive, or special status. During the field survey there were no nests observed or birds exhibiting nesting behaviors.

The proposed Project would be located in the County of Riverside Stephen's Kangaroo Rat Plan and Fee Area (County of Riverside Ordinance No. 663). The County Ordinance requires all proposed development projects that are located within the fee area to be reviewed to assess the appropriate course of action to protect the survival of the species. Preparation of the Biological Resources Assessment **(Appendix B)** fulfills the requirements of the ordinance that the proposed Project be reviewed. The Biological Resources Assessment determined the proposed Project area does not have the suitable grassland, costal shrub and sagebrush habitat needed to support the Stephen's Kangaroo Rat. Instead, the proposed Project sites are all vacant areas that are highly disturbed and/or have dominant exotic plants and are surrounded by urban development. Therefore, the proposed Project would not impact, or result is the loss of suitable habitat for the Stephan's Kangaroo Rat and no mitigation would be required.

Construction activities would primarily occur in areas that are highly disturbed (previously disturbed by EMWD facilities or roadway construction) and are surrounded by development. With the proposed Project being confined to existing roadway right-of-way or other developed areas, it would likely deter wildlife and nesting birds from using the site long-term or even at all. Therefore, there would be less than significant impacts to candidate, sensitive, or special status species.

b) No Impact

No sensitive plant communities as defined by the CNDDB or local ordinances were present on the proposed Project sites. Additionally, the Project sites are not suitable to support such communities due to the high level of disturbance and development. Sensitive plant and wildlife species typically have very specific habitat requirements, which the proposed Project area does not support. Additionally, there are no riparian/riverine habitats present within the proposed Project sites. The Project sites have all been heavily disturbed and consist of either no vegetation, development, or exotic upland species which are not conducive to supporting riparian/riverine habitat. The proposed Project area is within the boundaries of the Western Riverside County MSHCP, which identifies sensitive natural communities and seeks to protect those communities by protecting areas with biological and ecological diversity. The MSHCP identifies Criteria Areas, Public-Quasi Public Reserve Lands, and Core or Linkage Areas. These areas are defined in order to permanently preserve portions of habitat and decrease development

in these areas. The proposed Project area would not be located in an MSHCP Criteria Area, Public-Quasi Public Reserve Lands, or within a Core or Linkage (**Appendix B**). There are no riparian/riverine habitats protected by the MSHCP on the proposed Project sites; therefore, no MSHCP actions are required. Lastly, there are no jurisdictional features located within the proposed Project area that are under jurisdiction of the US Army Corps of Engineers, Regional Water Quality Control Board, or CDFW. Therefore, the proposed Project would have no impact on any riparian habitat or other sensitive natural community.

c) No Impact

The proposed Project sites consist of developed areas that are interconnected by urban roadways. The NWI identified several potential jurisdictional features within or adjacent to the proposed Project area. However, these features were interpreted from black and white imagery from 1975 and based on the field survey these areas have since been developed with features that have likely been diverted into underground stormwater channels. Additionally, no hydric soils were present at the Project sites and no jurisdictional features were identified within the proposed Project area. Therefore, the proposed Project would have no impact on jurisdictional wetlands.

Additionally, the proposed Project area was surveyed for vernal pools and fairy shrimp habitat. There were no vernal pools or fairy shrimp habitat observed. The proposed Project sites have moderately to excessively well-drained soils that are confined to the existing sidewalks, streets, and other developed areas. Therefore, no action would be required in regard to vernal pools. No impact would occur.

d) No Impact

There are no mapped essential habitat connectivity areas in the immediate vicinity of the Project sites (**Appendix B**). The nearest mapped essential habitat connectivity areas are located approximately 1.1 miles to the northwest near the Box Springs Mountain Reserve Park and approximately 1.5 miles to the east near the Perris Reservoir. These two areas would not be impacted by the proposed Project because the proposed Project would be confined to existing developed and disturbed areas. Therefore, the proposed Project would have no impacts on wildlife movement.

e) No Impact

There are no other biological resources protected by local policies or ordinances within the proposed Project area. There would be no impact.

f) Less than Significant Impact

The proposed Project would be located in the Western Riverside MSHCP and portions of the proposed Project sites would be located within the BUOW study area, but not within a designated survey area identified for any other MSHCP covered species. There is low potential for BUOW to occur at the proposed Project locations because the proposed sites

are highly disturbed and surrounded by urban development (see response to question *a*, above, for more details*).* In addition, no BUOW or their signs were observed during the field survey. The proposed Project would not be located within a Criteria Cell or Public/Quasi Public conserved lands. The nearest Public/Quasi Public conserved lands are approximately 1.5 miles east of the proposed Project area (MW-9) in the Lake Perris State Recreation Area. The proposed Project would not impact these conserved lands because of the urban development that separates them. Therefore, the proposed Project would have a less than significant impact.

Mitigation Measures: None required or recommended.

3.5 Cultural Resources

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	[ ]	[X]	[ ]	[ ]
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	[ ]	[X]	[ ]	[ ]
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	[ ]	[X]	[ ]	[ ]

Discussion

A Cultural Resources Assessment Report was prepared in February 2020 for the proposed Project. The Cultural Resources Assessment Report was prepared to satisfy CEQA-Plus investigation, Section 106 of the National Historic Preservation Act (NHPA), and the National Environmental Policy Act (NEPA). This Report included a cultural resources records search, Native American outreach, local historic group consultation, historical imagery review, and a field survey. The complete report is provided in **Appendix C** and is summarized in this IS/MND. The results of the cultural resources records search, Native American outreach, historical society outreach, historical imagery review, and field survey identified no cultural resources within the proposed Project area.

On January 23, 2020 a cultural resources records search of the California Historical Resources Information System (CHRIS) at the Eastern Information Center at the University of California, Riverside was conducted and identified any previously recorded cultural resources and cultural resources studies within the proposed Project area and a 0.5-mile radius. The National Register of Historic Properties, the California Register of Historical Resources, the Archeological Determination of Eligibility list, and the California State Historic Resources Inventory was also reviewed. Eighty-eight previously identified cultural resource studies were completed within a half mile radius of the proposed Project area between 1953 to 2019. Eight of these studies (RI-0146, RI-2171, RI-3693, RI-5027, RI-6579, RI-6898, RI-6914, and RI-9311) cover approximately 50 percent of the proposed Project area and none of these studies identified any cultural resources.

On January 29, 2020 Section 106 Native American outreach was initiated. *Section 3.18 Tribal Cultural Resources* provides an overview of the tribal outreach and consultation in regard to the proposed Project.

On January 23, 2020 and February 3, 2020, the Moreno Valley Historical Society, City of Moreno Valley Environmental and Historical Preservation Board, Riverside African American Historical Society, and March Field Air Museum were contacted to request information regarding historical resources. Overall, there are no concerns regarding historic properties in or near the proposed Project area.

A review of historical maps and aerial photographs of the proposed Project area in 1966 shows much of the area surrounding the Project sites were agricultural fields with sparse areas of residential development **(Appendix C).** During this time, the March Air Force Base was present south and west of the proposed Project area. Residential development in the mid-1960s appears to be the densest near what is now Highway 60, along the east side of March Air Force Base, and between Perris Boulevard and Kitching Street. The 1966 aerial photograph also shows two drainages that were channelized between 1978 and 1997. Based on aerial imagery, most of the proposed Project area experienced development in the 1980s and 1990s.

The field survey was conducted on January 30, 2020 by a Rincon Archaeologist accompanied by a tribal representative from the Soboba Band of Mission Indians. A pedestrian survey was conducted within undeveloped or partially developed portions of the proposed Project area encompassing MW-1 through MW-6 and MW-8 through MW-10. All proposed well locations, along with portions of the surrounding 10,000 square foot area located within the public right-of-way or EMWD easement, were inspected by walking a series of 5-meter spaced transects. The ground surface of MW-7's site was inspected through a fence boundary. Large portions of the proposed Project area are developed with the ground surface covered with pavement, existing facilities, sidewalks, gravel, and landscaping. Ground visibility was less than 10 percent at MW-2, MW-4, MW-6, MW-7, MW-9, and MW-10. For MW-1, MW-3, MW-5, and MW-8 ground visibility ranged from 20 to 50 percent. The field survey identified no archaeological resources or historic-age buildings or structures within the proposed Project area.

a) Less than Significant Impact with Mitigation Incorporated

According to the CHRIS records and field survey conducted for the Cultural Resources Assessment (**Appendix C**), no historical structures overlap with the proposed Project area. However, the proposed Project would involve ground disturbing activities during construction, and there is potential to encounter previously unknown historical resources. Encountering unknown historical resources below the superficial ground surface is highly unlikely due to the small area of disturbance created, as well as the proposed well locations within previously disturbed areas. Operational activities would not involve any ground disturbing activities and would not have potential to impact historical resources. With any ground-disturbing activity, the potential, however low, exists to encounter unknown historical resources. Implementation of **Mitigation Measure CUL-1** would ensure proper procedures are in place to reduce potential impacts to previously unknown historical resources, if encountered during construction, to less than significant.

b) Less than Significant Impact with Mitigation Incorporated

Archaeological resources are not anticipated to be encountered because no archaeological resources have been previously recorded within or immediately adjacent to the proposed Project area and because of the high degree of existing development and types of soils found in the proposed Project area. Further, construction of the proposed Project would disturb only a small area (10,000 square feet of previously disturbed surface area, and a borehole only 30-inches in diameter), decreasing the likelihood of encountering an archaeological resource during construction. However, if ground-disturbing activities expose previously unrecorded resources, **Mitigation Measure CUL-1** would help prevent further damage to cultural or archaeological resources. Operation of the proposed Project would not involve ground disturbing activities and would therefore have no impact on unique archaeological resources. With implementation of **Mitigation Measure CUL-1**, potential impacts from ground-disturbing activities during construction resulting in an adverse change to archeological resources would be less than significant.

c) Less than Significant Impact with Mitigation Incorporated

The proposed Project would be constructed in previously disturbed areas (roadway right-of-way or EMWD-owned properties that already have some structures present), and would disturb a relatively small area during construction. The potential to encounter human remains during construction is therefore low, especially given that the proposed well sites are not in areas with known human remains. However, there is always a possibility of discovering human remains during ground disturbing activities, despite this low potential. **Mitigation Measure CUL-2** would be implemented during construction to ensure proper procedures are in place if human remains are discovered during construction. With **Mitigation Measure CUL-2**, the impacts would be less than significant.

Mitigation Measures:

CUL-1: Unanticipated Discovery of Cultural Resources. If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) should be contacted immediately to evaluate the find. If the discovery proves to be significant under NHPA and/or CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts.

CUL-2: Human Remains. If Native American human remains are encountered, Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5 will be followed. If human remains are found, regulations outlined in the State of California Health and Safety Code Section 7050.5 state no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission, which will determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 48 hours of being granted access and provide recommendations as to the treatment of the remains to the landowner.

3.6 Energy

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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?	[ ]	[ ]	[X]	[ ]
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	[ ]	[ ]	[X]	[ ]

Discussion

The proposed Project spans multiple cities with two primary electricity providers. Moreno Valley is serviced by Moreno Valley Utility (MVU) and in some areas Southern California Edison (SCE). MVU was established in 2001 to provide electrical service to new residents and businesses within areas of the City of Moreno Valley that are being converted from fallow or agricultural lands to housing, commercial and industrial uses. MVU's service area extends from the City boundary in the south up to Bay Avenue, covering a portion of the North and East Area (MW-5, MW-6, MW-7) and a portion of the Southern Area (MW-9) (MVU 2018). The remaining portion of the City of Moreno Valley and the City of Perris are serviced by SCE (including MW-1, MW-2, MW-3, MW-8, and MW-10). SCE is one of the largest providers of electricity in southern California and serves 15 million people, 180 incorporated cities, and 15 counties (SCE 2020).

The proposed Project would require electricity during construction, which would be provided by an on-site generator and not grid supplied power. Operation of the proposed project would not require connection to the electric grid because monitoring would occur using portable monitoring equipment. Additionally, natural gas service would not be required for construction or operation of the proposed Project.

While the proposed Project would not be connected to grid power, it is still important to consider energy related planning documents utilized within the proposed Project area. The City of Moreno Valley produced both an Energy Efficiency and Climate Action Strategy and a Greenhouse Gas Analysis in 2012, in addition to participating with several other municipalities including the City of Perris in the Western Riverside Council of Governments (WRCOG) Subregional Climate Action Plan (CAP). The Efficiency and Climate Action Strategy outlines and prioritizes numerous energy efficiency and energy reduction measures, while the Greenhouse Gas Analysis establishes goals and policies that incorporate environmental responsibility to reduce GHG emissions. The Greenhouse Gas Analysis sets a goal to reduce the City's emissions to 1990 levels by 2020 which is equal to 798,693 metric tons carbon dioxide equivalent (CO_2e), which is consistent with the State's emissions reduction targets.

a) Less Than Significant Impact

Construction of the proposed Project would involve construction-related fossil fuel consumption from operation of diesel-powered construction equipment, and fossil fuel consumption from material hauling, delivery, and worker vehicle trips. **Table 3-12** summarizes the anticipated construction fleet for the proposed Project.

Table 3-12: Construction Fleet Summary

Equipment	Number Required for Each Well
Backhoe/Loader	1
Drilling Rig	1
Crane	1
Utility Truck	1
Water Truck	1
Welder	1
Compressor	1
Pump	1
Pick-up Trucks	2
Concrete Pumper	1
Generator	1

Sources: Project-specific information provided by EMWD engineers and duration based on total construction timeframe. See *Section 2 Project Description*. CalEEMod Version 2016.3.2; see Appendix A for model output. When project-specific equipment not available in CalEEMod, alternate construction equipment selected based on similar horsepower.

The proposed Project would implement typical construction practices such as pavement removal, drilling, and repaving. As shown in **Table 3-12**, the Project would not require unusual or excessive construction equipment or practices that would result in wasteful, inefficient, or unnecessary consumption of energy compared to projects of similar type and size. In addition, the construction fleet contracted for the proposed Project would be required to comply with the California Air Resources Board (CARB) In-Use Off-Road Diesel-Fueled Fleets Regulations, which would limit vehicle idling time to five minutes, restrict adding vehicles to construction fleets with older-tier engines, and establish a schedule for retiring older, less fuel-efficient engines from the construction fleet.

Additional vehicle trips are required for hauling, deliveries, and worker vehicle trips. A total of 88 haul trips for all 10 wells are estimated during the construction of the proposed Project. This was calculated based on the 30-inch borehole diameter, varying depths of the borehole for each well plus an estimated additional 50 cubic yards of material per site for preparation for a total of approximately 1,400 cubic yards for all 10 wells. Haul trucks carry approximately 16 cubic yards per load requiring a total of 88 haul trips. A summary of these volumes and haul truck trips for each well is provided in **Table 2-1**, in *Section 2.4.2 Well Construction*.

Deliveries estimations are based on CalEEMod and engineering estimates. Approximately one delivery per week per well is estimated during project construction and

none during operation. Additionally, up to six one-way trips to staging areas would occur per day per well under construction.

Worker vehicle trips are based on the CalEEMod estimate of 1.25 workers per piece of equipment. An estimated 50 workers would be needed per well during construction of the proposed Project (25 workers on site at a given time). Operation of the proposed Project would involve weekly data collection, which would be collected by a sensor driven past each well. EMWD would collect weekly data from all 10 wells in a single trip, minimizing the trips and vehicle miles required to collect data (52 vehicle trips annually). Operation and maintenance would also require semi-annual trips to each site, which is estimated to require an additional total of 24 vehicle trips a year to each well site for a total of 240 vehicle trips annually (see *Section 2.4.7 Operation and Maintenance Vehicle Trips*). Given EMWD's overall size, with a service area of 555 square miles and providing water to over 825,000 people (EMWD 2016), vehicle trips associated with the proposed Project would be relatively minor. As such, construction and operation of the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy during construction and impacts would be less than significant.

b) Less Than Significant Impact

The City of Moreno Valley Energy Efficiency and Climate Action Strategy (Moreno Valley 2012) focuses on reducing energy and emissions from the City of Moreno Valley as an organization and how to encourage community members to reduce their own energy and GHG emissions. The City of Moreno Valley Energy Efficiency and Climate Action Strategy includes suggested measures to reduce emissions and GHGs through energy use reduction, water use reduction, recycling and diversion, alternative transportation, and renewable energy utilization. Additionally, the WRCOG Subregional CAP that the City of Perris participates in identifies several goals, measures, and strategies to reduce GHG emissions through energy, transportation and land use, solid waste, and water.

Operation of the proposed Project includes a negligible increase in new vehicle trips (292 per year). The proposed Project would not involve land use changes that would indirectly result in an increase in vehicle trips or vehicle miles travelled, for example from relocation of an existing road. As explained under question "a" above, the proposed Project would not involve wasteful or inefficient energy consumption. Therefore, the proposed Project would not conflict with the City of Moreno Valley strategy or the WRCOG Subregional CAP, which were developed to keep GHG emissions in line with State reduction targets. Therefore, the proposed Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Impacts would be less than significant, and no mitigation would be required.

Mitigation Measures: None required or recommended.

3.7 Geology and Soils

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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 Division of Mines and Geology Special Publication 42.	[ ]	[ ]	[ ]	[X]
ii) Strong seismic ground shaking?	[ ]	[ ]	[X]	[ ]
iii) Seismic-related ground failure, including liquefaction?	[ ]	[ ]	[X]	[ ]
iv) Landslides?	[ ]	[ ]	[X]	[ ]
b) Result in substantial soil erosion or the loss of top soil?	[ ]	[ ]	[X]	[ ]
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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	[ ]	[ ]	[X]	[ ]
d) Be located on expansive soil, as defined in Table 18-1-B of the	[ ]	[ ]	[X]	[ ]

	Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?				
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?	[ ]	[ ]	[ ]	[X]
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	[ ]	[X]	[ ]	[ ]

Discussion

The City of Moreno Valley is located in a valley which is surrounded by hills and mountains along the northern, eastern, and southern side. The City of Perris has similar topography of being surrounded by foothills and mountains while the City itself is located within a flat valley. The proposed Project's wells would be located on the valley floor, which is relatively flat with minimal slope, within both cities.

As with most regions in Southern California, the proposed Project area is located in areas of several known active earthquake faults. The San Jacinto Fault Zone runs through the eastern portion of the City of Moreno Valley, and lies just over 4 miles from the nearest well site. The San Andres Fault Zone is approximately 15 to 20 miles north of the City of Moreno Valley and the Elsinore Fault Zone is approximately 12 to 18 miles south of the City. The City of Perris is surrounded by the San Andreas, San Jacinto, Cucamonga, and Elsinore Faults (City of Perris 2005a). However, none of these faults are located within the City of Perris and no Alquist-Priolo Earthquake Fault Zones are identified by the State Division of Mines and Geology (City of Perris 2005a).

There are several regions of the City of Moreno Valley known to have unstable soils and/or be susceptible to landslides. The Badlands in Moreno Valley, located on the eastern edge of the City, consist of shale and siltstone that is highly porous and does not hold together when wet, which can cause slope instability and landslides during earthquake events (City of Moreno Valley 2006b). Other known unstable soils include the mountain slopes located in the southern portion of Moreno Valley which have loose granitic boulders that could slide down the slopes (City of Moreno Valley 2006a & 2006b). Slope instability is mainly found in the most southern portion of the City of Perris as well as a small portion near the mid-western City boundary and a small area in the northeastern region (City of Perris 2016c). None of these areas are within proximity of the proposed Project area. Most of the City of Perris is comprised of alluvium soils (City of Perris 2005a). Overall, the proposed Project area, in Moreno Valley and Perris, includes sandy loam and silt loam soils (USDA 2019).

a.i) No Impact

The proposed Project would not be associated with significant levels of risk of loss, injury or death from rupture of a known earthquake fault. Based on California's Geological Survey's Earthquake Fault Zone Map (CGS, 2018), the proposed Project area is not within a Fault Zone. The nearest potentially active fault mapped in accordance with the Alquist-Priolo Earthquake Fault Zoning Act is the San Jacinto Fault Zone. The shortest distance between this Fault Activity Zone and the proposed Project sites is 4.20 miles. Due to the distance between the Fault Zone and proposed Project area, there is no potential for the Project to adversely affect any existing faults.

a.ii) Less than Significant Impact

The San Jacinto Fault Zone, which runs through the eastern portion of the City of Moreno Valley and as close as 4.2 miles to proposed Project facilities, is one of the most active faults in Southern California. Additionally, the San Andres Fault Zone is approximately 15 to 20 miles north of Moreno Valley and the Elsinore Fault Zone is approximately 12 to 18 miles south of the proposed Project. CDOC's Ground Motion Interpolator (2008) shows the proposed Project area has a 0.759 - 0.857 acceleration (g) ground shaking potential. Ground shaking potential is calculated as the potential for ground shaking that has a 2% chance of being exceeded in 50 years and is measured on a ratio scale to signify the severity of the earthquake. Typically, potential ground shaking will be seen on a scale of 0g to 1.3g or even greater – there is no set scale because this measurement uses a ratio. For the proposed Project area, the range provided by the Ground Motion Interpolator shows that there is a 2% chance that an earth shaking event that produces violent shaking and heavy potential damage would occur in a 50 year period. The Peak Ground Acceleration (pga) for the proposed Project area is relatively high due to the close proximity to the San Jacinto Fault Zone. Therefore, the Project components would likely be subject to seismic ground shaking in a measurable seismologic event, though well drilling activities associated with the proposed Project would not exacerbate existing seismic groundshaking risks.

According to studies performed by the National Seismic Hazard Mapping Program, the City of Perris is considered "Very High" on the scale of probable motion for the level of potential ground motion during an earthquake. This is lower than most other cities within the County of Riverside who fall into the "Extremely High" category (City of Perris 2016c). Seismic activity is common in California, generally. Seismic activity is common in California generally, and the proposed Project facilities would be designed per EMWD's Engineering Standards and Specifications, which would ensure structural resiliency. The proposed Project would also be designed and constructed pursuant to applicable American Water Works Association (AWWA) standards, and would incorporate measures to accommodate seismic loading pursuant to guidelines such as the "Greenbook" Standard Specifications for Public Works Construction (Greenbook Committee of Public Works Standards, Inc. 2018) and the International Building Code (IBC; International Code Council 2018). These guidelines are produced through joint efforts by industry groups to

provide standard specifications for engineering and construction activities, including measures to accommodate seismic loading parameters. These standards and guidelines are widely accepted by regulatory authorities and are regularly included in related standards such as municipal building and grading codes. In addition, the proposed Project's design would follow guidelines within the California Building Code (CBC; California Code of Regulations, Title 24, Part 2), which is based on the IBC with amendments to reflect conditions specific to California. Because building and construction codes related to seismic shaking would be followed, there would be less potential for structural damage or loss due to seismic ground shaking. Even if structural damage does occur during a seismic event it would be isolated to the proposed monitoring wells; the proposed Project would not exacerbate a risk of seismic-related events or damage to other existing resources in the vicinity. Impacts would be less than significant and mitigation would not be required.

a.iii) Less than Significant Impact

Liquefaction is the process by which clay-free soil, such as sands and silts, temporarily lose cohesion and strength and turn into a fluid state during a severe ground shaking event. This primarily occurs in areas saturated with high groundwater levels and recent deposits of sands and silts. Although the City of Moreno Valley has seen no evidence of liquefaction events occurring in the area (City of Moreno Valley 2006b), western portions of the City have shallow groundwater. The City of Perris is comprised of extensive alluvial deposits; however, groundwater depths generally exceed 100 feet (City of Perris 2005a; City of Perris 2016c). The central and northeastern parts of the City of Perris are comprised of materials that are considered to be susceptible to moderate to very high liquefaction potential (City of Perris 2005a & 2016c). Therefore, the proposed Project area may be susceptible to liquefaction. Specifically, portions of the South Area overlie Very High to Moderate shallow groundwater susceptible sediments, and low deep groundwater susceptible sediments. MW-8 and MW-10 are both located in areas with low susceptible sediments, while MW-9 is not located within a susceptible area. (City of Perris 2016c). While a portion of the North and East Area overlies an area of potential liquefaction between Cactus Avenue and Alessandro Boulevard, none of the proposed well locations for the North and East Area fall within this area of potential liquefaction (City of Moreno Valley 2006). A soils and geotechnical report would be prepared for all proposed Project components by a California licensed geotechnical engineer. The geotechnical report would evaluate various geotechnical characteristics, including determining whether there is a liquefaction risk for the proposed Project area, and provide recommendations for materials and design that should be incorporated into the specifications for each Project facility and component. In addition, all proposed Project facilities would be designed in accordance with EMWD's Engineering Standards and Specifications and the other standards and guidelines described under "a.ii" above, that would ensure structural resiliency during earthquakes and other ground instability events, such as liquefaction. While design would address seismic risks on the proposed Project's facilities, construction and operation of the proposed Project would not trigger a seismic event or associated liquefaction, and impacts would be less than significant.

a.iv) Less than Significant Impact

Landslide risk is typically associated with high slopes and unstable soils. The majority of the proposed wells would be located on sites that are flat or have a minimal slope, according to the County of Riverside General Plan's Figure S-5 (County of Riverside 2019). Therefore, the potential for the Project to exacerbate the risk of landslides in the proposed Project area is low. In addition, the proposed Project facilities are not in a region within Moreno Valley known to have unstable soils, such as the "Badlands." The Badlands in Moreno Valley, located on the eastern edge of the City, consist of shale and siltstone that is highly porous and does not hold together when wet, which can cause slope instability and landslides during earthquake events (City of Moreno Valley 2006b). Other known unstable soils include the mountain slopes located in the southern portion of Moreno Valley which have loose granitic boulders that could slide down the slopes. The proposed Project facilities are not near these mountain slopes and therefore there is a low probability that the proposed Project could be impacted by landslides in the Moreno Valley portion of the proposed Project area or that the proposed Project could trigger landslides. The western and southwestern portion of the City of Perris have steep slopes of 30 percent or greater; however, the proposed Project facilities are not near these areas (City of Perris, 2005a & 2016c), and are not at risk of impacting those areas. All proposed Project facilities would be designed in accordance with EMWD's Engineering Standards and Specifications, as well as the other standards and guidelines described under "a.ii" above. A soils and geotechnical report would be prepared for all proposed Project components that would evaluate soil stability of the proposed Project area. Therefore, landslide impacts would be less than significant.

b) Less than Significant Impact

Construction of the Project components would require soil-disturbing activities such as drilling, which would expose soil. The soil exposed by construction would be subject to erosion if exposed to strong winds, heavy rains, or other storm events. Proposed Project construction activities would disturb approximately 2.3 acres for the 10 wells combined and would require a National Pollutant Discharge Elimination System (NPDES) Construction General Permit. A Stormwater Pollution Prevention Plan (SWPPP) be prepared and implemented in compliance with the Construction General Permit. Best Management Practices (BMPs) would be identified in the SWPPP to control and reduce pollutant discharges associated with construction and erosion and sediment control. Once construction is complete, all monitoring well disturbance areas would be returned to almost pre-Project conditions, including being repaved, and therefore would not result in further soil erosion. All stormwater that occurs on the sites would be collected as runoff and conveyed and discharged to the street in accordance with applicable storm water drainage design and water quality control requirements. Therefore, erosion and sedimentation impacts would be less than significant.

c) Less than Significant Impact

The proposed Project components within the City of Moreno Valley would be located in two soil areas, the Hanford-Tujunga-Greenfield area and the Monserate-Arlington-Exeter area. The Hanford-Tujunga-Greenfield soil area of well-drained to somewhat excessively drained soils developed in granitic alluvium with poor to fair soil stability with significant erosion potential (City of Moreno Valley 2006a & 2006b). While the Monserate-Arlington-Exeter soil area consists of well-drained soils that developed in alluvium from predominantly granitic materials with fair to good soil stability with minimal erosion potential (City of Moreno Valley 2006a & 2006B). The topsoil layer consists of coarse sandy loam with underlying layers of coarse sandy loam and loamy sand (City of Moreno Valley 2006a & 2006b). These soils are found at nearly level to moderately steep slopes of 5 to 15 percent, which lowers the risk of on- or off-site landslides (City of Moreno Valley 2006a & 2006b). Proposed Project components located in the rest of the proposed Project area would generally be on sites consisting of alluvial soils, which are more susceptible to settlement than other soils (City of Perris 2005a).

Additional landslide impacts were addressed in response “a.iv” above. Lateral spreading is caused by earthquake-induced liquefaction, which has been determined to be a less than significant impact. Liquefaction and lateral spreading risks exist in the proposed Project area due to the well-drained, clay-free soils and shallow groundwater levels, though the proposed Project’s activities would not exacerbate these risks because it would not change the soil type or trigger a seismic event. Moreno Valley and Perris have low to moderate liquefaction susceptibility and low slope instability (City of Perris 2016c). The geotechnical report that would inform design, along with adherence to EMWD’s Engineering Standards and Specifications and other standards and guidelines would ensure structural resiliency to earthquake events and associated lateral spreading and liquefaction. Therefore, implementation of the proposed Project would not result in significant risk of landslide, lateral spreading, or liquefaction.

Subsidence and associated fissuring have occurred in a variety of areas within Riverside County due to the falling and rising of groundwater tables (City of Perris 2005a). Alluvial valley regions, such as the cities of Perris and Moreno Valley, are susceptible to subsidence (City of Moreno Valley 2006b; City of Perris 2005a). EMWD has been managing groundwater levels in the western portion of the San Jacinto Groundwater Basin via the Annual West San Jacinto Groundwater Management Plan since 1995. Water levels were drawn down to historic lows in the middle of the 20th century and have been slowly rising since that time as a result of several factors that have offset or reduced groundwater extraction and replenished the groundwater levels. The proposed Project is located in an area of rising groundwater levels that would be replenished in the future by water banking through the San Jacinto Valley Enhanced Recharge and Recovery Project and recharge through the Purified Water Replenishment Project. The Groundwater Sustainability Plan (GSP), currently under development, would require groundwater to be managed in a sustainable manner. The success of the proposed Project requires functioning monitoring wells; wells would not be functional if the groundwater basin

collapsed. Construction would be conducted to avoid collapse of the borehole, based on the results of the geotechnical report and compliance applicable design standards. The proposed Project's wells would be used for monitoring groundwater levels and quality and would not result in substantial extraction of groundwater that could contribute to subsidence or collapse in the groundwater basin. Therefore, the proposed Project would not be susceptible to risks associated with land subsidence or collapse; impacts would be less than significant.

d) Less than Significant Impact

Expansive soils have the ability to significantly change their volume, shrink and swell, due to their soil moisture content. Expansive soils can crack rigid structures and potentially create pipeline rupture. Typically, expansive soils are very fine grained with a high to very high percentage (60% or more) of clay. Known potentially expansive soils within the proposed Project area are found in the Badlands-San Timoteo geological region (Moreno Valley 2006b), however none of the proposed Project sites would be located in this area. Overall, the proposed Project area soil types have a range of clay composition between 5% to 28% (USDA 2019). With the project-specific geotechnical report, expansive soils would be identified, and design specification would be implemented to avoid damage to proposed Project wells. The geotechnical report would include necessary design specifications that the proposed Project shall incorporate, including recommendations for materials and design, to avoid infrastructure damage from expansive soils. Additionally, the proposed Project would be designed in accordance with EMWD's Engineering Standards and Specifications, as well as other State and International buildings standards and guidelines, which would ensure structural resiliency and minimize the potential effects of expansive soils. This application of proper design standards appropriate to the proposed well sites would minimize the direct and indirect risks to life or property associated with implementing the proposed Project in expansive soils, in such areas as may be identified in the geotechnical report. The proposed Project would not change the soil composition in the proposed Project area, and would not exacerbate the impacts of expansive soils in the proposed Project Area. Impacts would be less than significant.

e) No Impact

The proposed Project would not include the construction or use of septic tanks or alternative wastewater disposal systems. Therefore, there would be no impact.

f) Less than Significant Impact with Mitigation Incorporated

Fossils are valuable and nonrenewable resources of remains of ancient, commonly extinct organisms that contribute understanding of the evolutionary history of life on earth. A Paleontological Resource Assessment Report was completed in compliance with CEQA, federal, state, and local regulations to determine the potential project impacts to paleontological resources in the proposed Project area. This report is provided in **Appendix D**.

Federal regulations are applicable for projects on federal lands or to projects that involve a federal agency license, permit, approval, or funding. These regulations include the National Environmental Policy Act (United State Code, Section 4321 et seq.; 40 Code of Federal Regulations, Section 1502.25), which instructs federal agencies to "preserve important historic, cultural, and natural aspects of our national heritage (Section 101(b)(4))." As well as the Paleontological Resources Preservation Act (PRPA), a part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D), which instructs for paleontological resources to be managed and protected on federal lands and to develop plans for inventorying, monitoring, and deriving scientific and education use of these resources. PRPA also prohibits the removal of paleontological resources from federal lands. State regulations include the California Public Resources Code (Section 5097.5) which prevents an individual from removing, destroying, or altering any paleontological resources found on public lands without the permission of the public agency that has jurisdiction over the lands. The City of Moreno Valley contains on a policy (Policy 7-6) for paleontological resources in their General Plan which states that areas expected to have paleontological or archaeological resources, based on the survey conducted by the University of California, Riverside Archaeological Research Unit, should follow their report to reduce potential impacts (Appendix D). The City of Perris contains one goal, one policy, and one implementation measure; which requires the protection of historical, archaeological, and paleontological sites through complying with state and federal regulations and monitoring of all projects requiring subsurface excavations within Area 1 and Area 2 on the Paleontological Sensitivity Map (**Appendix D**).

The Paleontological Resource Assessment Report was prepared in February 2020 for the proposed Project, and is provided here in **Appendix D**. Paleontological sensitivity of the geological units underneath the proposed Project area was assessed through a literature review, a paleontological locality search, and a review of existing geologic maps. A request was submitted to the Natural History Museum of Los Angeles County (NHMLAC) for a list of known fossil localities for the proposed Project area and immediate vicinity. The potential for impacts to significant paleontological resources was assessed based on the potential for ground disturbance to directly impact paleontological sensitive geologic units as defined by the Society of Vertebrate Paleontology (SVP) (2010).

The proposed Project area is located in the central Perris Block of the northern portion of the Peninsular Ranges Province, which is one of the eleven major geomorphic provinces in California (**Appendix D**). The Perris Block consists of Pleistocene and Holocene alluvial fan deposits deriving from the San Gabriel Mountains to the north and fluvial depots from the Santa Ana River (**Appendix D**). The Project site is underlain with younger Quaternary (Holocene) surficial deposits (i.e. alluvium), including stream channel deposits and valley area deposits. Holocene alluvial deposits in the proposed Project area are too young to preserve paleontological resources; however, at shallow or known depths, the Holocene sediments could grade downward into deposits of older Quaternary (Pleistocene) alluvium that could preserve fossil remains. Pleistocene alluvium deposits have a well-documented record for containing abundant and diverse vertebrate fauna throughout California. Overall, the Holocene alluvium mapped at the surface of the

proposed Project area has a low paleontological sensitivity because the Holocene sedimentary deposits are generally too young to contain fossilized materials.

There are no previously recorded fossil localities in the Project site based on a paleontological locality records search performed at NHMLAC. However, there are several vertebrate localities within the Project's vicinity. East of the Project site, within the gravel pits of the San Jacinto Valley, a vertebrate fossil locality LACM 4540 yielded a horse (*Equus* sp.) from Pleistocene alluvial deposits at an unknown depth. South of the Project site, on the north side of the Railroad Canyon Reservoir, another vertebrate locality LACM 5168 yielded a horse (*Equus* sp.) from Pleistocene deposits at an unknown depth. Lastly, vertebrate fossil localities LACM (CIT) 572 and LACM 6059 yielded a horse (*Equus* sp.) and camel (*Camelops hesternus*) from Pleistocene alluvial deposits near Lake Elsinore, further south-southwest of the proposed Project area, at a depth of recovery unknown (**Appendix D**).

Western Science Center (WSC) records indicate that there were several fossil localities near the Project site. WSC localities 192, 193, and 194 rendered fossil ground sloth (*Megalonyx jeffersonii*), lamine camel (*Hemiauchenia* sp.), and horse (*Equus* sp.) approximately four miles northeast of the Project site (Appendix D). These fossils were recovered from 11 to 13 feet below ground surface within Pleistocene alluvial fan deposits (**Appendix D**).

Ground-disturbing activities in previously undisturbed portions of the Project site underlain by geologic units with a high paleontological sensitivity (i.e. Pleistocene alluvial deposits) may result in significant impacts to paleontological resources. The Project construction activities would include establishing temporary work areas measuring approximately 10,000 square feet at the surface and drilling and installing 10 groundwater monitoring wells between 200 and 800 feet below surface level. Minor ground-disturbances within the temporary work areas are unlikely to impact previously disturbed sediments at the surface. Vertical drilling of boreholes less than three feet in diameter is also not conducive to paleontological monitoring because drilling typically pulverizes the soil and sediment cuttings and removes the stratigraphic context of any fossils or microfossils that may be present within the borehole walls or the cuttings. Potential disturbance to intact Pleistocene sediments from well drilling would be limited to the small diameter of the borehole (i.e. 30-inch) and would therefore make impacts to paleontological resources due to well drilling negligible. Although ground-disturbing activities are likely to impact geologic units of high paleontological sensitivity at depths of 11 feet or greater below surface level, the potential for encountering significant fossil resources during construction is low due to construction occurring in previously disturbed areas, and impacts to paleontological resources are not anticipated. However, there is always the potential to encounter an unanticipated paleontological resource whenever ground disturbing activities occur. **Mitigation Measure GEO-1** would be implemented during construction of the proposed Project, which would require work stop if a fossil is encountered during construction until a qualified paleontologist can properly document the find. In the unlikely event an unanticipated fossil is discovered, **Mitigation Measure**

GEO-1 would ensure it would be preserved, and potential impacts on paleontological resources would be less than significant.

Mitigation Measures:

GEO-1: Unanticipated Fossil Discovery. In the event an unanticipated fossil discovery is made during the course of project development, then in accordance with SVP (2010) guidelines, it is the responsibility of any worker who observes fossils within the project site to stop work in the immediate vicinity of the find and notify a qualified professional paleontologist who shall be retained to evaluate the discovery, determine its significance and if additional mitigation or treatment is warranted. Work in the area of the discovery will resume once the find is properly documented and authorization is given to resume construction work. Any significant paleontological resources found during construction monitoring will be prepared, identified, analyzed, and permanently curated in an approved regional museum repository.

3.8 Greenhouse Gas Emissions

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	[ ]	[ ]	[X]	[ ]
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	[ ]	[ ]	[X]	[ ]

Discussion

GHGs are pollutants that are known to increase the greenhouse effect in the earth's atmosphere thereby adding to global climate change impacts. Several pollutants have been identified as GHGs, and the State of California definition of a GHG in the Health & Safety Code, Section 38505(g) includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Water vapor

is also a GHG, however, it is short lived, and concentrations are largely determined by natural processes such as evaporation. Other GHGs such as fluorinated gases are created and emitted through anthropogenic sources. The most common anthropogenic sources of GHGs are CO_2, CH_4, and N_2O.

Measuring how much energy the emissions of one ton of a gas will absorb over a given period of time relative to the emissions of one ton of CO_2 is called the Global Warming Potential (GWP or CO_2e). CO_2e is the amount of GHG emitted multiplied by its GWP. CO_2 has a 100-year GWP of one; CH_4 has a GWP of 25; and N_2O has a GWP of 298.

In 2005, Executive Order S-3-05 set GHG emission reduction targets:

- 2010 should have 2000 levels;
- 2020 should have 1990 levels; and
- GHG emissions should be 80% below 1990 levels by 2050.

Senate Bill (SB) 32, passed in 2016, required that the CARB include in its next update to the Assembly Bill (AB) 32 Scoping Plan, "ensure that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit no later than December 31, 2030." Executive Order B-55 set a GHG emission reduction target for California to be carbon neutral by 2045.

CARB adopted the *Scoping Plan* in December 2008 and a *Scoping Plan Update* in December 2017. The *Scoping Plan* contains the strategies California will implement to achieve reduction of 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. In the *Scoping Plan*, "CARB recommends that lead agencies prioritize onsite design features that reduce emissions, especially from vehicle miles travelled (VMT), and direct investments in GHG reductions within the proposed Project's region that contribute potential air quality, health, and economic co-benefits locally."

The City of Moreno Valley also produced an *Energy Efficiency and Climate Action Strategy* and a *Greenhouse Gas Analysis* in 2012. The *Energy Efficiency and Climate Action Strategy* outlines and prioritizes numerous energy efficiency and energy reduction measures, while the *Greenhouse Gas Analysis* establishes goals and policies that incorporate environmental responsibility to reduce GHG emissions. The *Greenhouse Gas Analysis* sets a goal to reduce the City's emissions back to 1990 levels by 2020 which is equal to 798,693 metric tons CO_2e, which is consistent with the State's emissions reduction targets per AB 32 and SB 32.

The Cities of Moreno Valley and Perris are also members of the WRCOG. Several member governments of WRCOG are actively participating in the development of a Subregional CAP. However, the City of Moreno Valley has elected to utilize its existing *Efficiency and Climate Action Strategy*. In addition to the WRCOG CAP, the County of Riverside adopted a CAP in 2015 for unincorporated areas of Riverside County.

The County of Riverside's 2015 CAP establishes goals and policies that incorporate sustainability and GHG reduction targets into its management process. The County set a goal to reduce emissions to 1990 levels by 2020 in line with the State's AB 32 GHG reduction targets. The CAP was updated in 2019 to contain further guidance on Riverside County's GHG Inventory reduction goals, thresholds, policies, guidelines, and implementation programs including 2030 thresholds to reduce emissions to 40 percent below 1990 levels. In particular, the CAP elaborates on the County's *General Plan* goals and policies relative to GHG emissions and provides a specific implementation tool to guide future decisions of the County. The County's CAP includes a review process procedure for evaluating individual project GHG impacts and determining the significance under CEQA. The County's CAP is qualified for CEQA tiering and streamlining of individual projects' CEQA review. The County's CAP has set a threshold of 3,000 metric tons (MT) CO_2e per year to be used to identify projects that, when combined with the modest efficiency measures (e.g., energy efficiency matching or exceeding the Title 24 requirements in effect as of January 2017; water conservation measures that match the California Green Building Standards Code in effect as of January 2017) are considered less than significant.

The Cities of Moreno Valley and Perris, EMWD, and the proposed Project lie within the jurisdiction of the SCAQMD. On December 5, 2008, the SCAQMD Board approved interim CEQA GHG significance thresholds for stationary sources, rules, and plans using a tiered approach for determining significance (SCAQMD 2008b). Tier 3, the primary tier the SCAQMD board uses for determining significance, set a screening significance threshold of 10,000 $MTCO_2e$/year for determining whether a stationary source project would have a less than significant cumulative GHG impact (SCAQMD 2008b). While useful as a reference, this threshold is meant to apply to industrial projects where SCAQMD is the lead agency (Radlein, personal correspondence 2020). Therefore, for the purposes of this analysis, the County of Riverside screening level is used as a threshold to determine significance of the proposed Project under CEQA.

a) Less Than Significant Impact

The proposed Project would produce GHG emissions during construction and operation. Construction is expected to last approximately 7 months, and the proposed Project's life expectancy is 30 years. Construction impacts would include emissions associated with staging, site preparation, pilot boring, and well construction. Operational emissions would result from semiannual well inspections and monitoring visits, including weekly drive-by data collection. Further details can be found in *Section 2 Project Description*. Modeling of air emissions from construction and operation was completed in CalEEMod version 2016.3.2 for construction of the wells. Details on construction, including timing, duration, equipment, and worker trips can be found in *Section 2 Project Description*. Operational emissions would result from the vehicle trips to the wells for inspection and aquifer testing throughout the year. Based on annual operation and maintenance for each well, approximately 5,550 vehicle miles traveled would occur annually. Monitoring wells would

not require a connection to the electrical grid and all monitoring equipment would be brought to the site during sampling periods.

As described above, the Riverside County CAP has set a threshold of 3,000 $MTCO_2e$ to identify small projects that are considered less than significant and would not require mitigation. The results of the inventory for GHG emissions, as shown in the CalEEMod output tables in **Appendix A**, are presented in **Table 3-13** along with the significance threshold. Consistent with the methodologies in the County CAP, total GHG emissions from construction have been amortized over the 30-year lifetime of the Project.

Table 3-13: Proposed Project GHG Emissions per Year ($MTCO_2e$/year)

Source	$MTCO_2e$
Area	<1
Energy	0
Mobile	2
Waste	0
Water	0
Construction (amortized over 30 years)	8
Total	**10**
Threshold	3,000
Exceed Threshold?	*No*

Note: CalEEMod's default CO_2e intensity factor for Southern California Edison is 702.44 lb/MWhr. However, recent information provided by SCE (2019) specifies a CO_2e intensity factor of 467.38 lb/MWhr for SCE, which was used in this analysis.

The total annual construction emissions from the proposed Project would be 249 $MTCO_2e$ in 2022. Amortized over a 30-year period, the Project would generate approximately 10 $MTCO_2e$ per year. In addition to the low per year generation of $MTCO_2e$, the proposed Project would adhere to existing energy efficiency requirements during construction, including CARB's In-Use Off-Road Diesel-Fueled Fleets Regulations that limit vehicle idling time to five minutes, restrict adding vehicles to construction fleets that have lower than Tier 3 engines, and establish a schedule for retiring older and less fuel-efficient engines (CARB 2019b). Construction related impacts to GHG would be less than significant.

Long-term GHG emissions from the proposed Project would result from mobile sources for semiannual visits, which is considered negligible as described above. Total GHG emissions are 10 $MTCO_2e$ annually, which is below the 3,000 $MTCO_2e$ threshold. Therefore, impacts are less than significant.

b) Less than Significant Impact

California's 2017 Climate Change Scoping Plan focuses on reducing energy demand, and GHG emissions, that result from mobile sources and land use development. The proposed Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl. Therefore, it would not conflict with the State's Climate Change Scoping Plan.

The proposed Project would not interfere with existing City, County, or regional programs intended to reduce energy and improve water use efficiency, including the County's CAP, the City of Moreno Valley's *Energy Efficiency and Climate Action Strategy* and its *Greenhouse Gas Analysis*. It would not result in emissions higher than the Riverside County CAP significance screening thresholds. The proposed Project would not, therefore, conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Impacts would be less than significant, and no mitigation would be required.

Mitigation Measures: None required or recommended.

3.9 Hazards and Hazardous Materials

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	[ ]	[ ]	[X]	[ ]
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?	[ ]	[X]	[ ]	[ ]
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	[ ]	[ ]	[X]	[ ]

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?	[ ]	[ ]	[X]	[ ]
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?	[ ]	[ ]	[ ]	[X]
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	[ ]	[X]	[ ]	[ ]
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	[ ]	[ ]	[X]	[ ]

Discussion

a) Less than Significant Impact

Construction machinery (i.e. drilling rig, cranes) would be used throughout construction in order to drill the monitoring wells. This equipment may leak small amounts of petroleum products (i.e. gasoline, diesel) and automotive fluids during transportation and equipment use. Chemicals may be used during the drilling process (e.g., drill fluids). To minimize the risks of exposure to hazardous materials from routine use or accident conditions, federal, State and local regulations have been put into place to regulate hazardous material use, storage, transportation, and handling. EMWD would be required to be in compliance with all applicable federal, State, and local regulations pertaining to hazardous materials (Federal Code Title 40 & 49; Occupational Safety and Health Administration (OSHA) 29 CFR 1910; California code section 5001, 5401, 5701, and 25507; California Health and Safety Code Division 20, Chapter 6.5, Article 6.5, Article 6.6, and Article 13; and Riverside County ordinance 651). Conformance with the above regulations would include protective measures, including implementation of a SWPPP to address the discharge of

contaminants (including construction-related hazardous materials) through appropriate BMPs. While specific BMPs would be determined during the SWPPP process based on site-specific characteristics (equipment types, etc.), they would include standard industry measures and guidelines contained in the NPDES Construction General Permit text. According to California Health and Safety Code Division 20, Chapter 6.5, Article 13, used oil that may be produced from construction or operation of the proposed Project would be recycled. Groundwater encountered during construction would be discharged to land or surface water (storm drain) in accordance with applicable permits or discharged to EMWD's sewer for treatment and reuse. As discussed in *Section 2.4.2 Well Construction*, where the quality of groundwater recovered during construction fails to meet regulatory standards for discharge to surface waters, discharge to sewer would be required. With compliance with existing regulations, impacts during construction from the routine use of hazardous materials would be less than significant, and no mitigation would be required.

Once operational, each monitoring well would be visited twice per year to collect manual readings and conduct inspections and maintenance. EMWD operators would also drive past each well weekly to collect data remotely. The only potential hazardous materials exposure from operation would be potential small leaks of petroleum products (i.e. gasoline, diesel) from worker vehicles and automotive exhaust. These exposures are minimal and consistent with existing exposure for EMWD operators. As such, operational activities do not risk significant exposure to hazardous materials and impacts would be less than significant, and no mitigation is required.

b) Less than Significant with Mitigation Incorporated

There is potential that chemicals or materials used during construction, such as drilling fluids, diesel, and fuels, could be accidentally released. Implementation of **Mitigation Measure HAZ-1** would minimize the risk of hazardous material exposure through material use and accidents by requiring EMWD and its construction contractor to develop a Hazardous Materials Management and Spill Prevention and Control Plan to ensure project-specific contingencies are in place. Impacts from hazardous materials to the public or the environment from potential accidents would be less than significant with implementation of **Mitigation Measure HAZ-1**.

There is very low to no risk of accidental release of hazard materials during operations because the proposed monitoring wells are located underground and would not require the use of hazardous materials to perform monitoring activities. Some chemicals may be used during the semi-annual maintenance of the proposed wells, including diesel and fuels from vehicles that could be accidentally released. The proposed Project would be required to comply with various existing regulations (see response to "a" above) that would minimize the risk of accidental hazardous material release during operation. In addition, a Hazardous Materials Business Plan, Emergency Response Plan, and Risk Management Plan would need to be prepared and implemented based on the State of California Accidental Release Prevention (CalARP) requirements. The CalARP Program incorporated and modified the Federal Risk Management Plan and designed it to

minimize harm to people and the environment through enforcing regulations that minimize risks for facilities that handle hazardous material. Safety measures would be put in place to ensure proper sampling and spill procedures, and training for site workers. Impacts would be less than significant with implementation of **Mitigation Measure HAZ-1**.

c) Less than Significant Impact

There are five existing schools located within one-quarter miles of the proposed Project sites (see *Section 2.3 Environmental Setting and Existing Conditions*). During construction, there would be emissions of toxic air pollutants, such as diesel particulate matter, within one-quarter mile of schools. As demonstrated in *Section 3.3 Air Quality*, construction emissions would be below SCAQMD LST thresholds and less than significant. As explained in response to "b" above, there is a low risk of accidental release of hazardous materials during project construction, including within one-quarter mile of schools. As such, impacts would be less than significant. Although impacts are less than significant, implementation of **Mitigation Measure HAZ-1**, required under impact "b" above, would further reduce potential exposure of schools to hazardous materials.

During operation the monitoring wells would require visitation twice a year for manual data collection, inspection, and maintenance; however, no hazardous materials would be handled or emitted on a regular basis. As explained under responses "a" and "b" above, operation of the monitoring wells would be compliant with local regulations, and there would be less than significant impacts related to hazardous material release associated with long-term Project operation and maintenance activities.

d) Less Than Significant Impact

Regulatory records were searched through the State Water Resources Control Board (SWRCB) GeoTracker database (SWRCB 2015) and the Department of Toxic Substances Control (DTSC) EnviroStor database (DTSC 2020). These databases provide information on potential, confirmed, and closed hazardous waste and substances sites in California. None of the proposed Project sites are included on a list of hazardous materials sites per Government Code Section 65962.5 (DTSC 2020 and SWRCB 2015).

Recent and currently active clean-up sites in the vicinity of the proposed Project are summarized here:

- Shell Moreno at 13260 Old Frontage Road in Moreno Valley (GeoTrack ID #T0606500255) – This leaking underground storage tank (LUST) site is approximately 0.31 miles away from MW-3, 0.75 miles away from MW-4, and 0.85 away from MW-5. The site has undergone remediation for release of petroleum hydrocarbons (gasoline) in soil and groundwater. Underground storage tanks were removed, and monitoring was completed. The RWQCB issued a notice of case closure in May 2019.
- M&M Dry Cleaners at 23080 Alessandro Blvd in Moreno Valley (GeoTracker ID #T10000004432) – This site is approximately 0.57 miles away from MW-4 and

0.43 miles away from MW-5. The site has been under investigation and remediation for the release of dry cleaning solvent, tetrachloroethene (also known as perchloroethylene or PCE), in soil and groundwater. The site has been remediated and confirmation soil sampling and groundwater monitoring is ongoing. The case has not yet been closed by the RWQCB.

- Shell Perris Blvd at 15980 Perris Blvd. in Perris. (GeoTracker ID #T0606517323) – This LUST site is approximately 0.07 miles away from MW-7 and 1.4 miles away from MW-6. The site has undergone remediation for release of hydrocarbons in soil and groundwater. Groundwater monitoring is ongoing. Recent correspondence from the Santa Ana RWQCB (letter from Hope Smythe, RWQCB Executive Director dated December 23, 2019) requests that the site owner conduct a short-term groundwater extraction test to demonstrate that the areal extent and mass of the residual plume of methyl tertiary butyl ether (MTBE) and tertiary butyl alcohol (TBA) affected groundwater is limited. The RWQCB is interested in better understanding the stability of the residual plume and the results of EMWD hydrological modeling to determine if there is any potential for the plume to be affected by proposed wells in this area.

- The Festival in Moreno Valley (Envirostor ID #60002747) on Hemlock Avenue in Moreno Valley is a voluntary cleanup site (for a previous M&M Dry Cleaners tenant) that is inactive but actions are required; and is approximately 0.43 miles away from MW-1 and 0.3 miles away from MW-2. The site investigation detected PCE, trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and trans-1,2-DCE in soil and soil vapor. Soil vapor extraction was conducted without DTSC oversight between March 2017 and April 2018 as remediation. Sampling was performed confirm remaining onsite hazardous constituents. Based on the sampling results, the soil gas concentrations rebounded, and show an increase of 20 times for CSVP-1 and three times for CSVP-3. According the DTSC Envirostor, additional sampling needs to be done to show stable and/or downward concentration trend.

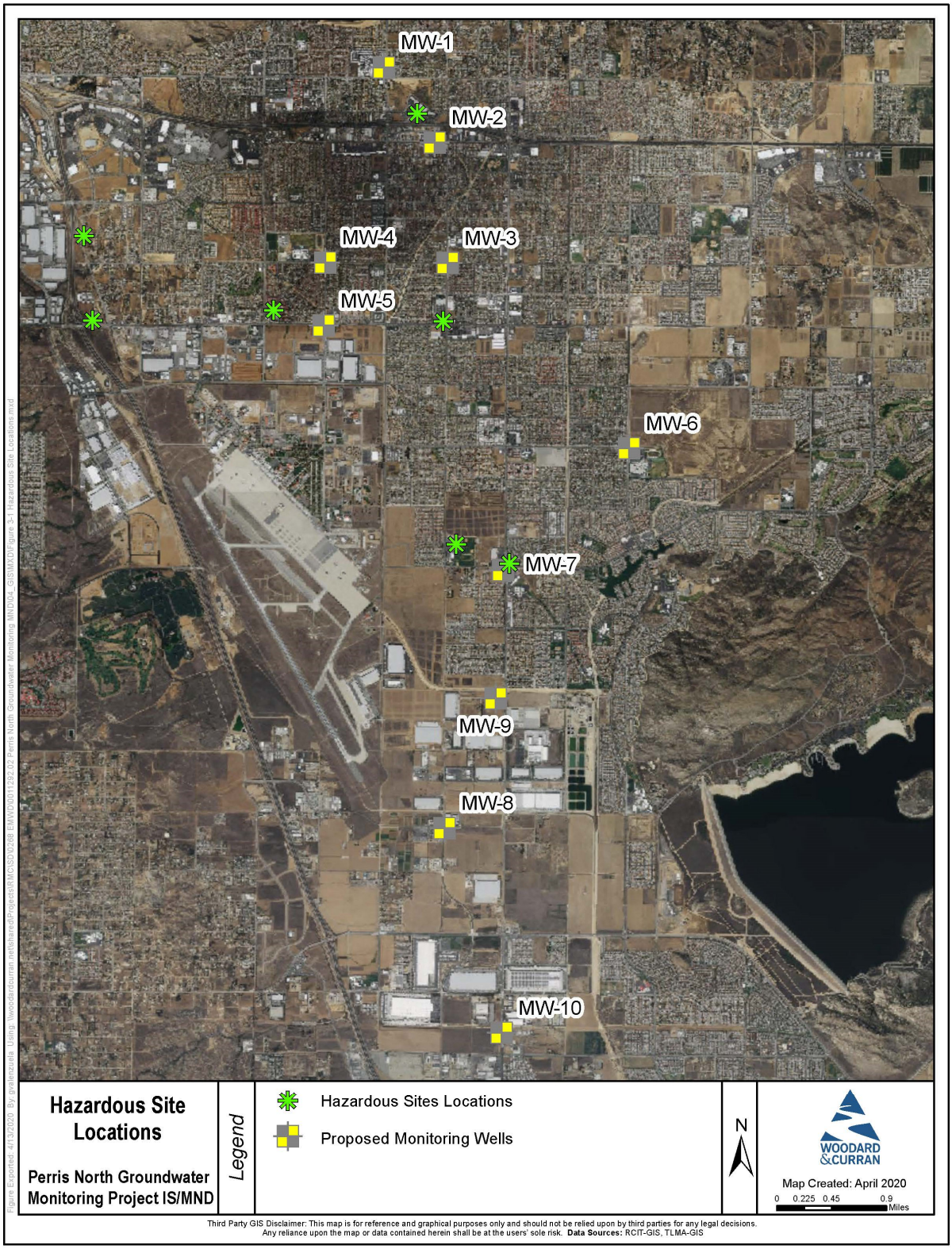
- Indian Middle School (Envirostor ID #33000006) on Iris Avenue in Moreno Valley is a school cleanup site; and is approximately 0.47 miles away from MW-7. Agricultural use of row crops led to increased DDT and Toxaphene constituents. According to DTSC's Envirostor, the site is certified as of March 10, 2006, which means it is identified as a completed site *"with previously confirmed release that are subsequently certified by DTSC as having been remediated satisfactorily under DTSC oversight."*

- ARCO #6345 located at 2624 E Alessandro Boulevard in Moreno Valley (Envirostor ID # T0606500497) – This LUST site is located approximately 1.9 miles from MW-5, the closest proposed Project facility. The site has undergone remediation for release of petroleum hydrocarbons in soil, soil vapor and groundwater. Confirmation soil sampling and groundwater monitoring is ongoing. The case has not yet been closed by the RWQCB.

- MOBIL #18-A3E located at 24440 Alessandro Boulevard in Moreno Valley (Envirostor ID # T0606599291) – This LUST site is located approximately 0.3 miles south of MW-3, 1 mile southeast of MW-4, and 0.95 miles east northeast from MW-5, the closest proposed Project facilities. The site has undergone remediation for release of petroleum hydrocarbons (gasoline) in soil and groundwater. Underground storage tanks were removed, and monitoring was completed. No further action /case closure was issued by the RWQCB in May 2019.

The proposed Project would not involve construction activity on or immediately adjacent to any of these listed sites (see **Figure 3-2**). Construction and operation activities for the proposed Project would be limited to the footprint immediately surrounding each proposed well. The nearest listed hazardous site is 0.3 miles from the proposed Project's construction footprint. Therefore, the proposed Project would not expose either workers or the public to hazards from these sites. Impacts would be less than significant.

Figure 3-2: Hazardous Sites in Relation to Proposed Wells



e) No Impact

The proposed Project area is near the March Air Reserve Base, which has its own airport and the small, private Perris Valley Airport. The proposed Project area is located in Zone E of the Airport Influence Area for the March Air Reserve Base, which is the outer limits of the influence area (Riverside County Airport Land Use Commission, 2014). Zone E is the outer portion of the flight corridor and is only occasionally used, which leads to low noise disturbances. Additionally, there are no restrictions on development for this outer area. Even so, the Project would not include tall structures that could interfere with airport safety measures. For the Perris Valley Airport, the proposed Project area would not be located within the influence zone (City of Perris, 2005a). There would be no impacts.

f) Less than Significant with Mitigation Incorporated

The City of Moreno Valley Emergency Operations Plan (EOP) and the City of Perris EOP provide guidance for the cities' respective responses to extraordinary emergency situations associated with natural, man-made and technological disasters. While the EOP is a preparedness document and is designed to be read, understood, and exercised prior to an emergency, emergency evacuation plans should be viewed as living documents because communities change and integrating the needs of individuals with differing access and functional needs is a dynamic process. The Office of Emergency Management (OEM) is responsible for working and communicating with local community stakeholders to practice, review, revise, and update plans to reflect changes in technology, personnel, and procedures (City of Moreno Valley 2019a; City of Perris 2011; City of Perris 2013b).

The City of Moreno Valley and City of Perris Local Hazard Mitigation Plan (LHMP) is designed to reduce or eliminate long-term natural or man-made hazard risks and communicate the City's corresponding mitigation strategy. Components of the plan include hazard identification, asset inventory, risk analysis, loss estimation, and a mitigation strategy to reduce the effects of hazards in the City (City of Moreno Valley 2017).

During construction of the proposed Project components, roads would be temporarily altered, blocked, or impaired for a period of up to one-month. Where construction occurs along primary roadways, there is potential that the proposed Project could conflict with the adopted emergency response plan and emergency evacuation plan (the City EOP and LHMP) if lane closures affect roads identified as evacuation routes. Major roads impacted by installation of the proposed wells include Perris Boulevard, N Perris Boulevard, Sunnymead Boulevard, Graham Street, Iris Avenue, Alessandro Boulevard, Lasalle Street, John F. Kennedy Drive, Cottonwood Avenue, Indian Street, Harley Knox Boulevard, and Heacock Street.

During operation, the wells would require semi-annual data collection visits and inspections as needed, which would impact a 1,600 square foot area around each well for a period of up to one-week. These minimal operational activities would require

temporary lane closures for proposed sites per semi-annual monitoring event. Lane closures would not be required for monitoring that occurs on EMWD-owned property. Temporary lane closures associated with operation of the proposed Project could interfere with implementation of an adopted emergency response plan by reducing access in the event of an evacuation or emergency.

With the implementation of **Mitigation Measure TRA-1** (see *Section 3.17 Transportation*), coordination with local emergency responders would be required regarding lane closures for both construction and operation. Impacts would be less than significant with the incorporation of **Mitigation Measure TRA-1**.

g) Less than Significant Impact

The proposed Project would not involve the installation or maintenance of infrastructure that is associated with fire risk (*see Section 3.20 Wildfire*). Additionally, the proposed Project sites within the Moreno Valley Local Responsibility Area (LRA) are designated as a non-Very High Fire Hazard Severity Zone (FRAP, 2009). Perris is designated as a community at the highest level of risk for wildfire; however, the City of Perris has implemented weed abatement and brush clearance regulations to help reduce the threat of the spread of wildfires (City of Perris, 2005a). Therefore, the proposed Project would have a less than significant impact on exposing people or structures to a significant risk of loss, injury or death involving wildland fires.

Mitigation Measures:

Mitigation Measure HAZ-1: Hazardous Materials Management and Spill Prevention and Control Plan. Before construction begins, EMWD shall prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and water operations. The Plan will be applicable to construction activities and will establish policies and procedures according to applicable codes and regulations, including but not limited to the California Building and Fire Codes, and federal and California Occupational Safety and Health Administration (OSHA) regulations. The Plan will include, but is not limited to the following:

- A discussion of hazardous materials management, including delineation of access and egress routes, waterways, emergency assembly areas, and hazardous material disposal;
- Notification and documentation of procedures; and
- Spill control and countermeasures, including employee spill prevention/response training.

Mitigation Measure TRA-1: Traffic Control Plan (see *Section 3.17*)

3.10 Hydrology and Water Quality

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	[ ]	[ ]	[X]	[ ]
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	[ ]	[ ]	[ ]	[X]
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;	[ ]	[ ]	[X]	[ ]
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	[ ]	[ ]	[X]	[ ]
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; or	[ ]	[ ]	[X]	[ ]

iv) impede or redirect flood flows?	[ ]	[ ]	[X]	[ ]
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?	[ ]	[ ]	[X]	[ ]
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	[ ]	[ ]	[X]	[ ]

Discussion

Surface Water

The proposed Project is located in the Santa Ana River Basin, which includes portions of San Bernardino, Riverside, and Orange counties. Within the Basin, the proposed Project is located in the San Jacinto River Watershed, which drains approximately 540 square miles into Canyon Lake. Canyon Lake discharges into Lake Elsinore, and Lake Elsinore discharges into a tributary of the Santa Ana River; however, discharges from these two lakes are very rare. Drainage in the City of Moreno Valley and City of Perris is provided by local storm drain channels (including the Sunnymead Channel and Kitching Channel) which convey storm flows to the Perris Valley Storm Drain, and subsequently into the San Jacinto River (City of Moreno Valley 2006b; City of Perris 2005a). The Perris Valley Storm Drain discharges into the San Jacinto River in the City of Perris near I-215, roughly four miles south of the proposed Project area.

The Santa Ana 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. Intermittent beneficial uses of the San Jacinto River downstream of the proposed Project area have been identified, and include municipal and agricultural water supply, groundwater recharge, recreation, and freshwater habitat and wildlife uses (Santa Ana RWQCB 2019). Beneficial uses of Canyon Lake and Lake Elsinore include municipal and agricultural supply, recreation, commercial uses, and freshwater habitat and wildlife uses (Santa Ana RWQCB 2019).

The State Water Resources Control Board (SWRCB) also maintains the 303(d) List of Impaired Water Bodies, which identifies water bodies where water quality indicators exceed acceptable thresholds. The Project sites do not directly drain to 303(d)-listed impaired water body (SWRCB 2019). However, Lake Elsinore appears on the 303(d) list for the following water quality issues: nutrients, organic enrichment/low dissolved oxygen, toxicity, dichlorodiphenyltrichloroethane (DDT), and polychlorinated biphenyls (PCBs) (SWRCB 2016). Canyon Lake is 303(d)-listed for nutrients (SWRCB 2016). The Santa Ana RWQCB develops and implements total maximum daily loads (TMDLs) 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.

The U.S. Department of Homeland Security Federal Emergency Management Agency (FEMA) identifies flood hazard areas on Flood Insurance Rate Maps prepared for the National Flood Insurance Program. These areas, known as Special Flood Hazard Areas (SFHAs), are defined as areas where there is a one percent chance of flooding in any given year (also referred to as a 100-year flood). FEMA maps also identify moderate flood hazard areas, which are areas outside the one-percent flood area where there is a 0.2 percent chance of flooding in a given year (also referred to as a 500-year flood). Areas outside the 100-year and 500-year flood zones are considered areas of minimal flood hazard. Existing drainage channels in the proposed Project area contain the 100-year flood (i.e., along Kitching Street, near the intersection of Alessandro Boulevard and Heacock Street, and along Camino Flores). Larger 500-year flood zones also exist in the proposed Project area; flood zones are shown in **Figure 3-3**. One well is located in the 100-year floodplain (MW-1), two wells are located in or immediately adjacent to the 500-year floodplain (MW-2 and MW-9), and seven wells are not located in either the 100- or 500-year floodplain (MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-10).

Groundwater

The Project site overlies the San Jacinto Groundwater Basin (California Department of Water Resources [DWR] Basin Number 8-05). The basin generally encompasses the areas of Moreno Valley, Perris, Hemet, San Jacinto, Sun City, and Menifee, and has an estimated storage capacity of roughly three million acre-feet (DWR 2006). The Basin has been divided into smaller management areas. The Perris North Sub-basin underlies the Project site.

The San Jacinto Groundwater Basin is designated by DWR as a high priority basin. The eastern portion of the Basin is adjudicated, but the western portion (which includes the Perris North Sub-basin) is subject to the provisions of SGMA. EMWD acts as the Groundwater Sustainability Agency (GSA) for the western portion of the Sub-Basin. As the GSA, EMWD is required to develop a Groundwater Sustainability Plan (GSP) by 2022. The GSP will document basin conditions, and basin management will be based on measurable objectives and minimum thresholds defined to prevent significant and unreasonable impacts on the sustainability indicators defined in the GSP.

The Santa Ana RWQCB designates beneficial uses for the San Jacinto Groundwater Basin, including the Perris North Sub-basin. Designated beneficial uses are municipal and agricultural supply, industrial service supply, and industrial process supply. Groundwater in the Perris North Sub-basin is contaminated. Contaminants of concern (COCs) include PCE, VOCs, nitrate, perchlorate, TDS, fluoride, and manganese (co-mingled VOC-Nitrate Plume).

The Perris North Sub-basin is a source of potable water for EMWD. Active potable water wells within the proposed Project area include EMWD's Well 55, Well 56 and Well 59. The groundwater aquifer in the proposed Project area has been a source of potable water for nearly 100 years. However, over the last several decades, contaminants in the groundwater have resulted in numerous potable wells being shut down and unavailable for potable use. The proposed Project area was primarily used for agricultural production, but over the last several decades it has transitioned to primarily urban uses.

The original source of potable water for MARB was groundwater wells located on the base. Over time, the wells were shut down and the water supply was converted to municipal water due to groundwater contamination. EMWD has had 10 potable water wells shut down over the last two decades due to groundwater contamination. When local groundwater cannot be used due to contamination, EMWD must replace this water supply with imported water from MWD. The groundwater contamination is nonpoint source pollution associated with previous agricultural operations, equipment maintenance, and urban activities in the region. Potential COCs in the Basin aquifer include VOCs, perchlorate, nitrate, fluoride, manganese, and PCE. Potential contamination sources were identified by EMWD through implementation of the DWSAP, as well as GeoTracker and Envirostor database research, in developing a comingled plume map.

EMWD is not currently treating contaminated groundwater in the proposed Project area but has been developing plans to mitigate the contaminated groundwater and prevent the flow of contaminated groundwater toward areas where the groundwater is not contaminated. EMWD has one potable well, Well 59, that is currently being equipped with GAC to address contamination from perfluorinated compounds (PFCs). EMWD Wells 55 and 56 do not require treatment for use in the potable water system. The Air Force/EPA have ongoing efforts to address point source plumes coming from March Air Reserve Base (MARB), but their efforts are separate and distinct from EMWD plans.

a) Less than Significant Impact

The proposed Project would cumulatively disturb an area greater than one acre in size and would therefore be required to obtain coverage under the NPDES Stormwater Construction General Permit during Project construction. As part of the Permit conditions, EMWD would be required to prepare a SWPPP, which would identify BMPs to control sediment and other construction-related pollutants in stormwater discharges. Typical BMPs include housekeeping practices such as proper waste disposal, covering stockpiles with tarps, containment of building materials, and inspection of construction vehicles to prevent leaks or spills. Contractors would be required to comply with the Construction General Permit throughout construction. Construction dewatering water would be either discharged to land in accordance with RWQCB Waste Discharge Requirements for construction dewatering; or discharged to the local storm drain system per Riverside County Flood Control and Water Conservation District requirements; or discharged to the EMWD sewer system, depending on the quality of the water and permitted allowances. Compliance with these permits including implementation of BMPs would ensure the

project would not violate water quality standards or waste discharge requirements, nor significantly degrade surface water quality. Impacts on surface water quality would be less than significant.

With regard to groundwater, the proposed monitoring wells would have no adverse impact on groundwater quality, but rather would provide a benefit to water quality management of Perris North Sub-basin. The monitoring wells would provide data needed to improve understanding of groundwater quality within the Perris North Sub-basin, and the well data would support understanding of the impacts of other management decisions in the region on the contaminant plume in the Perris North Sub-basin. As a result, Project operation would provide a long-term beneficial effect to long-term groundwater quality management of the basin.

b) No Impact

The proposed Project would construct monitoring wells that would result in a negligible change to impervious surface area, and hence have a negligible effect on groundwater recharge. Operation of the wells would provide water quality and other data needed to manage and protect the Perris North Sub-basin. EMWD has been managing groundwater quantity and quality in the western portion of the San Jacinto Groundwater Basin via the West San Jacinto Management Plan since 1995; EMWD prepares annual reports documenting the implementation of the plan and activities in groundwater management zones. The Project is part of EMWD's ongoing groundwater management in the basin. No groundwater would be extracted as part of the proposed Project. Therefore, the Project would not decrease groundwater supplies or interfere with groundwater recharge. No impacts would be expected.

c) Less than Significant Impact

Eight of the 10 proposed monitoring wells would be constructed in existing roadway right-of-ways that are already paved and thus would not increase total impervious surface area. The two remaining wells (MW-1 and MW-7) would be located at sites currently covered by bare dirt and/or gravel. Project construction may result in disturbance or exposure of soil that could be subjected to erosion and sedimentation during a rain event. Implementation of BMPs as required by the NPDES Stormwater Construction General Permit and SWPPP would limit erosion and sedimentation. Monitoring wells MW-1 and MW-7 would replace existing pervious surfaces with pavement and other facilities that would lead to slightly increased surface runoff from sites. However, the monitoring well footprints would be minimal and would have a negligible effect on surface runoff.

Proposed Project facilities would have minor aboveground surface profiles and would be entirely unoccupied other than occasional short-term visits by EMWD maintenance staff. As a result, the proposed Project facilities would not impede or redirect flood flows. The proposed Project would not alter drainage patterns of the sites or proposed Project area, cause substantial erosion, substantially increase surface runoff, generate runoff in excess

of the existing storm drainage systems, or be a source of polluted runoff. Therefore, the proposed Project would have a less than significant impact.

d) Less than Significant Impact

A tsunami is a large ocean wave, caused by earthquakes or major ground movement. The proposed Project site is located approximately 40 miles from the Pacific Ocean; at this distance, a tsunami would not impact the Project vicinity. A seiche is a large wave generated in an enclosed body of water such as lake, which is also typically caused by an earthquake. There are no significant documented seiche hazards for any water bodies within Riverside County (County of Riverside 2014). Perris Reservoir is located west of the proposed Project area (approximately two miles west of the nearest monitoring well site). Due to the distance between the reservoir and the Project site, the potential for inundation by seiche is low.

According to FEMA maps, well sites that fall within or immediately adjacent to the 100- or 500-year floodplain are MW-1, MW-2, and MW-9 (FEMA 2008). The risk of floods inundating any of the other seven well sites is low. No hazardous materials would be kept at the well sites; therefore, there is no potential for release of pollutants to occur in the event that wells are inundated. The impact would be less than significant.

e) Less than Significant Impact

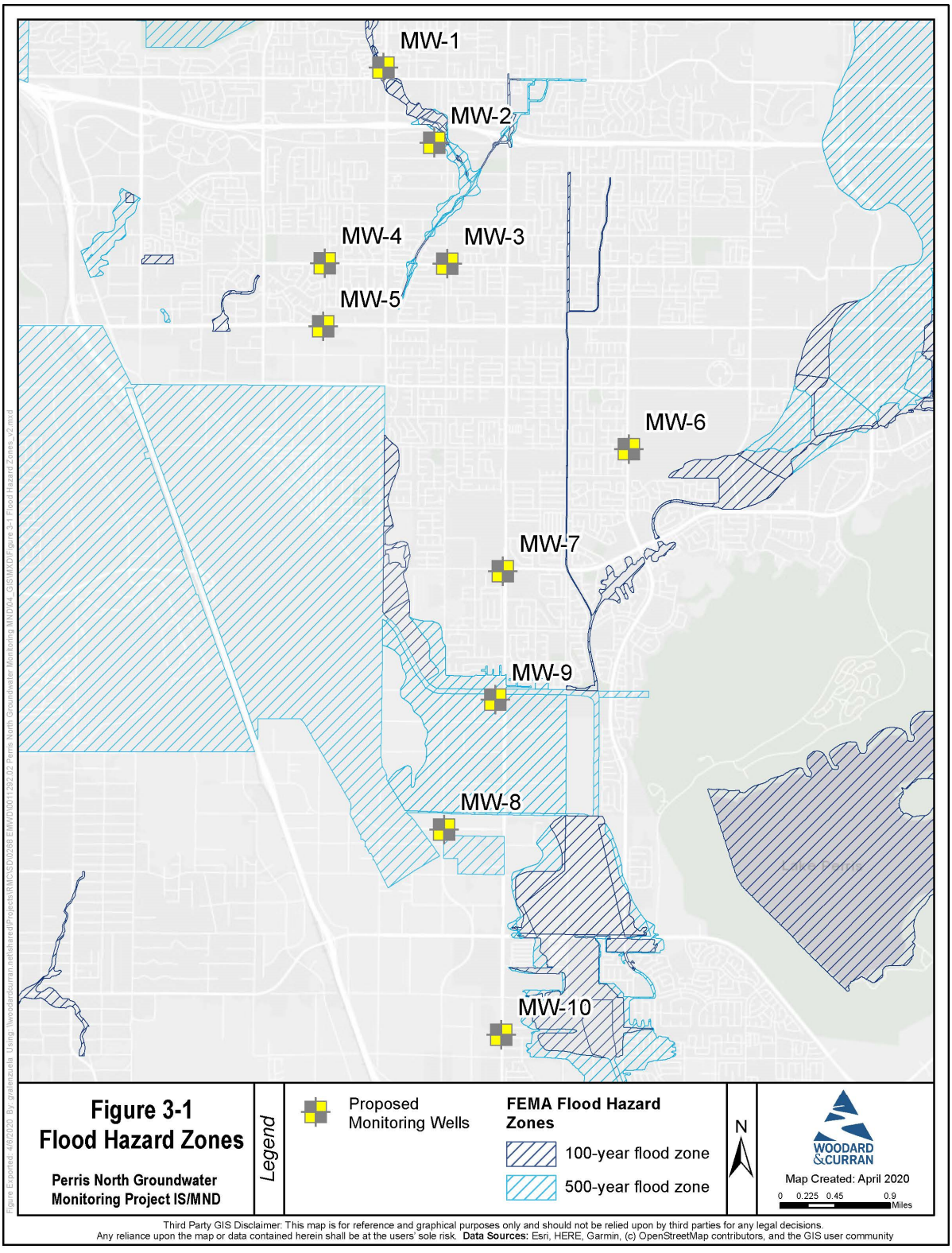
As noted previously, the Basin Plan sets water quality objectives for the proposed Project area. Water quality thresholds identified in the Basin Plan are intended to reduce pollutant discharge and ensure that water bodies are of sufficient quality to meet their designated beneficial uses. The Project 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, pollutant discharge during construction would be avoided via compliance with the Construction General Permit and SWPPP and NPDES permits for construction dewatering if discharged to the storm drain system. Once operational, the proposed Project would monitor groundwater; water would not be discharged from monitoring wells. The proposed Project would not be a source of pollutants for downstream water bodies (e.g., San Jacinto River, Canyon Lake, Lake Elsinore). Therefore, the proposed Project would not conflict with the Basin Plan.

Under SGMA, a GSP must be prepared for the San Jacinto Groundwater Basin. The EMWD Board of Directors is the GSA for the West San Jacinto Groundwater Basin and is responsible for development and implementation of a GSP. The GSP must be completed by January 2022 per SGMA regulations, which would be prior to the start of the proposed Project's operation. The GSP will establish sustainability indicators for the groundwater basin; however, no indicators or thresholds have been established to date. Therefore, the proposed Project would not conflict with the GSP. Currently, groundwater in the proposed Project area carries contaminants and the groundwater table is elevated; the Project is expected to aid in alleviating these issues by providing data on groundwater quality that can be used when making management decisions for the basin.

The Project would not conflict with applicable water quality control plans or groundwater management plans; therefore, impacts would be less than significant.

Mitigation Measures: None required or recommended.

Figure 3-3: Flood Hazard Areas



3.11 Land Use and Planning

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Physically divide an established community?	[ ]	[ ]	[X]	[ ]
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?	[ ]	[ ]	[ ]	[X]

Discussion

The proposed Project is located in the City of Moreno Valley and City of Perris. Land use in Moreno Valley and Perris is governed by the zoning designations established in each city's respective General Plan and by municipal ordinances that outline acceptable uses in each zone. **Table 3-14** summarizes the location of each proposed monitoring well site and the zoning designation at each site (or adjacent to the site, for sites in the roadway right-of-way).

According to the City of Moreno Valley zoning map, land use designations at or adjacent to the proposed well sites are residential, commercial, public facility (e.g., roadway, park, administrative building), business park/light industrial, and village commercial/residential uses (**Table 3-14**) (City of Moreno Valley 2019a; City of Moreno Valley 2006a; City of Moreno Valley n.d.b). The facilities associated with the proposed Project would be considered "public utility stations, yards, wells and similar facilities" under Title 9 of the Moreno Valley municipal code (City of Moreno Valley n.d.a). Such facilities are permitted in light industrial areas and are allowed in areas zoned for residential use with a conditional use permit. Wells are permitted in commercial, public facility, business park, and village commercial/residential areas provided that they are not within 300 feet of a residence or residential use. For wells located less than 300 feet from a residence, a conditional use permit would be required. However, according to California Government Code Section 53091(d) and (e), building and zoning ordinances of a county or city do not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water.

According to the City of Perris zoning map, land use designations adjacent to proposed monitoring well sites are general industrial or light industrial (**Table 3-14**) (City of Perris

2013a). The City of Perris zoning ordinance does not include information whether wells would be a permitted use when located on parcels zoned for general industrial or light industrial uses (City of Perris 2017a).

Table 3-14: Zoning of Proposed Monitoring Well Sites

Proposed Monitoring Well Site	City	Location	Zoning Designation
MW-1	Moreno Valley	EMWD-owned parcel	Parcel designation: Residential
MW-2	Moreno Valley	Roadway right-of-way	Adjacent designations: Village Commercial/Residential
MW-3	Moreno Valley	Roadway right-of-way	Adjacent designations: Residential
MW-4	Moreno Valley	Roadway right-of-way	Adjacent designations: Public Facilities, Residential
MW-5	Moreno Valley	Roadway right-of-way	Adjacent designations: Residential, Commercial, Business Park/Light Industrial
MW-6	Moreno Valley	Roadway right-of-way	Adjacent designations: Residential, Public Facilities
MW-7	Moreno Valley	EMWD-owned parcel	Parcel designation: Commercial
MW-8	Perris	Roadway right-of-way	Adjacent designations: General Industrial, Light Industrial
MW-9	Moreno Valley	Roadway right-of-way	Adjacent designations: Commercial, Business Park/Light Industrial
MW-10	Perris	Roadway right-of-way	Adjacent designations: Light Industrial

a) Less Than Significant Impact

The proposed monitoring wells would be constructed within established communities. All well sites currently consist of roadway rights-of-way or vacant, disturbed land. Construction of the proposed Project would temporarily affect adjacent land uses through increased dust, noise, and traffic, but impacts would end upon completion of construction, and disturbed roadways would be restored to pre-construction condition. The wells would have minimal footprints and would not create a physical barrier in the existing communities. According to the siting criteria, described in *Section 2.2, Project Overview,* the sites would be accessible by existing public roadways and would not develop new roads that could divide an established community. The proposed Project would not permanently interfere with the pedestrian, bicycle or vehicle circulation of the neighborhoods or community. The proposed Project would have a less than significant impact related to physically dividing an established community.

b) No Impact

The proposed Project would construct wells in the roadway right-of-way at sites adjacent to land designated for various uses, including residential, commercial, public facility, business park/light industrial, and village commercial/residential uses in the City of Moreno

Valley, and general industrial and light industrial in the City of Perris. Two wells would be located at existing vacant sites, designated for commercial (MW-7) and residential (MW-1) uses in Moreno Valley. The wells would have minimal footprint sizes and would not significantly alter the ability of those lands to be used for their designated purposes. Additionally, under the City of Moreno Valley's zoning ordinance, facilities such as wells and treatment facilities are permitted at the proposed sites. Therefore, the proposed Project would not conflict with the City of Moreno Valley's zoning policies. The monitoring wells located in Perris (MW-8 and MW-10) would all be constructed in the roadway right-of-way. The proposed Project would not prevent the adjacent parcels in Perris from being used for general industrial or light industrial purposes. Therefore, the proposed Project would not conflict with existing zoning designations. Additionally, because the proposed Project consists of facilities for the production, generation, storage, treatment, or transmission of water, EMWD would not be required to conform to city zoning ordinances.

The City of Moreno Valley and City of Perris are located within the Western Riverside MSHCP. However, EMWD is not a participant in the MSHCP and is therefore not subject to its conditions. The proposed Project would be implemented entirely within disturbed lands within Moreno Valley and Perris; it would not impact criteria resource areas identified in the MSHCP. Therefore, the Project would not conflict with applicable land use plans, policies, or regulations intended to avoid or mitigate an environmental effect. No impact would occur.

Mitigation Measures: None required or recommended.

3.12 Mineral Resources

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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?	[ ]	[ ]	[ ]	[X]
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	[ ]	[ ]	[ ]	[X]

Discussion

The Surface Mining and Reclamation Act of 1975 (SMRA) mandates a process for classification and designation of lands containing potentially important mineral deposits. Classification is carried out by the California Geological Survey (CGS) State Geologist and designation is a function of the CGS State Mining and Geology Board. Lands are given a priority listing through classification into Mineral Resource Zones (MRZs). These MRZs are based on geological appraisals which include the use of literature, geological maps, and publications and data from the CDOC Division of Mines and Geology, US Geological Survey, the former US Bureau of Mines, and the US Bureau of Land Management. It also includes site investigations that determine the chemical and physical components of the area. An area can be classified as:

- Areas of Identified Mineral Resource Significance
- Areas of Undetermined Mineral Resource Significance
- Areas of Unknown Mineral Resource Significance
- Areas of No Mineral Resource Significance

The Division of Mines and Geology has identified Moreno Valley and Perris an area with no significant mineral resources (City of Moreno Valley 2006b; City of Perris 2005a). There are sand and gravel resources located near Moreno Valley and within Riverside County; however, there are no operating quarries for these resources (City of Moreno Valley 2006a & 2006b). Additionally, the sand and gravel resources found in the nearby areas are not considered to be important local resources (City of Moreno Valley 2006a & 2006b).

a, b) No Impact

The CDOC, Division of Mines and Geology has not identified significant mineral resources within Moreno Valley (Moreno Valley 2006b). The CGS classifies the proposed Project area as sand and gravel resource areas based on SMARA Special Report 143: Part VII (CDOC 2019). The common mineral materials found in the area are sand, gravel, and rock, which are not considered valuable mineral resources locally, to the region, or to residents of the State (Moreno Valley 2006a & 2006b). Additionally, the City of Perris has been designated as MRZ 3 and MRZ 4, which are not defined as significant resource areas, and does not include nay locally-important mineral resource recovery sites (City of Perris 2005a). Therefore, no impact to availability of valuable mineral resources will occur. The proposed Project area is not currently used as a mineral resource recovery site and the proposed Project would not involve mining or the production of mineral resources. No impact on the availability of a known mineral resource or the availability of a locally-important mineral resource recovery site would occur as a result of construction or operation of the proposed Project.

Mitigation Measures: None required or recommended.

3.13 Noise

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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?	[ ]	[X]	[ ]	[ ]
b) Generation of excessive groundborne vibration or groundborne noise levels?	[ ]	[ ]	[X]	[ ]
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?	[ ]	[ ]	[X]	[ ]

Discussion

Noise is generally defined as unwanted sound. Noise can cause hearing impairment for humans, and may also disrupt everyday activities such as sleep, speech, and activities requiring concentration. Noise can also interfere with the activities of wildlife, especially nesting birds. Noise-sensitive land uses are generally those where excess noise would disrupt how humans and/or wildlife use the land. Land uses such as schools, churches, and hospitals would typically be considered noise-sensitive. Noise may be generated by mobile (i.e., line) sources (for example, cars, trains, and aircraft) or stationary (i.e., point) sources (for example, machinery, airports, and construction sites).

Noise is described using specific terminology, as summarized below. The following explanations are adapted from the U.S. Department of Transportation Federal Highway Administration (FHWA) *Construction Noise Handbook* (FHWA 2006a) and the U.S. Department of Transportation Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018):

- **A-Weighting.** A method used to account for changes in level sensitivity as a function of frequency. A-weighting de-emphasizes the high (6.3 kilohertz [kHz] and above) and low (below 1 kHz) frequencies and emphasizes the frequencies between 1 kHz and 6.3 kHz, in an effort to simulate the relative response of the human ear.
- **Community Noise Equivalent Level (CNEL).** A 24-hour time-averaged sound exposure level adjusted for average-day sound source operations. The adjustment includes a 5-decibel (dB) penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-dB penalty for those occurring between 10:00 p.m. and 7:00 a.m., to adjust for the increased impact of nighttime noise on human activities.
- **Day-Night Average Sound Level (DNL, denoted by the symbol, L_{dn}).** L_{dn} describes a receiver's cumulative noise exposure from all events over 24 hours. Events between 10:00 p.m. and 7:00 a.m. are increased by 10 dB to account for humans' greater nighttime sensitivity to noise.
- **Decibel (dB).** A unit of measure of sound level. dB are calculated by comparing sound pressure to a sound pressure reference (the threshold of human hearing) and are measured using a logarithmic scale. A-weighted decibels are expressed as dBA or dB(A).
- **Equivalent Sound Level (L_{eq}).** The equivalent sound level describes a receiver's cumulative noise exposure from all events over a specified period of time.
- **Ground Effect.** The change in sound level, either positive or negative, due to intervening ground between source and receiver. Ground effect is influenced by multiple factors, including ground characteristics, source-to-receiver geometry, and the spectral characteristics of the source. A commonly used rule-of-thumb for propagation over soft ground (e.g., grass) is that ground effects will account for about 1.5 dB per doubling of distance. However, this relationship is quite empirical and tends to break down for distances greater than about 100 to 200 feet.
- **Line Source.** A source of noise that is created by multiple point sources moving in one direction; for example, a continuous stream of roadway traffic, which radiates sound cylindrically. Sound levels measured from a line source decrease at a rate of 3 dB per doubling of distance.
- **Noise Barrier.** The structure, or structure together with other material, that potentially alters the noise at a site.
- **Point Source.** A source that radiates sound spherically. Sound levels measured from a point source decrease at a rate of 6 dB per doubling of distance.

- **Ten-Percentile Exceeded Sound Level (L_{10}).** The sound level exceeded 10 percent of a specific time period. For example, from a 50-sample measurement period, the fifth (10% of 50 samples) highest sound level is the 10-percentile exceeded sound level. Other similar descriptors include L_{50} (the sound level exceeded 50 percent of a specific time period), L_{90} (the sound level exceeded 90 percent of a specific time period), etc.

Groundborne vibration may occur when heavy equipment or vehicles create vibrations in the ground, which can then propagate through the ground to buildings, creating a low-frequency sound. Groundborne vibrations can be a source of annoyance to humans due to a "rumbling" effect, and such vibrations may also cause damage to buildings. Groundborne vibration is discussed in terms of these impacts on humans and structures. The annoyance potential of groundborne noise is typically characterized with the A-weighted sound level. Due to its low frequency, groundborne noise sounds louder than airborne noise at the same noise level; therefore, the impact thresholds for groundborne noise are typically lower than those for airborne noise. The following vibration terminology have been adapted from the FTA's *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018):

- **Vibration Decibels (VdB)**. The vibration velocity level in decibel scale.
- **Peak Particle Velocity (PPV)**. The peak signal value (maximum positive or negative peak) of the vibration signal. PPV is often used in monitoring of construction vibration (such as blasting) because it is related to the stresses that are experienced by buildings and is not used to evaluate human response. PPV is usually expressed in inches/second in the United States.
- **Root Mean Square (rms)**. The rms is used to describe the smoothed vibration amplitude. The rms amplitude is used to convey the magnitude of the vibration signal felt by the human body, in inches/second. The average is typically calculated over a one-second period. The rms amplitude is always less than the PPV and is always positive.

Transportation is the major source of noise in the City of Moreno Valley and City of Perris. Sources include roadways (especially along SR-60 and arterial roadways due to high traffic volumes), the Perris Valley Airport, Perris Auto Speedway, railroad, and the joint-use airport at the MARB (City of Moreno Valley 2006a; City of Perris 2016b). Sensitive receptors in the Project vicinity include residences, schools, and churches.

Noise Standards

The proposed Project would be located within the City of Moreno Valley and City of Perris. The noise standards for these jurisdictions are summarized herein.

For construction noise, the City of Moreno Valley Municipal Code, Sections 8.14.040 and 11.80.030, restricts construction within the City to between 7:00 a.m. and 7:00 p.m. on weekdays, and from 8:00 a.m. to 4:00 p.m. on Saturdays. The City of Moreno Valley

Municipal Code also prohibits sound within the City that exceeds levels determined by the Centers for Disease Control and Prevention and the National Institute for Occupational Safety and Health to cause permanent hearing loss. For a sound that lasts 8 hours per day, that limit is 90 dBA. The City of Perris Municipal Code, Section 7.34.060, restricts construction within the City to between 7:00 a.m. and 7:00 p.m. on weekdays and Saturdays. The City of Perris Municipal Code prohibits construction activity that exceeds 80 dBA in residential zones in the city.

For long-term operational noise, the City of Moreno Valley prohibits non-impulsive, maximum noise levels which exceeds the following limits measured at a distance of 200 feet or more from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property (**Table 3-15**) (City of Moreno Valley n.d.a.). These guidelines apply to permanent noise sources and would not be applicable to temporary construction noise.

Table 3-15: City of Moreno Valley Non-Impulsive Noise Guidelines

Residential (in dBA)		**Commercial (in dBA)**	
Daytime	*Nighttime*	*Daytime*	*Nighttime*
60	55	65	60

The City of Perris prohibits nighttime noise (occurring 10:00 p.m. to 7:00 a.m.) in excess of 60 dBA, and daytime noise (occurring from 7:00 a.m. to 10:00 p.m.) in excess of 80 dBA (as measured at the property line of the receptor) (City of Perris 2000). The City of Perris does not maintain separate noise thresholds for different land use types.

General Plan Policies

The City of Moreno Valley General Plan (City of Moreno Valley 2006a) includes several policies and objectives related to minimizing noise impacts in the land use planning process. Policies relevant to the proposed Project are listed below.

- Policy 2.2.17: Discourage nonresidential uses on local residential streets that generate traffic, noise or other characteristics that would adversely affect nearby residents.
- Policy 2.10.11: Screen and buffer nonresidential projects from adjacent residential property and other sensitive land uses when necessary to mitigate noise, glare and other adverse effects on adjacent uses.
- Objective 6.3: Provide noise compatible land use relationships by establishing noise standards utilized for design and siting purposes.
- Policy 6.3.1: The following uses shall require mitigation to reduce noise exposure where current or future exterior noise levels exceed 20 CNEL above the desired interior noise level: single- and multiple family residential buildings shall achieve an interior noise level of 45 CNEL or less….New libraries, hospitals and extended medical care facilities, places of worship and office uses shall…achieve interior

noise levels of 50 CNEL or less; New schools shall…achieve interior noise levels of 45 CNEL or less.

- Policy 6.3.2: Discourage the siting of residential land uses where current or projected exterior noise due to aircraft over flights will exceed 65 dBA CNEL.
- Policy 6.3.6: Building shall be limited in areas of sensitive receptors.
- Objective 6.4: Review noise issues during the planning process and require noise attenuation measures to minimize acoustic impacts to existing and future surrounding land uses.
- Objective 6.5: Minimize noise impacts from significant noise generators such as, but not limited to, motor vehicles, trains, aircraft, commercial, industrial, construction, and other activities.
- Policy 6.5.1: New commercial and industrial activities (including the placement of mechanical equipment) shall be evaluated and designed to mitigate noise impacts on adjacent uses.
- Policy 6.5.2: Construction activities shall be operated in a manner that limits noise impacts on surrounding uses.

The City of Perris General Plan (City of Perris 2016b) contains goals, policies, and implementation measures to manage noise relative to land use; relevant items are summarized below:

- Goal I – Land Use Siting: Future land uses compatible with projected noise environments.
- Policy I.A: The State of California Noise/Land Use Compatibility Criteria shall be used in determining land use compatibility for new development.
- Implementation Measure I.A.1: All new development proposals will be evaluated with respect to the State Noise/Land Use Compatibility Criteria. Placement of noise sensitive uses will be discouraged within any area exposed to exterior noise levels that fall into the “Normally Unacceptable” range and prohibited within areas exposed to “Clearly Unacceptable” noise ranges.
- Implementation Measure I.A.3: Acoustical studies shall be prepared for all new development proposals involving noise sensitive land uses… where such projects are adjacent to roadways and within existing or projected roadway CNEL levels of 60 dBA or greater.

EMWD, as a public agency, is not subject to other jurisdictional agencies’ established noise standards. Likewise, as a public agency, EMWD is not subject to the City ordinances and would not be required to obtain variances. EMWD has not established an applicable noise standard of its own for permanent or temporary ambient noise levels. The noise standards of the City of Moreno Valley and City of Perris are provided for reference and context. However, for the purposes of this analysis, noise associated with

construction and operation of the proposed Project is not compared quantitatively to the local standards because EMWD, as a public agency, is not subject to them.

Existing Conditions

The proposed Project is located in a suburban area with residential, commercial, and business park/light industrial land uses. Noise-sensitive receptors adjacent to or in the vicinity of well sites include residences, schools, and churches. The surrounding receptors and existing attenuation features at each proposed Project site are summarized below:

- MW-1: The site is a vacant parcel owned by EMWD. The site is primarily flat with no vegetative land cover, with the exception of one tree in the southwest corner of the site. The site is bordered on the north, west, and south by a cement brick and wood wall approximately 6 feet tall. Single family residential properties surround the site to the north, east, and west. Heacock Street forms the eastern border of the site. The residences located to the east (across Heacock Street) have a mix of chain-link fencing, 6-foot wood fencing, and 6-foot masonry walls. To the south, the site adjoins a commercial shopping center (Ironwood Plaza).
- MW-2: The site is located in the roadway right-of-way of Sunnymeade Boulevard between Indian Street and Back Way. Immediately across Sunnymeade Boulevard (to the north of the site) is a hotel and office space. A shopping center and church are located immediately east of the site. The church is separated from the site by a 4- to 6-foot masonry wall and building. South of the site is a surface parking lot and small one-story building which appears abandoned. Additional commercial space exists west of the site. Residential properties are located less than 0.1 miles from the proposed site but are not immediately adjacent to the proposed site.
- MW-3: The site is located in the roadway right-of-way at the intersection of Indian Street and Cottonwood Avenue. The site is adjacent to a large undeveloped parcel on the northeast corner of the intersection, and single-family residential properties on the remaining three corners. The undeveloped lot is currently vegetated with grass. Residences have fences along property lines adjacent to the intersections. Homes to the northwest and southeast are accessed from other streets and have backyards that face the intersection, enclosed by approximately 5- to 6-foot-tall wooden fences (northwest of the intersection) and approximately 5-foot-tall cement brick walls (southeast of the intersection). Homes to the southwest front Cottonwood Avenue and Indian Street, with chain-link fencing and landscaping trees between homes and the well site. Moreno Valley Community Adult School, March Mountain High School, and Moreno Valley Adult Education, at Indian Street and Dracaea Avenue are located approximately 0.15-0.25 miles north of the site.
- MW-4: MW-4 would be located in the roadway right-of-way at the northwest portion of the intersection of Cottonwood Avenue and Graham Street. Moreno Valley High School's parking lot is located immediately northwest of the MW-4 site, and is currently enclosed by a chain link fence. The nearest buildings at Moreno Valley

High School are roughly 400 feet from the well site. To the northeast, southeast, and southwest of the site are single-family residences, with backyards facing the intersection and enclosed by 5- to 6-foot-tall cement brick walls.

- MW-5: The site is located at the intersection of Graham Street and Alessandro Boulevard; MW-5 would be constructed within the right-of way on the southwest corner of the intersection. Land use in the area is primary commercial to the east and a mix of commercial and light industrial to the south. Single-family residences are located to the northwest of the intersection, and have backyards facing Graham Street and Alessandro Boulevard. Residential properties adjacent to the intersection are enclosed by 6-foot-tall wooden fences, which are visually obscured by vegetation. The southwest corner of the intersection is an undeveloped lot currently vegetated with grass. Gas stations are located on the northeast and southeast corners of the intersection.
- MW-6: MW-6 would be located at the intersection of Lasselle Street and John F. Kennedy Drive. At the northeast corner of the intersection is a large undeveloped lot. To the southeast is a parking lot for Vista del Lago High School, with the nearest school buildings being roughly 700 feet from the well site. The northwest and southwest corners of the site are occupied by residences, with homes backing up to Lasselle Street and John F. Kennedy Drive. Residences have approximately 5- to 6-feet-high walls bordering their properties, composed of cement or cinder block and on some properties topped by wooden fencing.
- MW-7: The site is located on an EMWD-owned property at the southwest corner of Iris Avenue and Perris Boulevard. The site is flat, fully enclosed by chain-link fencing, unpaved, with a dirt/gravel surface. The site is in the northeast corner of an undeveloped lot that is vegetated with grass. North and east of the site are commercial areas, with single family residences located approximately 0.1 miles south and west of the site on the far side of the undeveloped lot, and 0.1 miles northeast of the site on the far side of existing commercial development. Homes south and west of the site are shielded by 4- to 6-foot masonry walls. Homes northeast of the site are blocked from view by a 6-foot masonry wall and existing commercial buildings.
- MW-8: The site is located at the intersection of Harley Knox Boulevard and Indian Avenue. The area is industrial, with an undeveloped lot at the southeast of the site, an asphalt operation to the southwest (All American Asphalt), and warehouses to the northeast and northwest.
- MW-9: MW-9 would be located in the roadway right-of-way along Rivard Road, just west of the intersection of Rivard Road and Perris Boulevard. The site is located between two single-family residential properties, one located north of Rivard Road and one located to the south. The residence to the north is separated from the well site by an open lot and shielded by a 5- to 6-foot-high wood fence. The residence to the south is separated from the well site by a chain-link fence and scattered trees. East of the site, across Perris Boulevard, is an automotive manufacturing

facility. A stormwater channel is located north of the site, with single-family residences located across the channel (approximately 650 feet from the well site). These residences have 4- to 6-foot masonry walls along the stormwater channel. North of the site, and west of Perris Boulevard, is undeveloped land with single-family residences on the far side (approximately 0.2 miles from the well site). Additional industrial and business land uses exist further west along Rivard Road and south along Perris Boulevard.

- MW-10: The site is located in the roadway right-of-way along Perris Boulevard just north of Commerce Drive, in a light industrial area. The east of the site is bounded by undeveloped lots, while west of the site is a large warehouse. The nearest residential properties are 0.2 miles south of the proposed well.

Ambient noise measurements were conducted in January 2020 at two locations that were deemed representative of the overall proposed Project due to proximity to multiple types of noise-sensitive receptors (see **Appendix E**). A 24-hour measurement was conducted at a vacant parcel east of Perris Boulevard and north of Bay Avenue, immediately north of Riverside County Education Academy (Perris Boulevard location) and at Victoriano Park, which is located north of Iris Avenue and east of Kitching Street. The observed CNEL and L_{dn} at the Perris Boulevard location were 77 dBA and 76.7 dBA, respectively, and the 24-hour average L_{eq} was 71.5 dBA. The observed CNEL and L_{dn} at Victoriano Park were 53.2 dBA and 53.1 dBA, respectively and the 24-hour average L_{eq} was 47.0 dBA.

a) Less than Significant with Mitigation Incorporated

Each well site would be located within the roadway right-of-way or EMWD parcel site such that it is as far as practicable from residential property lines. This would provide some natural noise attenuation associated with distance from the noise source.

Existing features in the area can also attenuate noise to residential receptors. The approximate range of noise attenuation from existing features was estimated based on the Federal Highway Administration Roadway Construction Noise Model User Manual, which provides the guidance on shielding as summarized in **Table 3-16** (FHWA 2006b). These features include typical landscape components (as opposed to specific construction noise control measures).

Table 3-16: Noise Shielding Guidance References

dBA of Shielding	Equivalent to the following between noise source and receptor
0	No barriers or breaks in the line of sight between the noise source and the receptor.
3	A noise barrier or other obstruction (like a dirt mound) just barely breaks the line-of-sight between the noise source and the receptor.
5	Noise source is enclosed or shielded with a solid barrier close to the source, but the barrier has some gaps in it.
8	Noise source is enclosed or shielded with a solid barrier close to the source
10	Noise source is completely enclosed and shielded with a solid barrier close to the source.
15	A building stands between the noise source and receptor and completely shields the noise source.

Source: FHWA 2006b

Table 3-17 summarizes existing attenuation features between each well site and nearby sensitive receptors.

Table 3-17: Existing Attenuation Features at Proposed Well Sites

Site	Existing Attenuation Features	Approximate Attenuation Factors (dBA)
MW-1	Chain link fencing, 6-foot wood fencing, or 6-foot cement brick and wood fencing.	0-5
MW-2	Surface parking lot, 4- to 6-foot masonry wall, and small one-story building between site and church. Surface parking and chain link fence surrounding residences.	0-5
MW-3	5- to 6-foot wooden fences or 5-foot cement brick walls.	3-5
MW-4	5- to 6-foot cement brick walls.	5
MW-5	6-foot wooden fences, landscaping vegetation (approximately 3 feet tall).	3
MW-6	5- to 6-foot cement/cinder block fencing.	5
MW-7	Commercial buildings to northwest. Undeveloped lot and 4- to 6-foot masonry walls to south and west.	5-15
MW-8	No nearby sensitive receptors.	15
MW-9	Open lot and 5- to 6-foot wooden fence to north. Chain link fence and/or landscaping trees to south.	0-3
MW-10	No nearby sensitive receptors.	15

Table 3-18 summarizes the distance between each well site and the nearest residential property line, and the distance between each well site and the nearest residential building (i.e., house structure).

Table 3-18: Distance to Nearest Residences at Proposed Well Sites

Site	Distance to Nearest Residential Property Line (feet)	Distance to Nearest Residential Building (feet)
MW-1	78	85
MW-2	144	90
MW-3	80	215
MW-4	65	105
MW-5	139	185
MW-6	95	165
MW-7	547	570
MW-8	>1,000	>1,000
MW-9	22	250
MW-10	>1,000	>1,000

The noise from the well drill rig would originate a minimum of 22 feet from residential property lines, as shown in **Table 3-18**. MW-9 is the nearest proposed well site to a residential property line (22 feet from the property line to the north). However, the residence on this property is approximately 200 feet from the well site, and the portion of the property near the well site is an empty paved lot. The residence to the south of MW-9 is over 200 feet from the well site, and the portion of the property near the well site is occupied by an auto yard. All other well locations are at least 65 feet from residential property lines. All well sites are at least 85 feet from residential buildings.

Daytime Construction

Construction of all 10 monitoring wells is expected to last seven months and would involve noise-generating activities such as asphalt removal, grading, and well drilling. It should be noted that construction of each well is expected to last approximately one month. Construction equipment to be used is listed in *Section 2.4, Proposed Project Description*. The typical noise level of each piece of construction equipment is shown in **Table 3-19**.

Table 3-19: Typical Construction Equipment Noise Levels

Equipment	Typical Noise Levels (dBA, at 50 feet)
Backhoe/Loader	78
Compressor	78
Concrete Pumper	81
Crane	81
Drilling Rig	90[1]
Generator	81
Pick-up Trucks	75
Pump	81
Utility Truck	74[1]
Water Truck	84[1]
Welder	74

Source: FHWA 2006a

1. Drilling rig noise level provided by contractor. Water truck noise was assumed to be comparable to a tractor. Utility truck noise was assumed to be comparable to a flat-bed truck.

During Project construction, truck trips would generate noise along haul routes. Project construction would require approximately 14 round-trip worker trips per day, up to 6 one-way trips per day for materials to and from the staging areas, and an average of approximately <1 round-trip hauling trips per day (88 haul trips total; approximately 9 haul trips per well). Noise-sensitive land uses along haul routes, including residences and schools, would be exposed to truck noise during construction. The amount of noise generated is affected by the vehicle speed, load, road condition, and other factors. As noted in the City of Moreno Valley General Plan and the City of Perris General Plan, road noise is a major noise source in both cities. Construction truck noise that occurs in noisy locations is generally less disruptive than the same noise would be in a quieter location.

The City of Moreno Valley and City of Perris noise guidelines, discussed previously, are included as general points of reference for noise levels. Because EMWD is exempt from other jurisdictional agencies' noise ordinances, sound emanating from the proposed Project construction would not be subject to the City of Moreno Valley or City of Perris ordinances. Therefore, city ordinances do not constitute thresholds of significance for noise resulting from the proposed Project. Although EMWD is not required to comply with city noise ordinances, with the exception of well drilling work (discussed below), construction activities would occur during daytime hours in accordance with City of Moreno Valley or City of Perris noise standards. Furthermore, existing ambient noise levels in the proposed Project area are elevated due to existing traffic noise, (e.g., the observed 24-hour average L_{eq} at the Perris Boulevard noise monitoring location, discussed above, was 71.5 dBA) which would dampen the perceived noise from the Project's construction activities. Due to the proximity of construction activities to residences and other noise-sensitive land uses, impacts from construction noise would be potentially disruptive to daily activities. With the implementation of **Mitigation Measure**

NOI-1, which requires the construction contractor to implement BMPs for noise control, daytime construction noise impacts would be reduced to less than significant.

Nighttime Construction

Construction of monitoring wells would last for four weeks per well from mobilization to demobilization. Of those four weeks, up to two weeks would consist of continuous drilling (24 hours per day) in order to avoid borehole collapse. Well sites are located near residences, schools, and churches that would be exposed to elevated noise levels during well construction. In particular, 24-hour construction work has the potential to create a significant noise impact on nearby residences. Residential land use would be sensitive to construction noise during nighttime hours because nighttime construction noise could be disruptive to sleep.

Some well sites have existing attenuation features (e.g., cement block walls), as summarized in **Table 3-17**. However, the well drilling activities (consisting of a drill rig and pickup truck) operating simultaneously, with no shielding present, would be expected to generate noise levels of 97.2 dBA L_{eq} at a distance of 22 feet (closest residential property line, near MW-9), 87.8 dBA L_{eq} at a distance of 65 feet (next closest property line, near MW-4), and 85.4 dBA L_{eq} at a distance of 85 feet (closest residence to any well site). Exposing residents to this level of noise over an extended timeframe would constitute a significant impact.

In order to mitigate this impact, EMWD shall require that its contractor implement **Mitigation Measure NOI-2**, which requires that sound barriers providing up to 25 dBA[1] of noise attenuation be used during well drilling and nighttime construction activities. With the use of all feasible sound barriers, the noise from well drilling activities would be reduced to 72.2 dBA L_{eq} at a distance of 22 feet, 62.8 dBA L_{eq} at a distance of 65 feet, and 60.4 dBA L_{eq} at a distance of 85 feet (as calculated using the Federal Highway Administration's *Roadway Construction Noise Model*). EMWD is not bound by City of Moreno Valley or City of Perris ordinances and is not required to abide by city noise thresholds; however, a sound wall would be used to reduce nighttime construction noise such that nearby receptors would not be exposed to excessive noise. For reference, the City of Moreno Valley does not specify acceptable nighttime construction noise levels, but considers 55 dBA L_{eq} to be an acceptable nighttime noise level for permanent, long-term operational noise (which would typically be lower than the threshold for temporary construction noise) when measured at a distance of 200 feet from the noise source. At a distance of 200 feet from a given well site, use of a sound barrier would reduce construction noise from the proposed Project to 53.0 dBA L_{eq}. Within the City of Perris, noise level determinations are made at the residential property line. While EMWD is not

[1] Note that dBA is used to describe the specific noise reduction that may be achieved from the sound barrier, while L_{eq} is used to describe noise levels because it captures a receiver's cumulative noise exposure.

subject to City of Perris's noise thresholds, both wells located in the City of Perris (MW-8 and MW-10) would be located over 1,000 feet from the nearest residential receptor. At this distance, noise levels would attenuate to below 53.0 dBA L_{eq}.

Without mitigation, the project would generate a substantial temporary increase in nighttime construction noise, which could impact the activities of nearby residents (e.g., by disrupting sleep). Because the noise standards of other agencies are not applicable to EMWD, no applicable standards would be exceeded. In order to reduce the project's noise impacts on nearby residents, **Mitigation Measures NOI-1** and **NOI-2** would be implemented. These measures would ensure that sensitive receptors are not exposed to excessive noise levels that would interfere with daily activities by implementing noise reduction measures. With implementation of these mitigation measures, construction noise impacts resulting from the nighttime well drilling activities would be reduced to a less than significant level.

Operation

Once operational, the monitoring wells would not generate noise. Ongoing operation and maintenance for the wells would involve periodic inspections and twice-yearly monitoring and maintenance visits. Long-term noise associated with these minor additional vehicle trips and monitoring activities would not cause a noticeable increase in permanent ambient noise above existing levels (which are already elevated due to roadway noise), because it would only require the use of standard vehicles (e.g., trucks) and maintenance activities would occur during the day when ambient noise levels are higher. Therefore, noise from the proposed operation and maintenance activities would be less than significant.

b) Less Than Significant Impact

Construction activities associated with the proposed Project would have the potential to generate low levels of groundborne vibration. Groundborne vibrations propagate through the ground and decrease in intensity quickly as they move away from the source. Vibrations with a PPV of 0.2 inches/second or greater have the potential to cause damage to non-engineered timber and masonry buildings (FTA 2018). The *Transit Noise and Vibration Impact Assessment Manual* provides average source levels for typical construction equipment that may generate groundborne vibrations; vibration source levels for construction equipment associated with the proposed Project are summarized in **Table 3-20**. None of the construction equipment to be used would exceed the PPV threshold at a distance of 25 feet. There are no existing structures within 25 feet of any well construction sites.

Table 3-20: Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet (inches/second)	Approximate VdB at 25 feet
Backhoe/Loader	N/A	N/A
Compressor	N/A	N/A
Concrete Pumper	N/A	N/A
Crane	N/A	N/A
Drilling Rig	0.089[1]	87[1]
Generator	N/A	N/A
Pick-up Trucks	0.076[1]	86[1]
Pump	N/A	N/A
Utility Truck	0.076[1]	86[1]
Water Truck	0.076[1]	86[1]
Welder	N/A	N/A

Source: FTA 2018

Most construction equipment is not expected to generate vibration; these are denoted with "N/A."

1. Drilling rig PPV was assumed to be comparable to caisson drilling. Pickup trucks, utility trucks, and water trucks were assumed to be comparable to "loaded trucks" as listed in the *Transit Noise and Vibration Impact Assessment Manual.*

According to the FTA's *Transit Noise and Vibration Impact Assessment Manual*, 80 VdB is the threshold for human annoyance from groundborne vibration noise when events are infrequent. Typical vibration dB levels for construction equipment are summarized in **Table 3-20**. Construction activities associated with the proposed Project would not involve use of high-impact activities, such as piledriving or blasting, that typically generate high levels of groundborne vibration. However, loaded trucks and well drilling rigs would produce levels of vibration noise that exceed the threshold for human annoyance at a distance of 25 feet. Groundborne vibration noise from the most impactful piece of equipment (drilling rig) would attenuate to below 80 VdB at a distance of 43 feet ($VdB_{distance} = VdB_{reference} - 30\log(distance/25)$) (FTA 2018). Vibration noise from trucks would attenuate to below 80 VdB at a distance of 40 feet. At all 10 well sites, sensitive receptors (i.e., residential structures) are located at least 85 feet from the noise source, at which distance groundborne vibration noise would not exceed the threshold for human annoyance. Therefore, construction vibration impacts would be less than significant.

Once operational, the wells would not produce groundborne vibration or noise. Project operation activities (i.e., monitoring and inspection visits) would be conducted using truck-mounted equipment on standard vehicles; no heavy equipment that could generate groundborne vibration or noise would be used for monitoring or maintenance. Therefore, there would be no operational vibration impacts.

c) Less Than Significant Impact

There is one airport in the Project vicinity, the MARB/March Inland Port. The base is located partially within the City of Perris and partially in unincorporated Riverside County. Two well sites (MW-8 and MW-10) are located within the noise contours of the MARB/March Inland Port. MW-8 is located within the 60 dBA noise contour, and MW-10

is located within the 70 dBA noise contour (City of Perris 2016b). During construction of the proposed project, workers at these sites could be exposed to elevated noise levels due to air traffic. Construction of each well would be completed in a short timeframe (four weeks); workers would not be exposed to air traffic noise over the long term. Additionally, construction workers would be equipped with appropriate personal protection equipment (PPE), which would prevent exposure to excessive noise.

During operation of the proposed Project, the wells would not generate noise. It is assumed that monitoring and maintenance visits would be conducted twice yearly at each well, which would last approximately one week in duration for each well. Existing ambient noise levels in the proposed Project area are elevated due to existing traffic noise, (e.g., the observed 24-hour average L_{eq} at the Perris Boulevard noise monitoring location, discussed above, was 71.5 dBA) and vehicle use for monitoring would not stand out above ambient noise. Monitoring visits would be infrequent and short in duration; additionally, EMWD staff conducting monitoring well visits would use appropriate PPE during monitoring visits to prevent exposure to excessive aircraft noise. Therefore, the Project would not expose residences or workers to excessive aircraft noise and the impact would be less than significant.

Mitigation Measures:

To mitigate possible noise impacts of the Project, EMWD shall implement **Mitigation Measure NOI-1** and **Mitigation Measure NOI-2**. With these mitigation measures incorporated, the Project impacts are considered less than significant.

Mitigation Measure NOI-1: Construction Noise Reduction Measures

EMWD shall require its contractor to implement the following actions relative to construction noise:

- For well sites located in the City of Moreno Valley, EMWD shall conduct construction activities between 7:00 a.m. and 7:00 p.m. on weekdays and 8:00 a.m. to 4:00 p.m. on Saturdays, in accordance with the City of Moreno Valley Municipal Code, Sections 8.14.040 and 11.80.030, with the exception of specific well drilling activities, which require 24-hour continuous work.
- For well sites located in the City of Perris, EMWD shall conduct construction activities between 7:00 a.m. and 7:00 p.m. on weekdays and Saturdays, in accordance with the City of Perris Municipal Code, Section 7.34.060, with the exception of specific well drilling activities, which require 24-hour continuous work.
- Prior to construction, EMWD in coordination with the construction contractor, shall provide written notification, to all properties within 100 feet of the proposed Project facilities informing occupants of the type and duration of construction activities. The notification shall also include information concerning the noise levels that may be experienced during evening hours and that this is a

temporary circumstance. Notification materials shall identify a method to contact EMWD's program manager with noise concerns. Prior to construction commencement, the EMWD program manager shall establish a noise complaint process to allow for resolution of noise problems. This process shall be clearly described in the notifications.

- Stationary noise-generating equipment shall be located as far from sensitive receptors as possible. Such equipment shall also be oriented to minimize noise that would be directed toward sensitive receptors. Whenever possible, other non-noise generating equipment (e.g., water tanks, roll-off dumpsters) shall be positioned between the noise source and sensitive receptors.
- Equipment and staging areas shall be located as far from sensitive receptors as possible. At the staging location, equipment and materials shall be kept as far from adjacent sensitive receptors as possible.
- Construction vehicles and equipment shall be maintained in the best possible working order; operated by an experienced, trained operator; and shall utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds).
- Unnecessary idling of internal combustion engines shall be prohibited. In practice, this would require turning off equipment if it would idle for five or more minutes.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion powered equipment, where feasible.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.

Mitigation Measure NOI-2: Noise Barriers

EMWD shall require its contractor to install temporary construction noise barriers prior to the start of well construction activities that would occur outside the hours specified by the City of Moreno Valley Municipal Code Sections 8.14.040 and 11.80.030. These barriers shall block the line of sight between the equipment and the noise-sensitive receptor(s) and shall provide a minimum of 25 dBA of noise attenuation. Due to the height of the drill rig, the noise barrier shall be at least 24 feet tall. The construction noise barrier shall be constructed of a material with a minimum weight of one pound per square foot with no gaps or perforations. It shall remain in place until conclusion of the nighttime construction activities. The Project plans and specifications shall include documentation from a noise consultant verifying the inclusion of an appropriate noise barrier.

3.14 Population and Housing

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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 roads or other infrastructure)?	[ ]	[ ]	[ ]	[X]
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	[ ]	[ ]	[ ]	[X]

Discussion

In 2015, EMWD served an estimated retail population of 546,146 through approximately 136,200 single family accounts, 4,300 multi-family accounts, and other commercial, industrial, institutional, landscape, and irrigation accounts. EMWD's service area is currently 40 percent built out, making it one of the few regions in Southern California that will see significant population growth in the coming decades. As planned for in the EMWD 2015 Urban Water Management Plan (UWMP), EMWD's retail service area population will increase to approximately 939,100 in 2040 with an estimated 230,500 single family accounts and 7,300 multi-family accounts (EMWD 2016).

a) No Impact

The proposed Project would not directly or indirectly induce unplanned population growth because no new housing or permanent employment are proposed. The proposed Project involves installation of monitoring wells and would not increase water production or distribution. Therefore, the proposed Project would not directly or indirectly induce unplanned population growth and no impact would occur.

b) No Impact

Construction and operation of the monitoring wells would occur within public rights of way (eight of the 10 wells) and EMWD owned property (two of the 10 wells). The proposed

Project would not displace existing people or houses or require the construction of replacement housing. For these reasons, no impact would occur.

Mitigation Measures: None required or recommended.

3.15 Public Services

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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 following public services:	[ ]	[X]	[ ]	[ ]
i) Fire protection?	[ ]	[X]	[ ]	[ ]
ii) Police protection?	[ ]	[X]	[ ]	[ ]
iii) Schools?	[ ]	[ ]	[ ]	[X]
iv) Parks?	[ ]	[ ]	[ ]	[X]
v) Other public facilities?	[ ]	[ ]	[ ]	[X]

Discussion

Fire Protection

The City of Moreno Valley provides fire protection and emergency services within the city and is part of the California Department of Forestry and Fire Protection (Cal Fire)/ Riverside County Fire Department's regional, integrated cooperative fire protection organization. The Moreno Valley Fire Department has seven fire stations that service the City of Moreno Valley (City of Moreno Valley n.d.c).

The City of Perris contracts with the Riverside County Fire Department for fire and emergency services and has two fire stations that service the City (City of Perris n.d.a).

Police Protection

The City of Moreno Valley contracts police services from the Riverside County Sheriff's Department to provide police protection and crime prevention services. The Moreno Valley Police Department operates out of the Public Safety Building located at 22850 Calle San Juan de Los Lagos, approximately one mile west of the proposed Project area. The department also uses satellite offices in strategic locations throughout the City (City of Moreno Valley n.d.d).

The City of Perris contracts with the Riverside County Sheriff to provide police services and has one station that services the City (City of Perris n.d.b)

Schools

Children who reside in the City of Moreno Valley attend schools within two different school districts: the Moreno Valley Unified School District and the Val Verde Unified School District. A satellite campus of Riverside Community College is also located within Moreno Valley, 0.65 miles from the proposed Project sites at 16130 Lasselle Street. The Moreno Valley Unified School District operates 39 preschools, elementary schools, middle schools, high schools, and alternative schools within Riverside County (Moreno Valley Unified School District 2019). The Val Verde Unified School District operates 24 preschools, elementary schools, middle schools, high schools, and alternative schools within Riverside County (Val Verde Unified School District 2019).

Children who reside in the City of Perris attend schools within two different school districts: the Perris Union High School District and the Val Verde Unified School District. The Perris Union High School District serves seven high schools and the Perris Union Elementary School District serves seventeen elementary and middle schools within the City of Perris (City of Perris n.d.c).

Parks

The Moreno Valley Parks and Community Services Department manages and provides maintenance services for City Parks and Facilities, and provides a wide range of

recreation activities, programs and services throughout the community. There are 38 parks and recreational facilities operated by the Moreno Valley Parks and Community Services District (City of Moreno Valley n.d.c). The City of Moreno Valley's General Plan policy 4.2.7 establishes the City level of service (LOS) standard as 3 acres of developed parkland for every 1,000 residents (City of Moreno Valley 2006a).

The City of Perris Community Services Department schedules excursions, classes, and activities for residents and staffs 14 parks, a gymnasium, and a senior center. In total there are 24 parks maintained by the City of Perris Community Services Department (City of Perris n.d.d). The City of Perris Ordinance Number 953 set a park standard of five acres per 1,000 residents as part of its General Plan goals (City of Perris 2005b).

Libraries

There are two public libraries accessible to Moreno Valley residents. The main 16,000 square foot Moreno Valley Public Library is located at 25480 Alessandro Boulevard, on the northwest corner of Alessandro Boulevard and Kitching Street. A branch location is at the Moreno Valley Mall on 22500 Town Circle (City of Moreno Valley n.d.b).

There is one public library accessible to City of Perris residents. The Cesar E. Chavez Library is located on 163 East San Jacinto Avenue (City of Perris n.d.e).

Hospitals

There are two hospitals located within Moreno Valley. The Riverside County Regional Medical Center (26520 Cactus Avenue) and the Kaiser Permanente Moreno Valley Medical Center (27300 Iris Avenue) (City of Moreno Valley 2006a).

In the City of Perris, Riverside County Fire Department personnel provide initial care and stabilize the sick or injured until an ambulance arrives for necessary transportation to the Riverside County Regional Medical Center or Kaiser Permanente Moreno Valley Medical Center (City of Perris 2016b). There are no emergency medical centers in the City of Perris.

a.i.) Less than Significant with Mitigation Incorporated

The proposed Project would not construct new or physically alter existing fire protection facilities. Construction of the proposed Project would require temporary lane closures, which has the potential to affect response times for fire protection services. **Mitigation Measure TRA-1** (see *Section 3.17 Transportation*) requires coordination with emergency services, including fire protection services, on road closures associated with the proposed Project. The proposed Project would not substantially change service ratios for fire protection services and facilities. Fire protection requirements during construction of the proposed Project would be short-term and the demands would be filled by the existing local work force. Existing fire protection services provided by the Riverside County Fire Department and City of Moreno Valley would be sufficient to provide fire or other emergency response to the proposed Project sites. In addition, operation of the proposed

Project would not directly or indirectly induce unplanned population growth that would require construction of new fire departments or expansion of fire protection facilities. No additional or increased fire protection facilities to maintain response times, service ratios, or other measures of performance would be required. With implementation of **Mitigation Measure TRA-1**, impacts on fire protection services would be less than significant.

a.ii.) Less than Significant with Mitigation Incorporated

The proposed Project would not construct new or physically alter existing police protection facilities. Construction of the proposed Project would require temporary lane closures, which has the potential to affect response times for police services. **Mitigation Measure TRA-1** (see *Section 3.17 Transportation*) requires coordination with emergency services, including police, on road closures associated with the proposed Project. The proposed Project would not substantially change service ratios for police services and stations. In the event of an emergency at a proposed Project site, existing police services provided by the Riverside County Sheriff's Department would be sufficient. In addition, operation of the proposed Project would not directly or indirectly induce unplanned population growth that would require construction of a new or expansion of the existing police station to maintain response ratios, service ratios, or other measures of performance. With implementation of **Mitigation Measure TRA-1**, impacts on police services would be less than significant.

a.iii.) No Impact

The proposed Project would not change existing demand on schools because the proposed Project would not directly or indirectly induce unplanned population growth. Construction of the proposed Project does not include housing and operation would not result in new employment or population growth that would result in an influx of students. No new school facilities would need to be built in order to maintain class size ratios or other performance objectives. As a result, no impact on schools would occur.

a.iv.) No Impact

The proposed Project would not change existing demand on parks because the proposed Project would not directly or indirectly induce unplanned population growth. Construction of the proposed Project does not include housing and operation would not result in new employment or population growth that would result in an influx of residents. No new parks or recreational facilities would need to be built in order to maintain existing park acreage/resident ratios. As a result, no impact on parks would occur.

a.v.) No Impact

The proposed Project would not change existing demand on other public facilities because the proposed Project does not propose new housing units, nor would it directly or indirectly induce population or employment within the area. Construction and operation of the proposed Project would not necessitate expansion of existing or construction of

new public facilities such as libraries or hospitals. Therefore, no impact to other public facilities would occur.

Mitigation Measures:

Mitigation Measure TRA-1: Traffic Control Plan (see *Section 3.17*)

3.16 Recreation

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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?	[ ]	[ ]	[ ]	[X]
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	[ ]	[ ]	[ ]	[X]

Discussion

The proposed Project is located within vacant EMWD owned land and public rights of way. There are no parks or dedicated recreational open spaces located within the proposed Project area.

a) No Impact

The proposed Project does not include any new housing units or workers that would result in temporary or permanent population increase and use of existing parks or recreational facilities. Additionally, construction activities would not impact access to parks. Therefore, implementation of the proposed Project would not cause substantial physical deterioration of existing parks or recreational facilities. No impact would occur.

b) No Impact

The proposed Project would not include recreational facilities or require the construction or expansion of recreational facilities. No impact would occur.

Mitigation Measures: None required or recommended.

3.17 Transportation

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	[ ]	[X]	[ ]	[ ]
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	[ ]	[ ]	[X]	[ ]
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	[ ]	[X]	[ ]	[ ]
d) Result in inadequate emergency access?	[ ]	[X]	[ ]	[ ]

Discussion

The major roadways that provide regional access to the proposed Project site are State Route 60 (SR-60), which runs east-west through Moreno Valley, and Interstate 215 (I-215), which is located immediately west of Moreno Valley and passes through the City of Perris. I-215 is the primary route for north-south travel. Local access within the proposed Project area is provided by Cottonwood Avenue, Alessandro Boulevard, Perris Boulevard, Heacock Street, and others. Public transportation in the proposed Project area consists of bus service provided by the Riverside Transit Authority; bus stops exist in the Project

vicinity, such as along Alessandro Boulevard. Class 2 bike lanes and Class 3 bike routes also exist in the proposed Project area.

The Circulation Element of City of Moreno Valley General Plan establishes goals, objectives, and policies for transportation in the City. The General Plan identifies acceptable level of service (LOS) standards for roadways in the City. Acceptable levels of service in the Project vicinity are LOS C or D, depending on the roadway (City of Moreno Valley 2006a). According to the City of Perris General Plan, Perris currently has an adopted minimum LOS D or E, depending on the roadway (City of Perris 2008a).

The Riverside County Transportation Commission (RCTC) works to plan and implement transportation improvements throughout the County, including assisting local governments with funding. RCTC maintains a Congestion Management Program (CMP), which is periodically updated and was last updated and adopted in 2011. RCTC has also prepared a Long Range Transportation Study (LRTS), which incorporates the CMP. The LRTS aims to develop strategies to address transportation challenges, provide a vision of future transportation in Riverside County, and develop a list of high-priority projects to be implemented. The LRTS evaluates highways, major roadways, transit, freight transport, and active transportation in Riverside County. The CMP portion of the LRTS indicates that all intersections and segments evaluated in the proposed Project area are operating at LOS D or better (RCTC 2019).

The WRCOG conducts various transportation studies and develops plans to help address transportation, transit, and active transportation issues in Western Riverside County. WRCOG has prepared the Western Riverside County Active Transportation Plan, which is intended to improve transportation choices within the subregion (WROCG 2018). The Active Transportation Plan is a not a policy document; it is meant to serve as a resource for WRCOG's member agencies in pursuing funding for active transportation projects.

The Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy identifies strategies to meet mobility of all modes, legislative, financial and air quality requirements in Southern California (SCAG 2016). It is updated every four years, most recently in June 2016. Most projects in Moreno Valley and Perris focus on roadway improvements such as resurfacing and widening (SCAG 2016).

a) Less Than Significant with Mitigation Incorporated

Construction of all ten proposed wells is estimated to last seven months (each well would require approximately one-month of construction time, and two wells may be under construction at a given time). Well drilling would be conducted continuously for 24 hours per day for up to two weeks per well in order to prevent borehole collapse. Additional details on the construction schedule can be found in *Section 2.4, Proposed Project Description*. During construction, truck trips would be generated associated with construction crews and materials deliveries. Construction is estimated to generate up to 35 one-way trips per well per day, which includes trips for off-hauling of export material,

delivery of materials, and construction worker commuting. All construction activities would occur within the City of Moreno Valley and City of Perris roadway rights of way, areas adjacent to the roadways, and/or on the parcels selected for well sites.

Construction-related traffic would be temporary. Lane closures may be required for wells constructed in the roadway right-of-way; as described in *Section 2.4.2*, approximately 770 feet of lane closure would be required for a period of four weeks at each well site. Lane closures have the potential to slow traffic and create a bottleneck on busy streets. Potential traffic-related impacts (including lane closures) associated with well construction in the right-of-way would move from site to site over the seven-month construction period, and disturbed areas would be restored to original condition. For wells located on EMWD-owned properties, construction would occur on the site parcels and would not impede circulation on the adjacent roadways. Construction traffic is expected to consist of 17 round trips per day per well under construction, which would not produce a significant impact to the LOS of roadways in the proposed Project area. Although construction of the proposed Project may cause short-term inconvenience and slow traffic, the impacts would be temporary, and would not be expected to reduce the LOS below levels allowed by general plans. Therefore, Project construction would not conflict with policies outlined in the City of Moreno Valley General Plan or City of Perris General Plan.

Operation of the proposed Project would not conflict with regional transportation plans, the City of Moreno Valley General Plan, or the City of Perris General Plan because it would not have a permanent impact on circulation. EMWD would conduct up to two monitoring/maintenance visits per year, which would require temporary lane closures lasting up to one week at each well located in public rights-of-way. Lane closures associated with monitoring/maintenance visits would be infrequent and temporary, but could still impact circulation by slowing traffic. No lane closures would be required for operation of wells located on EMWD property.

Although construction and operation impacts would be temporary and have limited footprints, construction and operation of the proposed Project may require temporary closures of roadways, bicycle lanes, and sidewalks. Potential traffic impacts related to these closures shall be mitigated through the implementation of a Traffic Control Plan as **Mitigation Measure TRA-1**, which would ensure that appropriate traffic controls are implemented and potential traffic impacts related to these closures are less than significant.

b) Less Than Significant Impact

CEQA Guidelines Section 15064.3, subdivision (b) outlines criteria for analyzing transportation impacts in terms of “vehicle miles traveled” (VMT) for land use projects and transportation projects. VMT refers to the amount and distance of automobile travel attributable to a project. Neither the City of Moreno Valley nor the City of Perris have adopted local VMT significance criteria.

Construction of the proposed Project would involve temporary trips associated with workers, delivery of construction supplies and equipment, and hauling materials to and from the site. These trips would be temporary, occurring during the 12-month construction period, and would not cause a notable increase in VMT that would exceed a City of Moreno Valley, City of Perris, or Riverside County threshold of significance. Operation of the proposed Project is expected to require truck trips in order to conduct of twice-yearly monitoring/maintenance visits to well sites. These trips would be incorporated into EMWD's existing operation and maintenance program and would not significantly increase VMT in the proposed Project area. Lane closures that slow traffic may cause drivers to seek alternate routes to avoid areas with lane closures. However, all well sites are located in areas with many nearby surface streets that could serve as alternate routes. Therefore, drivers who seek to avoid the lane closures would not need to significantly increase their trip mileage. Therefore, the proposed Project would be consistent with CEQA Guidelines Section 15064.3, subdivision (b) and the impact would be less than significant.

c) Less Than Significant with Mitigation Incorporated

The proposed Project would not construct new roadways, and existing roadways would be restored to their prior condition once construction is complete. Construction may require some incompatible uses on roadways in the proposed Project area (i.e., transportation of heavy construction equipment), which could temporarily increase hazards near Project sites and/or staging areas. The Traffic Control Plan implemented under **Mitigation Measure TRA-1** would include measures to ensure that vehicle ingress and egress from construction sites and the staging area occurs safely.

Project operation (i.e., monitoring visits and inspections) may require lane infrequent closures, which have the potential to create temporary roadway hazards. The Traffic Control Plan prepared as part of **Mitigation Measure TRA-1** would include measures to ensure that temporary lane closures are conducted safely (e.g., with appropriate signage).

With the implementation of **Mitigation Measure TRA-1**, the impacts from construction and operation of the proposed Project would be less than significant.

d) Less Than Significant with Mitigation Incorporated

Construction of the proposed Project would require lane closures for construction of wells in the roadway right-of-way for wells MW-2 through MW-6, and MW-8 through MW-10 (i.e., all wells except for MW-1 and MW-7 which are located on EMWD parcels). Construction would also generate vehicle trips for worker travel and delivery of materials and equipment. Lane closures have the potential to temporarily hinder access for emergency vehicles. Traffic control measures implemented during construction would require that emergency crews be able to access sites and surrounding areas. The contractor would coordinate to ensure that emergency responders are informed of construction locations. Traffic control measures would also require that the contractor

make a reasonable effort to preserve access to business and properties during construction. In order to prevent Project construction from interfering with emergency responders, **Mitigation Measure TRA-1** would be implemented. With this mitigation measure incorporated, impacts would be reduced to less than significant.

Project operation would consist of twice-yearly monitoring/maintenance visits which would last approximately one week twice per year. For wells in the roadway right-of-way, monitoring/maintenance would require lane closures. Lane closures would be infrequent and have a short duration; however, lane closures have the potential to impact emergency access. **Mitigation Measure TRA-1** would be implemented to prevent project operation from impeding emergency responders. With the incorporation of this mitigation measure, impacts from operation of the proposed Project would be less than significant.

Mitigation Measures:

To mitigate possible impacts to circulation and emergency access during construction, EMWD shall implement **Mitigation Measure TRA-1**. The proposed Project's traffic impacts would be less than significant with mitigation incorporated.

TRA-1: Traffic Control Plan. Prior to Project construction, EMWD shall require its construction contractor to implement a Traffic Control Plan, to be approved by the EMWD construction inspector, the City of Moreno Valley, and the City of Perris (relative to location of wells within public rights-of-way). The Traffic Control Plan shall, at minimum:

- Identify staging locations to be used during construction;
- Identify safe ingress and egress points from staging areas;
- Identify potential road closures;
- Establish haul routes for construction-related vehicle traffic; and
- Identify alternative safe routes to maintain pedestrian and bicyclist safety during construction.

EMWD's project manager shall coordinate with emergency services (police, fire, and others) to notify these entities regarding construction schedule, Project siting, and potential delays due to construction. EMWD's project manager shall also coordinate with emergency services prior to Project operation activities (i.e., monitoring and inspection visits) that would require lane closures. EMWD shall identify roadways and access points for emergency services and minimize disruptions to or closures of these locations.

The Traffic Control Plan shall include provisions for traffic control measures including barricades, warning signs, cones, lights, and flag persons, to allow safe circulation of vehicle, bicycle, pedestrian, and emergency response traffic. The provisions outlined in the Traffic Control Plan shall provide for traffic control measures during Project construction as well as during project operation. The Traffic Control Plan shall be

reviewed and approved by EMWD's project manager and the construction inspector prior to Project construction. EMWD's construction inspector shall also provide the construction schedule and Traffic Control Plan to the City of Moreno Valley and the City of Perris for review to ensure that construction of the proposed Project does not conflict with other construction projects that may be occurring simultaneously in the Project vicinity.

3.18 Tribal Cultural Resources

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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	[ ]	[X]	[ ]	[ ]
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	[ ]	[X]	[ ]	[ ]

(c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Discussion

A *Cultural Resources Assessment Report* was prepared in February 2020 for the proposed Project. On January 23, 2020 a cultural resources records search of the CHRIS was conducted at the Eastern Information Center at the University of California, Riverside. *Section 3.5 Cultural Resources* provides a summary of the CHRIS and other database searches that were conducted for the proposed Project, which concluded that no known cultural resources are located within the proposed Project area. A field survey was conducted, on January 30, 2020. No cultural resources were discovered during the field survey. The *Cultural Resources Assessment Report* is provided in **Appendix C**.

On January 17, 2020 Section 106 Native American outreach was initiated. The Native American Heritage Commission (NAHC) was contacted to request a Sacred Lands File search of the proposed Project area and a one-half mile radius surrounding it. A list of Native American groups and/or individuals culturally affiliated with the area who may have knowledge of the cultural resources in the proposed Project area was also requested. The results of the Sacred Lands File search by the NAHC did not indicate the presence of Native American sacred lands within the vicinity of the proposed Project area. The NAHC provided a list of 26 Native American contacts, which included seven individuals who had not been originally contacted. On January 23, 2020, Rincon prepared and mailed letters to 19 Native American contacts and an additional seven letters on January 29, 2020. Four responses from Native American groups were received from the initial outreach. On February 7 and 11, 2020, Rincon conducted follow-up phone call with Native American contacts who had not responded to the initiation letter. Eight additional responses were received from follow-up efforts. A summary of each response received as of February 11, 2020 follows.

- On January 20, 2020, the project archaeologist spoke with Mr. Michael Mirelez, Cultural Resources Coordinator for the Torres-Martinez Desert Cahuilla Indians, who asked to be sent a copy of the letter originally sent to Chairman Tortez on January 23,2020. Mr. Mirelez stated the Torres-Martinez Desert Cahuilla Indians defer to the Soboba Band of Luiseño Indians for this Project.
- On January 30, 3030, the project archaeologist received an email from Travis Armstrong, the Tribal Historic Preservation Officer for the Morongo Band of Mission Indians. Mr. Armstrong requested a records search at the appropriate California Historical Resources Information System center with at least a one-mile search radius be conducted. Additionally, Mr. Armstrong requested copies of the site records for tribal cultural resources identified in the records search be sent and

information regarding the vertical and horizontal proposed Project areas also be shared.

- On February 5, 2020, Mr. Dorame of the Gabrielino Tongva Indians of California Tribal Council called and stated in the event of cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, he would like to be notified. Additionally, Mr. Dorame stated if human remains are unearthed and identified by the Coroner as indigenous people, the Gabrielino Tongva Indians of California Tribal Council would like to be contacted regardless of the most likely descendent (MLD) designation from the NAHC.
- On February 5, 2020, the project archaeologist received an email from Alexandra McCleary, the Tribal Archaeologist from the San Manuel Band of Mission Indians (SMBMI), stated the proposed Project is located outside of Serrano ancestral territory and, as such, SMBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to legal and regulatory mandates.
- On February 7, 2020, the project archaeologist called and spoke with Chairman Anthony Morales who stated if archaeological and/or Native American monitoring is recommended, then the Gabrieleño/Tongva San Gabriel Band of Mission Indians would like to be notified. Additionally, Mr. Morales stated in the event cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, the Gabrieleño/Tongva San Gabriel Band of Mission Indians would like to be notified. Finally, Mr. Morales stated if human remains are unearthed and identified by the Coroner as indigenous people, the Gabrieleño/Tongva San Gabriel Band of Mission Indians would like to be contacted regardless of the MLD designation from the NAHC.
- On February 7, 2020, the project archaeologist called Chairman Mark Macarro of the Pechanga Band of Luiseño Indians. Chairman Macarro's assistant directed Rincon to contact Paul Macarro or Ebru Ozdil in the Tribal Cultural Resources Department. A voicemail was left for Mr. Paul Macarro on February 7, 2020. Mr. Macarro called back and responded by stating the Tribe has concerns regarding known cultural and tribal resources. Additionally, Mr. Macarro stated the Tribe would prepare a written response to the project shortly. No further response has been received from Mr. Paul Macarro or Molly Earp, the Tribal Archaeologist.
- On February 7, 2020, Rincon called Chairman Steven Estrada of the Santa Rosa Band of Cahuilla Indians and spoke with Ms. Joenie Miranda. Ms. Miranda stated she is now reviewing project notification letters and asked for copies of the letter sent to Mr. Steven Estrada and Ms. Mercedes Estrada to be emailed to her for review. Later that day, Ms. Miranda responded via email and stated the Tribe does not have any comments regarding this Project.
- On February 7, 2020, the project archaeologist called and spoke with Co-Chairman Mark Cochrane of the Serrano Nation of Mission Indians. Mr. Cochrane stated if

cultural resources or human remains are identified during this project, the Serrano Nation of Mission Indians would like to be notified. As a statement was made by Co-Chairman Cochrane on behalf of the notification letter attached was sent to Ms. Miranda on February 7, 2020. Later that day, Ms. Miranda responded via email and stating the Tribe does not have any comments regarding this project.

- On February 7, 2020, the project archaeologist called and spoke with Co-Chairman Mark Cochrane of the Serrano Nation of Mission Indians. Mr. Cochrane stated if cultural resources or human remains are identified during the project, the Serrano Nation of Mission Indians would like to be notified. As a statement was made by Co-Chairman on behalf of the Serrano Nation of Mission Indians, a follow-up call was not made to Co-Chairman Wayne Walker.
- On February 7, 2020, the project archaeologist called and spoke with Mr. Joseph Ontiveros of the Soboba Band of Luiseño Indians' Cultural Resources Department. Mr. Ontiveros stated the notification letter is currently being reviewed by Ms. Jessica Valdez the Tribal Cultural Resources Specialist. As Mr. Ontiveros made a statement about the Tribe reviewing the notification letter, a follow-up call was not made to Chairman Scott Cozart. No further response has been reviewed from Mr. Ontiveros or Ms. Valdez.
- On February 11, 2020, Rincon called Chairwomen Amanda Vance of the Augustine Band of Cahuilla Mission Indians and reached reception. The receptionist stated the letter had been forwarded to the appropriate individuals for review. No further response has been received from Ms. Vance.
- On February 11, 2020, the project archaeologist called Chairman Andrew Salas of the Gabrieleño Band of Mission Indians at the Tribal Office and left a voicemail. The phone call was returned by the secretary and she stated Chairman Salas defers the project to the Luiseño and an email stating such would also be sent. No email has been received to date and no further response has been received from Mr. Salas.

Appendix C provides further information on contact efforts and provides copies of all non-confidential Native American outreach correspondence.

Assembly Bill (AB) 52 Consultation

AB 52 establishes a formal consultation process between the lead agency, EMWD, and all California Native American Tribes within the area regarding tribal cultural resource evaluation. AB 52 mandates that the lead agency must provide formal written notification to the designated contact of traditionally and culturally affiliated California Native American tribes that have previously requested notice. Native American tribes are notified early in the project review phase by written notification that includes a brief description of the proposed project, location, and the lead agency's contact information. The Tribal contact then has 30 days to request project-specific consultation pursuant to this section (Public Resources Code §21080.1).

As a part of the consolation pursuant Public Resources Code §21080.3.1(b), both parties may suggest mitigation measures (Public Resources Code §21082.3) that can avoid or substantially lessen potential significant impacts to tribal cultural resources or provide alternatives that would avoid significant impacts to a tribal cultural resource. The California Native American tribe may request consultation on mitigation measures, alternatives to the project, or significant effects. The consultation may also include discussion on the environmental review, the significance of tribal cultural resources, the significance of the project's impact on the tribal cultural resources, project alternatives, or the measures planned to preserve or mitigate. Consultation shall end when either: 1) both parties agree on the mitigation measures to avoid or mitigate significant effects on a tribal cultural resource, or 2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.

EMWD has consulted with Native American tribal representatives through written correspondence, based on a contact list of tribes who indicated to EMWD that they are interested in receiving notification. Additionally, EMWD staff has undertaken consultation with representatives from the Pechanga Band of Luiseno Indians, Soboba Band of Luiseno Indians, Rincon Band of Luiseno Indians and Agua Caliente Band of Cahuilla Indians to discuss the proposed Project and potential effects on significant cultural resources.

a) Less than Significant with Mitigation Incorporated

The results from the *Cultural Resources Assessment Report* (**Appendix C**) determined there are no cultural resources, Native American or historical, within the proposed Project area. The assessment consisted of Native American and historical society consultation, historical map and imagery review, and a field survey. Most of the proposed Project area is highly disturbed by urban development, which makes the possibility of encountering intact surface tribal cultural resources low. Additionally, there are no known tribal burial sites within the proposed Project area.

No archaeological resources have been previously recorded within or immediately adjacent to the proposed Project area. The majority of the archaeological sites documented within the record search area are of fossils found in the Pleistocene alluvium within one half mile of the proposed Project area, but not within the proposed Project sites, and no cultural resources were found within or surrounding the proposed Project area. These results suggest that there is a relatively low potential for encountering substantial prehistoric archaeological remains during construction activities. Although there is substantially low potential for tribal resources to be discovered and impacts would be expected to be less than significant, there is always the potential for ground disturbing activities to encounter previously unknown tribal cultural resources. **Mitigation Measures CUL-1** and **CUL-2** would therefore be implemented in the event that tribal cultural resources are encountered during construction. **Mitigation Measure CUL-1** would require ground-disturbing activities to halt if an unanticipated cultural resource or tribal cultural resource was discovered, and an archaeologist to be contacted. **Mitigation**

Measure CUL-2 would ensure proper procedures are in place if human remains are discovered during construction, and for the remains to be analyzed to determine origin and disposition pursuant to Public Resources Code §5097.98. With the implementation of **Mitigation Measures CUL-1** and **CUL-2** impacts to tribal cultural resources would be less than significant.

Mitigation Measures: Refer to **Mitigation Measures CUL-1** and **CUL-2** in *Section 3.5 Cultural Resources.*

3.19 Utilities and Service Systems

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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?	[ ]	[ ]	[X]	[ ]
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	[ ]	[ ]	[ ]	[X]
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?	[ ]	[ ]	[X]	[ ]
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local	[ ]	[ ]	[X]	[ ]

infrastructure, or otherwise impair the attainment of solid waste reduction goals?					
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	[ ]	[ ]	[X]	[ ]	

Discussion

Water Supply

EMWD is the primary water purveyor for the City of Perris and City of Moreno Valley and provides potable water, recycled water, and wastewater services for the proposed Project area. The majority of EMWD's supply is imported from Metropolitan Water District of Southern California via the State Water Project and the Colorado River Aqueduct for potable and non-potable use and groundwater recharge. Groundwater is also pumped from the Hemet/San Jacinto and West San Jacinto areas of the San Jacinto Groundwater Basin to offset imported water supplies. Groundwater in portions of the West San Jacinto Basin is high in salinity and requires desalination treatment in one of two EMWD desalination plants before potable use (EMWD 2016).

Wastewater and Recycled Water

EMWD provides wastewater collection, treatment, and recycled water services for the City of Moreno Valley and City of Perris. EMWD currently treats approximately 46 million gallons per day (mgd) of wastewater at its four active regional water reclamation facilities (RWRF) (EMWD n.d.). Wastewater collected in the Perris North Management Zone, which encompasses the proposed Project area, is treated at RWRFs located in Moreno Valley, Perris Valley, Temecula Valley, and San Jacinto Valley. During 2018, the Moreno Valley RWRF, which is the RWRF closest to the Project sites, treated a total of 10,909 AF of wastewater. The Moreno Valley RWRF facility has a current capacity of 21 mgd, with build out capacity to 41 mgd (EMWD 2019).

EMWD owns, operates, and maintains a recycled water system in conjunction with the RWRFs. The Moreno Valley RWRF is located at 17140 Kitching Street, approximately 0.5 miles east of the proposed MW-9. Recycled water is used extensively in EMWD's service area and EMWD regularly uses 100 percent of its recycled water supply for beneficial use. Approximately 47 percent of the recycled water is used for agricultural irrigation, 35 percent for municipal and industrial use, and 18 percent for irrigated landscaping, golf courses, construction, and habitat creation (EMWD 2019). EMWD also produces recycled water supply for distribution to retail and wholesale customers.

Stormwater

The Riverside County Flood Control and Water Conservation District provides regional stormwater and flood control protection for the City of Moreno Valley and City of Perris.

The City of Moreno Valley has the responsibility for design, construction, and maintenance of local drainage facilities, including road curb and gutter and roadside ditches (City of Moreno Valley 2006a). Existing stormwater infrastructure in City of Moreno Valley Project sites include large drainage channels along the west side of Kitching Street, along the east side of Camino Flores, and east of Heacock Street abutting the residential property lines. Stormwater quality and flooding potential in for Project sites within the City of Moreno Valley are described in *Section 3.10 Hydrology and Water Quality*.

Riverside County Flood Control and Water Conservation District owns and maintains the Perris Valley Channel, the backbone of the City of Perris' storm drainage system. The Perris Valley Channel is a continuation of the City of Moreno's drainage system and travels from Heacock Street in the City of Moreno Valley through the City of Perris to the San Jacinto River (City of Perris 2005a). Stormwater quality and flooding potential in for Project sites within the City of Perris are described in *Section 3.10 Hydrology and Water Quality*.

Solid Waste

Solid waste pickup within the City of Moreno Valley is provided by Waste Management of Inland Empire and is primarily deposited in the Riverside County Waste Management District (RCWMD)'s Badlands Landfill (31125 Ironwood Avenue, Moreno Valley). However, trash haulers can also use other County landfills such as the Lamb Canyon Landfill (16411 Lamb Canyon Road, Beaumont) and El Sobrante Landfill (10910 Dawson Canyon Road, Corona). All Riverside County landfills are Class III disposal sites permitted to receive non-hazardous municipal solid waste. (City of Moreno Valley 2006b).

Solid waste pickup within the City of Perris is provided by CR&R Disposal and is transported to either the El Sobrante Landfill or to the Badlands Landfill (City of Perris 2005a).

Utilities

Electrical service for Project sites located in the City of Moreno Valley is provided by MVU and SCE (City of Moreno Valley 2006a). MVU was established in 2001 to provide electrical service to new residents and businesses within areas of the City that are being converted from fallow or agricultural lands to housing, commercial and industrial uses. MVU's service area extends from the City boundary in the south up to Bay Avenue, covering the Project sites MW-5, MW-6, MW-7, and MW-9. Electrical service for the Project sites MW-1, MW-2, MW-3, and MW-4 is provided by SCE.

Electrical service for Project sites MW-8 and MW-10 within in the City of Perris is provided by SCE (City of Perris 2005a).

Natural gas service for the City of Moreno Valley and City of Perris is provided by the Southern California Gas Company (City of Moreno Valley Financial & Management Services n.d.; City of Perris 2005a).

a) Less than Significant Impact

The proposed Project would construct up to 10 groundwater monitoring wells to improve EMWD's understanding of the level and extent of contamination in the Perris North Sub-basin. The proposed Project would not require improvements to existing municipal storm water drain systems as the proposed Project would not increase impervious surfaces in the proposed Project area, nor would it result in increased runoff. During construction, some dewatering activities would occur requiring discharge to stormwater or sewer systems, as permitted. These additional flows would be minimal and would not result in a substantial increase in temporary flows to these systems. As discussed in *Section 3.14 Population and Housing*, the proposed Project would not induce unplanned population or employment growth that would require or result in the construction of new or expanded water supply, wastewater treatment, stormwater drainage, electrical power, natural gas, or telecommunications facilities. As explained in *Section 2.4 Proposed Project Description*, the proposed monitoring wells would not be connected to either the City of Moreno Valley's or City of Perris' electrical grids or produce any potable, raw, recycled, or wastewater. Therefore, the proposed Project would not require construction or relocation of utilities and impacts would be less than significant.

b) No Impact

The purpose of the Project is to evaluate the level and quality of groundwater in the Perris North Sub-basin. The operation of the proposed Project would not require water supplies or service. Therefore, no impact would occur.

c) Less than Significant Impact

Construction and operation of the proposed Project would not directly or indirectly induce population growth that would result in or require expansion of existing wastewater collection or treatment services. During construction, dewatering may occur that could require disposal to the sewer for treatment, depending on groundwater quality. Water produced during construction would be relatively low in volume compared to existing sewer flows and would be accommodated within existing capacity of the treatment plant. During operation, monitoring would be performed twice per year by truck-mounted equipment and any wastewater produced during sampling would be disposed by the sampling contractor according to industry standards. Wastewater produced during construction and operation of the proposed Project would not be substantial and would be accommodated within existing wastewater system capacities. Therefore, impacts would be less than significant.

d) Less than Significant Impact

Construction of the proposed Project would generate soil and asphalt waste during installation of the monitoring wells. While excavated soil would be reused onsite as backfill to the extent feasible, it is estimated that approximately 1,000 cubic yards of material in total would be exported for all 10 of the proposed Project's wells. Cuttings from drilling activities would be disposed to the Badlands sanitary landfill, unless materials are determined to be hazardous, in which case they would be disposed of to the nearest landfill permitted to take such materials.

There are two State regulations that set standards for solid waste generation: AB 939 mandates 50 percent diversion of solid waste; and AB 341 mandates recycling programs to help reduce GHG emissions. The Badlands sanitary landfill had an overall remaining disposal capacity of approximately 9,804,704.62 tons of solid waste for disposal and was expected to reach capacity between 2018 and 2020 (City of Moreno Valley 2006b). The landfill however, submitted a Revised Solid Waste Facilities Permit to Riverside County in 2011 to increase design capacity from 30,386,993 cubic yards to 33,560,993 cubic yards (CalRecycle n.d.a). This changed the anticipated closure date to 2024. Construction of the proposed Project is expected to be completed by October 2024. The 1,000 cubic yards of excess construction debris is anticipated to be within the permitted capacity of the Badlands sanitary landfill after onsite backfill of excavated soil combined with adherence to mandatory construction waste diversion requirements.

Operation of the proposed Project would not generate solid waste. Therefore, solid waste generation would be limited to temporary construction activities and would not affect available solid waste disposal capacity in the region. Therefore, impacts related to local infrastructure capacity are less than significant, and no mitigation is required.

e) Less than Significant Impact

Construction and operation of the proposed Project would comply with local, State, and federal regulations related to solid waste. While operation of the proposed Project would not generate long-term solid waste, construction activities would create debris such as excavated soil and asphalt. Excavated soil would be backfilled to the extent possible, but construction contractor(s) would be required to dispose of excess construction debris in accordance with existing reduction statutes (AB 939 and AB 341) and regulations. These regulations would determine the landfill to be used for disposal of construction debris, disposal of solid waste from operation of the water treatment facility, mandatory 50 percent diversion of solid waste (AB 939), and mandatory recycling programs to reduce GHG emissions (AB 341). Therefore, impacts related to compliance with local, State, and federal reduction statues and regulations would be less than significant, and no mitigation would be required.

Mitigation Measures: No additional mitigation measures required or recommended.

3.20 Wildfire

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
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?	[ ]	[X]	[ ]	[ ]
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?	[ ]	[ ]	[ ]	[X]
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?	[ ]	[ ]	[ ]	[X]
d) Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	[ ]	[ ]	[ ]	[X]

Discussion

The California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP) assesses the amount and extent of California's forests and

rangelands, analyzes their conditions and identifies alternative management and policy guidelines (https://frap.fire.ca.gov/). FRAP maps are used to identify areas of Very High Fire Hazard Severity Zone within Local Responsibility Areas (LRAs). The proposed Project is designated as non- Very High Fire Hazard Severity Zone within the Moreno Valley LRA and the Perris LRA (FRAP 2009a; FRAP 2009b).

Emergency Operations Plan

The City of Moreno Valley EOP provides guidance for the City's response to extraordinary emergency situations associated with natural, man-made and technological disasters. While the EOP is a preparedness document and is designed to be read, understood, and exercised prior to an emergency, emergency evacuation plans should be viewed as living documents because communities change and integrating the needs of individuals with differing access and functional needs is a dynamic process. The City's OEM is responsible for working and communicating with local community stakeholders to practice, review, revise, and update plans to reflect changes in technology, personnel, and procedures (City of Moreno Valley 2019b).

The City of Perris EOP addresses the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting the City of Perris. The EOP is designed to establish the framework for implementation of the California Standardized Emergency Management System (SEMS) for the City of Perris, which is located within the Riverside County Operational Area and Mutual Aid Region VI as defined by the Governor's California Emergency Management Agency. By extension, the plan will also implement the National Incident Management System which is being integrated into SEMS at the Governor's directive (Executive Order S-2-05). The plan is intended to facilitate multi-agency and multi-jurisdictional coordination, particularly between the City of Perris and Riverside County, special districts, and state agencies, in emergency operations (City of Perris 2013b).

Local Hazard Mitigation Plan

The City of Moreno Valley LHMP is designed to reduce or eliminate long-term natural or man-made hazard risks and communicate the City's corresponding mitigation strategy. Components of the plan include hazard identification, asset inventory, risk analysis, loss estimation, and a mitigation strategy to reduce the effects of hazards in the City. (City of Moreno Valley 2017).

The City of Perris LHMP is designed to identify the County's hazards, review and assess past disaster occurrences, estimate the probability of future occurrences and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and man-made hazards. The plan identifies vulnerabilities, provides recommendations for prioritized mitigation actions, evaluates resources and identifies mitigation shortcomings, provides future mitigation planning and maintenance of existing plan (City of Perris 2017b).

a) Less than Significant with Mitigation Incorporated

Construction activities and potential staging areas would be located primarily within public rights of way and EMWD-owned land. Sidewalk and lane closures during construction would temporarily restrict access for use by emergency response vehicles or emergency evacuations and could impair implementation of or physically interfere with the City of Moreno Valley's or City of Perris' adopted EOP or LHMP. Implementation of **Mitigation Measure TRA-1** would require EMWD to develop a Traffic Control Plan, which would reduce conflict between Project construction activities and the EOPs and LHMPs by requiring coordination with emergency services (police, fire, and others); requiring identification of roadways and access points for emergency services; and requiring that disruptions to or closures of these locations be minimized. Impacts of construction on the adopted emergency evacuation plan would be less than significant with mitigation incorporated. Further consideration of the proposed construction activities and potential for roadway access and hazardous conditions can be found under *Section 3.17 Transportation*.

Operation of the proposed Project would not physically impair or otherwise interfere with adopted emergency response or evacuation plans in the proposed Project area as all ground surfaces of existing rights of way would be returned to pre-construction conditions after installation of the monitoring well sites. The Project would involve minimal additional vehicles being added to roadways (bi-annual readings by truck-mounted monitoring equipment and periodic EMWD well inspections) and temporary lane closures during inspections and readings for wells located within the roadway right-of-way. Therefore, the Project would not interfere with emergency evacuation plans and impacts would be less than significant with mitigation incorporated.

b) No Impact

The proposed Project area is designated as non-VHFHSZ within the Moreno Valley LRA and Perris LRA. Monitoring well sites would be installed within existing public rights-of-way and pre-graded vacant parcels that do not have steep slopes. No impacts would occur.

c) No Impact

The proposed Project would not involve the installation or maintenance of infrastructure that is typically associated with fire risk, such as roads, fuel breaks, emergency water sources, or power lines. The proposed Project would rely on existing roads and installation of well sites would be located within existing roadways and vacant EMWD-owned land. The proposed Project area is designated as non- Very High Fire Hazard Severity Zone within the Moreno Valley LRA and Perris LRA. No impact would occur.

d) No Impact

Construction of the proposed Project would occur within existing public rights-of-way and vacant EMWD-owned land that do not have steep slopes susceptible to landslides.

Proposed Project sites are not located on a downward slope that would result in increased drainage or runoff that could contribute to post-fire slope instability, landslides, or flooding. Once the Project is completed, the monitoring wells would be underground, and the area of temporary disturbance would be restored to pre-construction conditions. The proposed Project would have a less than significant impact related to increasing impervious surfaces and stormwater runoff (see *Section 3.10 Hydrology and Water Quality*). No impact would occur.

Mitigation Measures: Refer to **Mitigation Measure TRA-1** in *Section 3.17 Transportation*.

3.21 Mandatory Findings of Significance

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Does the Project:				
a) 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?	[ ]	[X]	[ ]	[ ]
b) 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 projects, and the effects of probable future projects)?	[ ]	[ ]	[X]	[ ]

c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	[ ]	[X]	[ ]	[ ]

Discussion

a) Less Than Significant with Mitigation Incorporated

With the implementation of mitigation measures, the proposed Project would have a less than significant impact on the environment. Due to high levels of existing disturbance, low habitat quality, and habitat fragmentation, there are less than significant impacts on biological resources, including burrowing owl, horned larks, and common avian species such as mourning doves and house finches from the proposed Project. No cultural or archaeological resources were identified within the area that would be directly impacted by the Project activities plus a one-half-mile buffer; however, there is a potential for previously unknown cultural material to exist at Project sites. With the implementation of **Mitigation Measures CUL-1** and **CUL-2**, potentially significant impacts on cultural resources would be reduced to less than significant. The Project site overlies Holocene deposits, which have low paleontological sensitivity, overlying Pleistocene sediments at a depth of approximately 11 feet, which have high paleontological sensitivity. Impacts on paleontological resources are not anticipated because Fossiliferous deposits have the potential to occur at greater depths than most of the proposed Project ground disturbance. To ensure proper procedures are in place in the event of an unanticipated fossil discovery, **Mitigation Measure GEO-1** would be implemented during all construction phases of the Project. **Mitigation Measure GEO-1** would ensure any unanticipated fossil discovered onsite would be preserved, and potential impacts on paleontological resources would be less than significant.

b) Less Than Significant Impact

CEQA Guidelines Section 15130(b) provides two approaches to discussing cumulative project impacts: either the *List-of-Projects Method:* a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or the *Summary-of-Projections Method:* a summary of projections contained in an adopted general plan or related planning document or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency. EMWD is relying on the *List-of-Projects* method for purposes of this analysis.

The Perris North Groundwater Monitoring Project is currently being considered as one project of several within the Perris North Groundwater Program. The other projects in the program would result in the construction and operation of groundwater monitoring wells,

extraction wells, treatment and distribution facilities also within the Perris North Basin. These other projects include:

- Well 204 Project;
- Cactus Avenue Corridor Groundwater Wells Project; and
- Well 65/66 Project.

The Well 204 Project consists of the development of one extraction well, a water treatment plant and pipelines in the Perris South Sub-Area of the basin. The Cactus Avenue Corridor Project involves the development and operation of groundwater extraction, treatment, and distribution facilities in the Perris North Sub-basin. The Well 65/66 Project consists of the development and use of two new groundwater wells and water treatment plant also within the Perris North Basin. Although related due to contributing to overall management of the Perris North Sub-basin, each project is a stand-alone project independent of the other for project implementation.

Construction of these projects would occur at different times and sites far enough removed from each other that construction-related cumulative effects such as fugitive dust and construction noise would be less than significant. Development would adhere to applicable rules and regulations related to dust suppression, traffic control, storm water control, handling/storage of hazardous materials, and regulations related to protections for plants/animals/waters of the State and U.S. Cumulative impacts in these areas are also considered less than significant. The only operational vehicle trips associated with the various projects listed above would be the infrequent monitoring and/or maintenance trips, which would result in an insignificant cumulative increase on area roadways separated in time and distance. Cumulative noise and air quality effects from these projects would also be less-than-significant due to their minimal contribution. Therefore, these projects are not expected to create impacts that are individually limited, but cumulatively considerable.

The proposed Project would not have impacts that are individually limited, but cumulatively considerable. The impacts of the proposed Project have been analyzed in accordance with the CEQA Guidelines; each topic has been found to have either no impact, a less than significant impact, or a less than significant impact with mitigation incorporated. The Project is of a limited scale, and, taken in sum with other projects in the area, would not produce cumulatively considerable impacts to the environment or human beings. Therefore, cumulative impacts of the proposed Project would be less than significant.

c) Less Than Significant with Mitigation Incorporated

The proposed Project may expose the community, including sensitive receptors, to noise from Project construction and operation. **Mitigation Measure NOI-1** would ensure that construction noise is reduced using BMPs and **Mitigation Measure NOI-2** would require the use of noise barriers to reduce the noise level at sensitive receptors to the maximum

extent possible. Noise resulting from proposed Project operation would be minimal, as monitoring wells would not produce operational noise and maintenance visits to wells would generate noise consistent with existing ambient nose. With these mitigation measures in place, the proposed Project would have a less than significant impact on human beings as a result of noise.

Although all existing applicable regulations would be followed by the Project, during construction, there is generally the potential for hazardous materials associated with typical construction activities to be released. **Mitigation Measure HAZ-1** would minimize the risk of hazardous material exposure through material use and accidents by requiring EMWD and its construction contractor to develop a Hazardous Materials Management and Spill Prevention and Control Plan to ensure project-specific contingencies are in place.

Construction and operation of the proposed Project may require temporary closures of traffic lanes and rerouting of bicycle and pedestrian traffic. These closures could impact humans if these they reduce pedestrian, bicycle, or vehicle safety, or if they impede emergency access for emergency responders. With the implementation of **Mitigation Measure TRA-1**, which requires a traffic control plan and coordination with emergency services to address such impacts, transportation and related safety impacts would be less than significant.

The impacts of the proposed Project have been analyzed in accordance with the CEQA Guidelines; each topic has been found to have either no impact, a less than significant impact, or a less than significant impact with mitigation incorporated. Therefore, with the implementation of the mitigation measures noted above, the proposed Project would not result in any environmental effects that would cause substantial adverse effects on human beings either directly or indirectly.

Mitigation Measures: See **Mitigation Measures CUL-1, CUL-2, GEO-1, HAZ-1, NOI-1**, **NOI-2,** and **TRA-1**.

4. FEDERAL CROSS-CUTTING ENVIRONMENTAL REGULATION EVALUATION

Should the proposed Project apply for funding from a federal program (U.S. Bureau of Reclamation) or a partially funded federal program (SWRCB's Clean Water State Revolving Fund [CWSRF] and Drinking Water State Revolving Fund [DWSRF]), federal environmental review requirements must be met. Although CEQA was modeled after NEPA, where there are differences between the State's process under CEQA and the applicable federal statutes and regulations, the federal statutes and regulations must be followed for a federal entity to fulfill its NEPA review requirements before releasing federal funds. Compliance is set out in the U.S. Code of Federal Regulations (CFR) at 40 CFR § 35.3575 (Application of Federal Cross-Cutting Authorities) and 7 CFR § 1970 (Environmental Policies and Procedures).

This section describes the proposed Project's status of compliance with the federal cross-cutting regulations (also referred to as CEQA-Plus) and the consultation that has or will occur. These policies and procedures are based on the SWRCB's Appendix I: State Environmental Review Process[2], which addresses the U.S. EPA review requirements that build upon the State environmental review requirements under CEQA.

4.1 Federal Endangered Species Act

The Federal ESA establishes a program for the conservation of threatened and endangered plants and animals and the habitats in which they depend. Section 7 (16 United States Code [U.S.C.] § 1531 *et seq.*) requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of designated critical habitat. If a project could result in an incidental (unintentional but not unexpected) take of a threatened or endangered (listed) species, federal agencies must undergo consultation with USFWS and/or National Oceanic and Atmospheric Administration's National Marine Fisheries Service, to obtain a Biological Opinion (BO). If the federal agency finds that the project is not likely to adversely affect listed species, the federal agency can consult informally, and if USFWS and National Marine Fisheries Service agree with that finding, a concurrence letter can be issued. If the BO finds that the project could jeopardize the existence or habitat of a listed species ("jeopardy" opinion), the agency cannot authorize the project until it is modified to obtain a "nonjeopardy" opinion.

As described in *Section 3.4 Biological Resources*, the proposed Project sites do not contain suitable habitat for any special status plant and most special status wildlife species.

[2] https://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/policy0513/appendix_i_envguide.pdf

No sensitive plant communities as defined by the CNDDB or local ordinances were present on the Project sites. The Project sites have all been heavily disturbed and consist of either no vegetation, development, or exotic upland species which are not conducive to supporting riparian/riverine habitat. It was determined that sensitive plant species are not expected to occur on the Project sites since sensitive plant species typically have very specific habitat requirements which the proposed Project area does not support.

Of the 35 special status wildlife species known or have the potential to occur within five miles of the Project site, only two of these species (BUOW and California horned lark) were determined to have a low potential to occur within the proposed Project area. While undeveloped areas at the Project sites contain marginally suitable habitat for these two species, there is a low potential of occurrence because the habitat is low quality and the site's location is within a heavily travelled urban transportation corridor and high levels of existing disturbances that would likely deter animals from long-term use. No horned larks, BUOW or signs of either species (i.e. pellets or whitewash) were observed during the field survey. Existing disturbance in the proposed Project area limits the potential for these species to occur in the proposed Project area. Therefore, the Project is not expected to result in direct or indirect impacts to special status plant or wildlife species or jeopardize any listed species and EMWD would be in compliance with the Federal ESA.

4.2 National Historic Preservation Act

The NHPA (16 U.S.C. § 470) establishes a program to protect, preserve, rehabilitate, and restore significant historical, archaeological, and cultural resources. Section 106 requires federal agencies to take into account effects on historic properties and involves a step-by-step procedure described in detail in the implementing regulations (36 CFR Part 800).

As described in *Section 3.5 Cultural Resources*, a cultural resource assessment was conducted for the proposed Project area and is provided in **Appendix C**. The analysis includes a Section 106 evaluation for the proposed Project and can be submitted as part of the consultation process with the State Historic Preservation Officer (SHPO). Completion of the cultural resources report and concurrence by SHPO would ensure compliance with the NHPA.

A total of 88 cultural resources have been previously recorded within a one-half-mile radius of the Project. None of these previously recorded cultural resources are located within the proposed Project area of potential effect (APE). In addition, based on results of a search of the Sacred Lands File at the NAHC, Native American outreach, local historic group consultation, historical imagery review, and a field survey, no cultural resources were identified in the Project's APE. Further, construction of the proposed Project would disturb only a small area, reducing the potential of encountering unknown cultural resources. The lack of surface evidence however does not preclude subsurface existence of archaeological or cultural resources. With implementation of **Mitigation Measures CUL-1** and **CUL-2**, the proposed Project is expected to have a less than significant impact to historical and archaeological resources and no historic properties are affected under Section 106 of the NHPA.

4.3 Clean Air Act

The U.S. Congress adopted general conformity requirements as part of the CAA Amendments in 1990 and the US EPA implemented those requirements in 1993 (Sec. 176 of the CAA (42 U.S.C. § 7506) and 40 CFR Part 93, Subpart B). General Conformity requires that all federal actions "conform" with the State Implementation Plan as approved or promulgated by US EPA. The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine state or local efforts to achieve and maintain the national ambient air quality standards. Before a federal action is taken, it must be evaluated for conformity with the State Implementation Plan. All "reasonably foreseeable" emissions predicted to result from the action are taken into consideration. These include direct and indirect emissions and must be identified as to location and quantity. If it is found that the action would create emissions above de minimis threshold (minimum threshold for which a conformity determination must be performed) levels specified in US EPA regulations (40 CFR § 93.153(b)), or if the activity is considered "regionally significant" because its emissions exceed 10 percent of an area's total emissions, the action cannot proceed unless mitigation measures are specified that would bring the proposed project into conformity.

As described in *Section 3.3 Air Quality*, the proposed Project lies within the South Coast Air Basin, which is designated nonattainment for State 1-Hour Ozone, 8-Hour Ozone, PM_{10}-24 hour, PM_{10}-Annual, and $PM_{2.5}$-Annual requirements and the Federal 1-hour Ozone, 8-Hour Ozone, $PM_{2.5}$-24 hour, $PM_{2.5}$-Annual, and lead requirements (see **Table 3-1**). The results of the air quality modeling showed that pollutant emissions would not exceed South Coast Air Basin General Conformity de minimis thresholds (see **Table 3-8**). These general conformity thresholds are consistent with the US EPA's federal general conformity de minimis rate tables[3]. Therefore, the general conformity requirements do not apply to the proposed Project's emissions, it is exempt from a conformity determination, and the proposed Project would be in compliance with the CAA.

4.4 Coastal Zone Management Act

The Coastal Zone Management Act (16 U.S.C. § 1451 *et seq.*) is managed by National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management and designed to balance land and water issues in coastal zones. It also aims to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." Within California, the Coastal Zone Management Act is administered by the San Francisco Bay Conservation and Development Commission, the California Coastal Conservancy, and the California Coastal Commission.

[3] https://www.epa.gov/general-conformity/de-minimis-tables

As described in *Section 3.10 Hydrology and Water Quality*, the proposed Project site is located approximately 40 miles from the Pacific Ocean. Therefore, no portion of the proposed Project is within the coastal zone and the Coastal Zone Management Act does not apply.

4.5 Farmland Protection Policy Act

The Farmland Protection Policy Act (7 U.S.C. § 4201 *et seq.*) requires a federal agency to consider the effects of its actions and programs on the nation's farmlands. The Farmland Protection Policy Act is intended to minimize the impacts of federal programs with respect to the conversion of farmland to nonagricultural uses. It assures that, to the extent possible, federal programs are administered to be compatible with state, local, and private programs and policies to protect farmland.

As described in *Section 3.2 Agriculture and Forestry Resources*, none of the proposed Project sites or pipeline alignments are classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. MW-7 is located on a parcel designated as Farmland of Local Importance, but the well would be located at a property which is currently occupied by EMWD facilities and not used for agriculture. The proposed Project would not convert any farmland to non-agricultural use. Therefore, the proposed Project would have no impact on the Farmland Protection Policy Act.

4.6 Executive Order 11988 – Floodplain Management, as amended by Executive Orders 12148 and 13690

Executive Order 11988 requires federal agencies to recognize the values of floodplains and to consider the public benefits from restoring and preserving floodplains.

As described under *Section 3.10 Hydrology and Water Quality* and shown in **Figure 3-3**, one well is located in the 100-year floodplain (MW-1) and two wells are located in the 500-year floodplain (MW-2 and MW-9). Drainage in the City of Moreno Valley (including the Sunnymead Channel and Kitching Channel) and City of Perris (Perris Valley Storm Drain) are sized to contain the 100-year flood. Proposed Project well sites would be underground, and the area of temporary disturbance would be restored to its almost original condition and entirely unoccupied other than occasional short term visits by EMWD maintenance staff. As a result, the proposed Project facilities would not impede or redirect flood flows. The proposed Project would not alter drainage patterns of the sites or proposed Project area, cause substantial erosion, substantially increase surface runoff, generate runoff in excess of the existing storm drainage systems, or be a source of polluted runoff. Therefore, the proposed Project would have a less than significant impact and be in compliance with Executive Order 11988.

4.7 Federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Executive Order 13168

The Migratory Bird Treaty Act (16 U.S.C. § 703-712) and the Bald and Golden Eagle Protection Act (16 U.S.C. § 668-668c) prohibit the take of migratory birds (or any part,

nest, or eggs of any such bird) and the take and commerce of eagles. Executive Order 13168 requires that any project with federal involvement address impacts of federal actions on migratory birds.

As described in *Section 3.4 Biological Resources*, nesting habitat within the proposed Project sites is considered low quality due to existing disturbances and proximity to heavily travelled roadways. No nests or birds exhibiting nesting behaviors were observed during the field survey performed as part of the Biological Resources Assessment. Existing conditions at the proposed Project sites are unlikely to result in nesting or migratory bird species that would be disturbed by proposed Project activities. Therefore, EMWD would be in compliance with the Federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Executive Order 13168.

4.8 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act as amended (16 U.S.C. § 661 *et seq.*) is intended to promote conservation of fish and wildlife resources by preventing their loss or damage, and to provide for development and improvement of fish and wildlife resources in connection with water projects. Federal agencies undertaking water projects are required to fully consider recommendations made by USFWS, National Marine Fisheries Service, and State wildlife agencies when any waterbody is impounded, diverted, controlled, or modified for any purpose. Compliance with Fish and Wildlife Coordination Act is to be coordinated with Federal ESA consultation.

The proposed Project would not impound, divert or control surface water source. Operation of the project involves groundwater quality monitoring and would not modify the groundwater source. Currently, the groundwater contains COCs including PCE (VOCs), nitrate, perchlorate, TDS, fluoride, and manganese (co-mingled VOC-Nitrate Plume). EMWD has been managing groundwater quantity and quality via the Annual West San Jacinto Groundwater Management Plan since 1995. The proposed Project would not substantially decrease groundwater supplies or interfere with groundwater recharge such that there would be an adverse effect on fish and wildlife resources. The proposed Project would not conflict with the Fish and Wildlife Coordination Act.

4.9 Executive Order 11990 – Protection of Wetlands

Under Executive Order 11990, federal agencies must avoid affecting wetlands unless it is determined that no practicable alternative is available. The Executive Order directs federal agencies to provide leadership and act to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in implementing civil works.

As described in *Section 3.4 Biological Resources*, no waters or wetlands potentially subject to the jurisdiction of the United States Army Corps of Engineers, RWQCB, or CDFW are located within the Project. Therefore, there would be no impacts to wetlands and the EMWD would be in compliance with Executive Order 11990.

4.10 Executive Order 13112 – Invasive Species

Under Executive Order 13112, federal agencies must prevent and control introductions of invasive non-native species in a cost-effective and environmentally conscious manner to minimize their economic, ecological, and human health impacts. As directed by this Executive Order, a national invasive species management plan guides federal actions to minimize invasive species and their impacts. To support implementation of this plan, the U.S. Army Corps of Engineers released a memorandum describing the USACE Invasive Species Policy[4]. As part of this policy, all civil works projects are required to address invasive species and potential impacts the project may have.

As described in *Section 3.4 Biological Resources*, non-native plant species were observed in the proposed Project area during the field survey conducted for the Biological Resources Assessment. Measures to control spread of invasive species during construction will be implemented, such as using excavated soil onsite as fill to the extent possible and cleaning construction vehicle track-out on unpaved roads. In areas where revegetation is required, use of native species will be required, per the SWPPP, to ensure that introduction of invasive species does not occur. EMWD would therefore be in compliance with Executive Order 13112.

4.11 Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act (6 U.S.C. § 1271 *et seq*.) was passed to preserve and protect designated rivers for their natural, cultural, and recreational value.

There are no designated Wild and Scenic Rivers within the proposed Project area, nor will any designated rivers be adversely affected by the proposed Project. As a result, the proposed Project would not result in any impacts related to the Wild and Scenic Rivers Act.

4.12 Safe Drinking Water Act, Sole Source Aquifer Program

Section 1424(e) of the Safe Drinking Water Act (42 U.S.C. § 300f *et seq*.) established the US EPA's Sole Source Aquifer Program. This program protects communities from groundwater contamination from federally funded projects.

Within US EPA's Region 9, which includes California, there are nine sole source aquifers. None of these sole source aquifers are located within the proposed Project area (USEPA 2019). Therefore, the Sole Source Aquifer Program does not apply to the proposed Project and the proposed Project would be in compliance with Section 1424(e) of the Safe Drinking Water Act.

[4] https://www.nae.usace.army.mil/Portals/74/docs/regulatory/InvasiveSpecies/policy.pdf

4.13 Executive Order 13195 – Trails for America in the 21st Century

The Executive Order 13195 requires federal agencies to protect, connect, promote, and assist trails of all types throughout the Unites States.

According to *Section 3.15 Public Services*, there are no trails within the proposed Project sites or that will be temporarily or permanently impacted by the proposed Project. As a result, no adverse effects on trials would occur and the proposed Project would be in compliance with Executive Order 13195.

4.14 Executive Order 13007 – Indian Sacred Sites

Sacred Sites are defined in Executive Order 13007 as "any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

As discussed in *Section 3.18 Tribal Cultural Resources*, a search of the Sacred Lands File at the NAHC was performed as part of the Project's Cultural Resources Assessment Report and returned negative results. EMWD also conducted consultation with local Native American groups and local historical societies to obtain additional information and performed an intensive pedestrian survey within the Project's APE. Based on the results of these efforts, no Indian sacred sites were identified in the Project's APE that would be impacted or adversely affected by the Project. Although the proposed Project would only disturb a limited area that had previously been disturbed, there remains a possibility that previously unknown cultural resources could be encountered during construction. Implementation of **Mitigation Measures CUL-1** and **CUL-2** would require appropriate treatment of any inadvertently discovered artifacts or human remains. With the implementation of these mitigation measures the proposed Project would have a less than significant impact to tribal cultural resources and EMWD would be in compliance with Executive Order 13007.

4.15 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act as amended (16 U.S.C. § 1801 *et seq*.) is the primary act governing federal management of fisheries in federal waters, from the 3-nautical-mile state territorial sea limit to the outer limit of the U.S. Exclusive Economic Zone. It establishes exclusive U.S. management authority over all fishing within the Exclusive Economic Zone, all anadromous fish throughout their migratory range except when in a foreign nation's waters, and all fish on the continental shelf. The Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. The act also requires federal agencies to consult with the NMFS on actions that could damage Essential Fish Habitat, as defined in the 1996 Sustainable

Fisheries Act (Public Law 104-297). Essential Fish Habitat includes those habitats that support the different life stages of each managed species. A single species may use different habitats that consist of both the water column and underlying surface (e.g. streambed) throughout its life to support breeding, spawning, nursery, feeding, and protection functions.

As described in *Section 3.4 Biological Resources* the proposed Project would not be located in or impact any U.S. federal waters regulated under the Magnuson-Stevens Act. Therefore, the proposed Project would have no impact on resident or migratory fish or fish habitat in the proposed Project area and the EMWD would be in compliance with the Magnuson-Stevens Act.

4.16 Environmental Justice

This section describes the existing socioeconomic resources in the proposed Project area and the regulatory setting pertaining to environmental justice-related issues. This section also evaluates the potential for the proposed Project to disproportionately affect minority or low-income groups. The USEPA defines environmental justice as:

> "The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means no group of people, including racial, ethnic, or economic groups should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies (USEPA 2016)".

According to US EPA guidelines, a minority population is present in a study area if the minority population of the affected area exceeds 50 percent or if the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

The proposed Project sites would be located within the cities of Moreno Valley and Perris in west Riverside County. According to the US EPA's Environmental Screening and Mapping Tool (EJScreen), as shown in **Figure 4-1**, all of the Project well sites are within or immediately adjacent to the 80-90 percentile, 90-95 percentile, or 95-100 percentile minority population. Therefore, the proposed Project area is composed of a minority population exceeding 50 percent.

US EPA guidelines recommend that analyses of low-income communities consider the U.S. Census Bureau's poverty level definitions, as well as applicable State and regional definitions of low-income and poverty communities.

DWR defines a Disadvantaged Community (DAC) as a community with a median household income (MHI) less than 80 percent of the California MHI and a Severely Disadvantaged Community (SDAC) as a community with an MHI less than 60 percent of the California MHI. To identify the location of DAC and SDAC communities for its mapping

tool, DWR (DWR n.d.), relies on 2012-2016 American Community Survey data, which defines the Statewide MHI was $63,783. A DAC would therefore be a community with an MHI of $51,026 or less and an SDAC would be a community with an MHI of $38,270 or less. According to the DWR Mapping Tool as shown in **Figure 4-2**, two wells are located within DACs (MW-1, MW-4), two wells are located within SDACs (MW-2, MW-5), one well is located on the corner of DAC, SDAC, and non-DAC area (MW-3), and five wells are located within non-DAC areas (MW-6, MW-7, MW-8, MW-9, and MW-10).

Figure 4-1: USEPA EJScreen Map of Minority Population

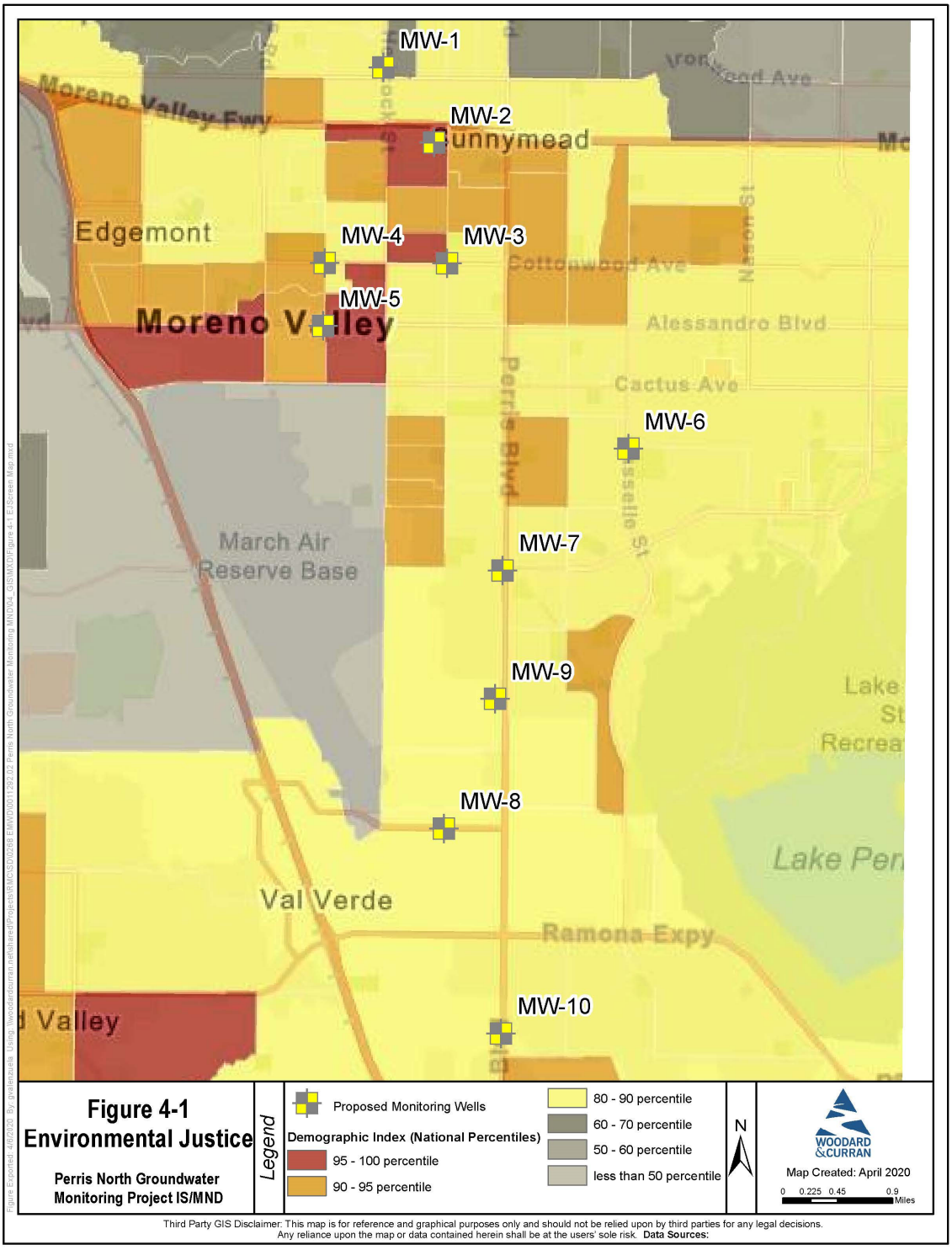
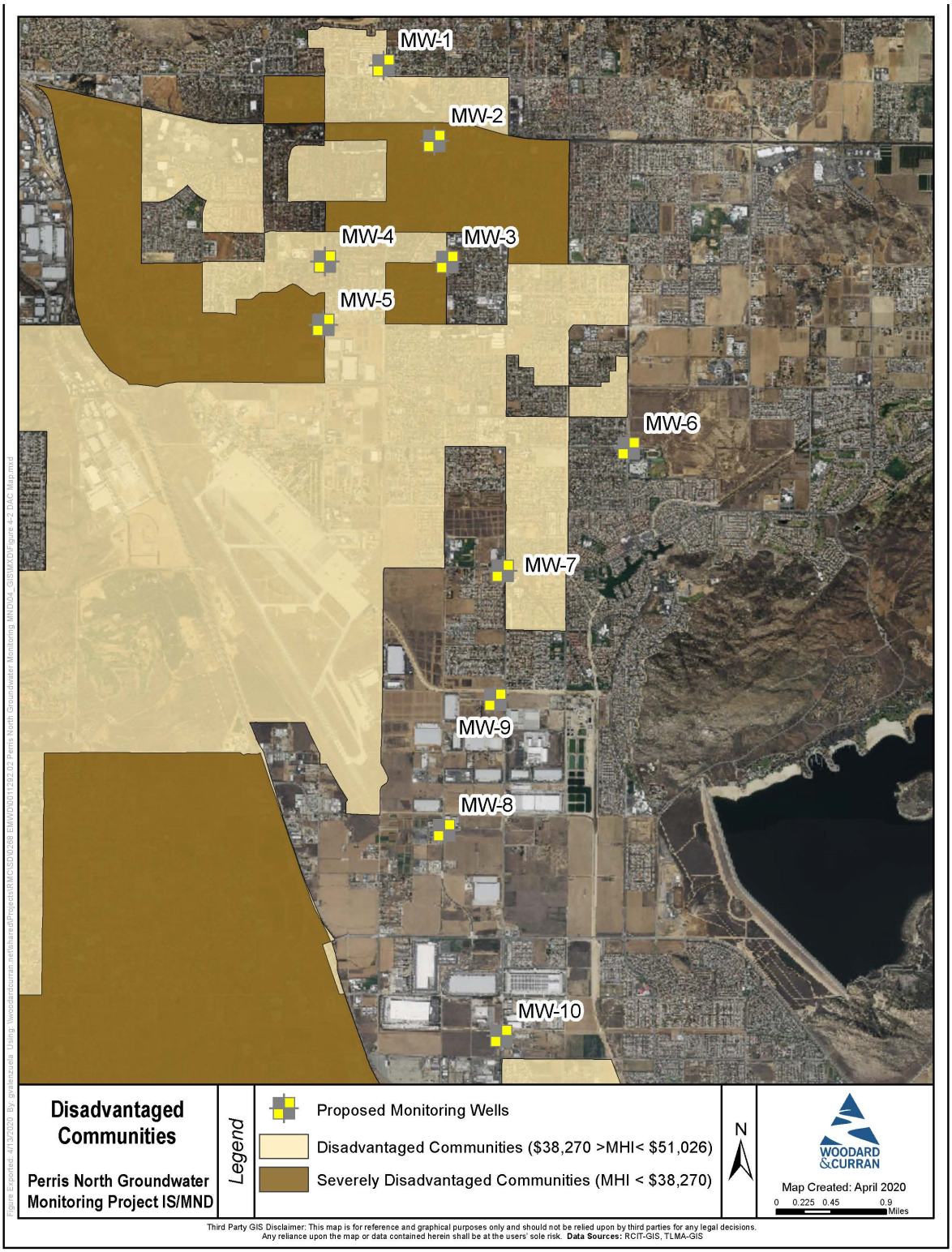


Figure 4-2: DWR DAC Mapping Tool



Impact Analysis

For the purposes of this analysis, an environmental justice impact would be significant if the proposed Project would directly, indirectly, or cumulatively cause disproportionately high and adverse impacts to minority or low-income populations.

The proposed Project would construct groundwater monitoring wells to improve EMWD's understanding of the level and extent of groundwater contamination in the Perris North Sub-basin. Although construction of the proposed Project has the potential for short-term environmental impacts related to air quality, noise, hazards and hazardous materials, and transportation as described in this document, operation of the proposed Project would have the long-term benefit of providing EMWD with data to make more informed management decisions related to the Perris North Sub-basin. While construction would generate impacts (e.g. air pollutants, hazardous materials, traffic), such activities would be intermittent and temporary and would cease upon completion of work activities. Once the proposed Project is completed, the monitoring wells would be underground and the area of temporary disturbance would be restored to its almost original condition, thus having no long-term impact on scenic vistas. Therefore, with the consideration of the benefits provided to these communities through implementation of the proposed Project and with the identified mitigation measures, the proposed Project would not result in any disproportionately high and adverse impacts on minority or low-income communities. Thus, no adverse environmental justice impacts would occur.

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APPENDIX A: CALEEMOD RESULTS

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Perris North Monitoring Wells - Annual W RegCom

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	10.00	1000sqft	0.23	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Perris North Monitoring Wells - Annual W RegCom - South Coast Air Basin, Annual

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - 'Each well site will have a MAX disturbance of 100x100 ft. during construction. Well infrastructure is likely to be much smaller (likely 100 square foot footprint or less)

Construction Phase - Site Prep/Construction is 5 days a week, drilling is 7 days a week.

Off-road Equipment - Based on engineering inputs and project description

Off-road Equipment - Based on engineering estimates

Trips and VMT - Based on egineering estimates

Vehicle Trips - based on engineering estimates and projectg experience

Road Dust - BMP

Area Coating - No painting needed, not applicable to this model run

Energy Use -

Construction Off-road Equipment Mitigation - Based on BMPs

Off-road Equipment - Based on engineering inputs and project description

Grading - Based on engineering inputs

Perris North Monitoring Wells - Annual W RegCom - South Coast Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	600	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	138.00
tblConstructionPhase	NumDays	1.00	100.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblGrading	MaterialExported	0.00	1,408.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	18.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblTripsAndVMT	HaulingTripNumber	176.00	88.00
tblTripsAndVMT	WorkerTripNumber	28.00	25.00
tblTripsAndVMT	WorkerTripNumber	30.00	75.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CW_TL	16.60	21.26
tblVehicleTrips	CW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	0.10

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	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
Year	tons/yr										MT/yr					
2022	0.1422	1.1925	1.1114	2.8500e-003	0.0503	0.0504	0.1006	0.0105	0.0481	0.0586	0.0000	247.6564	247.6564	0.0548	0.0000	249.0274
Maximum	**0.1422**	**1.1925**	**1.1114**	**2.8500e-003**	**0.0503**	**0.0504**	**0.1006**	**0.0105**	**0.0481**	**0.0586**	**0.0000**	**247.6564**	**247.6564**	**0.0548**	**0.0000**	**249.0274**

Mitigated Construction

	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
Year	tons/yr										MT/yr					
2022	0.1422	1.1925	1.1114	2.8500e-003	0.0332	0.0504	0.0836	7.5000e-003	0.0481	0.0556	0.0000	247.6561	247.6561	0.0548	0.0000	249.0271
Maximum	**0.1422**	**1.1925**	**1.1114**	**2.8500e-003**	**0.0332**	**0.0504**	**0.0836**	**7.5000e-003**	**0.0481**	**0.0556**	**0.0000**	**247.6561**	**247.6561**	**0.0548**	**0.0000**	**249.0271**

	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	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**33.96**	**0.00**	**16.96**	**28.23**	**0.00**	**5.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Perris North Monitoring Wells - Annual W RegCom - South Coast Air Basin, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-9-2022	8-8-2022	0.1347	0.1347
		Highest	0.1347	0.1347

2.2 Overall Operational

Unmitigated Operational

	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	tons/yr										MT/yr					
Area	6.6000e-004	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Energy	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
Mobile	3.0000e-004	1.5100e-003	5.4600e-003	2.0000e-005	2.1000e-003	2.0000e-005	2.1200e-003	5.6000e-004	2.0000e-005	5.8000e-004	0.0000	2.1390	2.1390	9.0000e-005	0.0000	2.1412
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.6000e-004**	**1.5100e-003**	**5.5900e-003**	**2.0000e-005**	**2.1000e-003**	**2.0000e-005**	**2.1200e-003**	**5.6000e-004**	**2.0000e-005**	**5.8000e-004**	**0.0000**	**2.1392**	**2.1392**	**9.0000e-005**	**0.0000**	**2.1415**

2.2 Overall Operational

Mitigated Operational

	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	tons/yr										MT/yr					
Area	6.6000e-004	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Energy	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
Mobile	3.0000e-004	1.5100e-003	5.4600e-003	2.0000e-005	2.1000e-003	2.0000e-005	2.1200e-003	5.6000e-004	2.0000e-005	5.8000e-004	0.0000	2.1390	2.1390	9.0000e-005	0.0000	2.1412
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.6000e-004**	**1.5100e-003**	**5.5900e-003**	**2.0000e-005**	**2.1000e-003**	**2.0000e-005**	**2.1200e-003**	**5.6000e-004**	**2.0000e-005**	**5.8000e-004**	**0.0000**	**2.1392**	**2.1392**	**9.0000e-005**	**0.0000**	**2.1415**

	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	N20	CO2e
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 Prep and Construction	Site Preparation	1/10/2022	5/27/2022	5	100	
2	Drilling	Grading	1/10/2022	1/21/2022	7	138	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.23

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Drilling	Air Compressors	1	18.00	78	0.48
Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Drilling	Cranes	1	18.00	231	0.29
Drilling	Generator Sets	1	18.00	84	0.74
Drilling	Off-Highway Trucks	1	9.00	402	0.38
Drilling	Off-Highway Trucks	1	6.00	402	0.38
Drilling	Off-Highway Trucks	2	6.00	402	0.38
Drilling	Tractors/Loaders/Backhoes	1	18.00	97	0.37
Drilling	Welders	1	12.00	46	0.45
Site Prep and Construction	Air Compressors	1	6.00	78	0.48
Site Prep and Construction	Cement and Mortar Mixers	1	2.00	9	0.56
Site Prep and Construction	Generator Sets	1	6.00	84	0.74
Site Prep and Construction	Off-Highway Trucks	1	3.00	402	0.38
Site Prep and Construction	Off-Highway Trucks	1	2.00	402	0.38
Site Prep and Construction	Off-Highway Trucks	2	2.00	402	0.38
Site Prep and Construction	Pumps	1	6.00	84	0.74
Site Prep and Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Prep and Construction	Welders	1	4.00	46	0.45
Drilling	Concrete/Industrial Saws	1	8.00	81	0.73
Site Prep and Construction	Graders	1	8.00	187	0.41
Drilling	Rubber Tired Dozers	1	1.00	247	0.40

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
Drilling	12	75.00	0.00	88.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Prep and Construction	11	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Prep and Construction - 2022

Unmitigated Construction On-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	tons/yr										MT/yr					
Fugitive Dust					0.0265	0.0000	0.0265	2.8600e-003	0.0000	2.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1001	0.8842	0.7737	1.9100e-003		0.0372	0.0372		0.0356	0.0356	0.0000	165.0366	165.0366	0.0374	0.0000	165.9709
Total	**0.1001**	**0.8842**	**0.7737**	**1.9100e-003**	**0.0265**	**0.0372**	**0.0637**	**2.8600e-003**	**0.0356**	**0.0384**	**0.0000**	**165.0366**	**165.0366**	**0.0374**	**0.0000**	**165.9709**

3.2 Site Prep and Construction - 2022

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	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	4.8800e-003	3.4800e-003	0.0403	1.3000e-004	0.0137	1.0000e-004	0.0138	3.6400e-003	9.0000e-005	3.7300e-003	0.0000	11.5298	11.5298	2.9000e-004	0.0000	11.5371
Total	**4.8800e-003**	**3.4800e-003**	**0.0403**	**1.3000e-004**	**0.0137**	**1.0000e-004**	**0.0138**	**3.6400e-003**	**9.0000e-005**	**3.7300e-003**	**0.0000**	**11.5298**	**11.5298**	**2.9000e-004**	**0.0000**	**11.5371**

Mitigated Construction On-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	tons/yr										MT/yr					
Fugitive Dust					0.0119	0.0000	0.0119	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1001	0.8842	0.7737	1.9100e-003		0.0372	0.0372		0.0356	0.0356	0.0000	165.0364	165.0364	0.0374	0.0000	165.9707
Total	**0.1001**	**0.8842**	**0.7737**	**1.9100e-003**	**0.0119**	**0.0372**	**0.0491**	**1.2900e-003**	**0.0356**	**0.0369**	**0.0000**	**165.0364**	**165.0364**	**0.0374**	**0.0000**	**165.9707**

3.2 Site Prep and Construction - 2022

Mitigated 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	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	4.8800e-003	3.4800e-003	0.0403	1.3000e-004	0.0137	1.0000e-004	0.0138	3.6400e-003	9.0000e-005	3.7300e-003	0.0000	11.5298	11.5298	2.9000e-004	0.0000	11.5371
Total	**4.8800e-003**	**3.4800e-003**	**0.0403**	**1.3000e-004**	**0.0137**	**1.0000e-004**	**0.0138**	**3.6400e-003**	**9.0000e-005**	**3.7300e-003**	**0.0000**	**11.5298**	**11.5298**	**2.9000e-004**	**0.0000**	**11.5371**

3.3 Drilling - 2022

Unmitigated Construction On-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	tons/yr										MT/yr					
Fugitive Dust					4.5200e-003	0.0000	4.5200e-003	2.4800e-003	0.0000	2.4800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0354	0.3026	0.2827	7.7000e-004		0.0131	0.0131		0.0124	0.0124	0.0000	66.6555	66.6555	0.0171	0.0000	67.0818
Total	**0.0354**	**0.3026**	**0.2827**	**7.7000e-004**	**4.5200e-003**	**0.0131**	**0.0176**	**2.4800e-003**	**0.0124**	**0.0149**	**0.0000**	**66.6555**	**66.6555**	**0.0171**	**0.0000**	**67.0818**

3.3 Drilling - 2022

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	tons/yr										MT/yr					
Hauling	3.0000e-005	9.5000e-004	2.2000e-004	0.0000	5.9000e-004	0.0000	5.9000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.2837	0.2837	2.0000e-005	0.0000	0.2842
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	1.7600e-003	1.2500e-003	0.0145	5.0000e-005	4.9400e-003	4.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	4.1507	4.1507	1.0000e-004	0.0000	4.1534
Total	**1.7900e-003**	**2.2000e-003**	**0.0147**	**5.0000e-005**	**5.5300e-003**	**4.0000e-005**	**5.5600e-003**	**1.4600e-003**	**3.0000e-005**	**1.4900e-003**	**0.0000**	**4.4344**	**4.4344**	**1.2000e-004**	**0.0000**	**4.4376**

Mitigated Construction On-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	tons/yr										MT/yr					
Fugitive Dust					2.0400e-003	0.0000	2.0400e-003	1.1200e-003	0.0000	1.1200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0354	0.3026	0.2827	7.7000e-004		0.0131	0.0131		0.0124	0.0124	0.0000	66.6554	66.6554	0.0171	0.0000	67.0817
Total	**0.0354**	**0.3026**	**0.2827**	**7.7000e-004**	**2.0400e-003**	**0.0131**	**0.0151**	**1.1200e-003**	**0.0124**	**0.0135**	**0.0000**	**66.6554**	**66.6554**	**0.0171**	**0.0000**	**67.0817**

3.3 Drilling - 2022

Mitigated 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	tons/yr										MT/yr					
Hauling	3.0000e-005	9.5000e-004	2.2000e-004	0.0000	5.9000e-004	0.0000	5.9000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.2837	0.2837	2.0000e-005	0.0000	0.2842
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	1.7600e-003	1.2500e-003	0.0145	5.0000e-005	4.9400e-003	4.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	4.1507	4.1507	1.0000e-004	0.0000	4.1534
Total	**1.7900e-003**	**2.2000e-003**	**0.0147**	**5.0000e-005**	**5.5300e-003**	**4.0000e-005**	**5.5600e-003**	**1.4600e-003**	**3.0000e-005**	**1.4900e-003**	**0.0000**	**4.4344**	**4.4344**	**1.2000e-004**	**0.0000**	**4.4376**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	tons/yr										MT/yr					
Mitigated	3.0000e-004	1.5100e-003	5.4600e-003	2.0000e-005	2.1000e-003	2.0000e-005	2.1200e-003	5.6000e-004	2.0000e-005	5.8000e-004	0.0000	2.1390	2.1390	9.0000e-005	0.0000	2.1412
Unmitigated	3.0000e-004	1.5100e-003	5.4600e-003	2.0000e-005	2.1000e-003	2.0000e-005	2.1200e-003	5.6000e-004	2.0000e-005	5.8000e-004	0.0000	2.1390	2.1390	9.0000e-005	0.0000	2.1412

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	1.00	0.00	0.00	5,528	5,528
Total	1.00	0.00	0.00	5,528	5,528

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
Other Asphalt Surfaces	21.26	0.00	0.00	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.552712	0.042774	0.202769	0.116939	0.015078	0.005847	0.021692	0.031910	0.002110	0.001769	0.004822	0.000710	0.000869

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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	tons/yr										MT/yr					
Other Asphalt Surfaces	0	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
Total		**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**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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	tons/yr										MT/yr					
Other Asphalt Surfaces	0	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
Total		**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**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	tons/yr										MT/yr					
Mitigated	6.6000e-004	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Unmitigated	6.6000e-004	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Total	**6.6000e-004**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.6000e-004**

Mitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Total	**6.6000e-004**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.6000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Perris North Annual Construction and Operational - WO RegCom

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	10.00	1000sqft	0.23	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - 'Each well site will have a MAX disturbance of 100x100 ft. during construction. Well infrastructure is likely to be much smaller (likely 100 square foot footprint or less)

Construction Phase - Site Prep is 5 days a week, drilling is 7 days a week.

Off-road Equipment - Based on engineering inputs and project description

Off-road Equipment - Based on engineering estimates

Off-road Equipment - Based on engineer input and project description

Trips and VMT - Based on egineering estimates

Vehicle Trips - based on engineering estimates and projectg experience

Road Dust - BMP

Area Coating - No painting needed, not applicable to this model run

Energy Use -

Construction Off-road Equipment Mitigation - Based on BMPs

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	600	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	14.00
tblConstructionPhase	NumDays	1.00	10.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	18.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblTripsAndVMT	WorkerTripNumber	28.00	25.00
tblTripsAndVMT	WorkerTripNumber	30.00	75.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	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
Year	tons/yr										MT/yr					
2022	0.0486	0.3989	0.3875	1.0500e-003	0.0130	0.0172	0.0302	4.7500e-003	0.0163	0.0211	0.0000	91.4356	91.4356	0.0219	0.0000	91.9831
Maximum	**0.0486**	**0.3989**	**0.3875**	**1.0500e-003**	**0.0130**	**0.0172**	**0.0302**	**4.7500e-003**	**0.0163**	**0.0211**	**0.0000**	**91.4356**	**91.4356**	**0.0219**	**0.0000**	**91.9831**

Mitigated Construction

	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
Year	tons/yr										MT/yr					
2022	0.0486	0.3989	0.3875	1.0500e-003	0.0130	0.0172	0.0302	4.7500e-003	0.0163	0.0211	0.0000	91.4355	91.4355	0.0219	0.0000	91.9830
Maximum	**0.0486**	**0.3989**	**0.3875**	**1.0500e-003**	**0.0130**	**0.0172**	**0.0302**	**4.7500e-003**	**0.0163**	**0.0211**	**0.0000**	**91.4355**	**91.4355**	**0.0219**	**0.0000**	**91.9830**

	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	N20	CO2e
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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-9-2022	8-8-2022	0.4332	0.4332
		Highest	0.4332	0.4332

2.2 Overall Operational

Unmitigated Operational

	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	tons/yr										MT/yr					
Area	6.6000e-004	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Energy	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
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.6000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.6000e-004**

2.2 Overall Operational

Mitigated Operational

	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	tons/yr										MT/yr					
Area	6.6000e-004	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Energy	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
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.6000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.6000e-004**

	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	N20	CO2e
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 Prep	Site Preparation	5/16/2022	5/20/2022	5	10	
2	Drilling	Grading	5/16/2022	5/29/2022	7	14	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.23

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Drilling	Air Compressors	1	18.00	78	0.48
Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Drilling	Cranes	1	18.00	231	0.29
Drilling	Generator Sets	1	18.00	84	0.74
Drilling	Off-Highway Trucks	1	9.00	402	0.38
Drilling	Off-Highway Trucks	1	6.00	402	0.38
Drilling	Off-Highway Trucks	2	6.00	402	0.38
Drilling	Tractors/Loaders/Backhoes	1	18.00	97	0.37
Drilling	Welders	1	12.00	46	0.45
Site Prep	Air Compressors	1	6.00	78	0.48
Site Prep	Cement and Mortar Mixers	1	2.00	9	0.56
Site Prep	Generator Sets	1	6.00	84	0.74
Site Prep	Off-Highway Trucks	1	3.00	402	0.38
Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Site Prep	Off-Highway Trucks	2	2.00	402	0.38
Site Prep	Pumps	1	6.00	84	0.74
Site Prep	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Prep	Welders	1	4.00	46	0.45
Drilling	Concrete/Industrial Saws	1	8.00	81	0.73
Site Prep	Graders	1	8.00	187	0.41
Drilling	Rubber Tired Dozers	1	1.00	247	0.40

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
Drilling	12	75.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Prep	11	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Prep - 2022

Unmitigated Construction On-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	tons/yr										MT/yr					
Fugitive Dust					1.3300e-003	0.0000	1.3300e-003	1.4000e-004	0.0000	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0100e-003	0.0442	0.0387	1.0000e-004		1.8600e-003	1.8600e-003		1.7800e-003	1.7800e-003	0.0000	8.2518	8.2518	1.8700e-003	0.0000	8.2986
Total	**5.0100e-003**	**0.0442**	**0.0387**	**1.0000e-004**	**1.3300e-003**	**1.8600e-003**	**3.1900e-003**	**1.4000e-004**	**1.7800e-003**	**1.9200e-003**	**0.0000**	**8.2518**	**8.2518**	**1.8700e-003**	**0.0000**	**8.2986**

3.2 Site Prep - 2022

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	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	2.4000e-004	1.7000e-004	2.0100e-003	1.0000e-005	6.9000e-004	1.0000e-005	6.9000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5765	0.5765	1.0000e-005	0.0000	0.5769
Total	**2.4000e-004**	**1.7000e-004**	**2.0100e-003**	**1.0000e-005**	**6.9000e-004**	**1.0000e-005**	**6.9000e-004**	**1.8000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5765**	**0.5765**	**1.0000e-005**	**0.0000**	**0.5769**

Mitigated Construction On-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	tons/yr										MT/yr					
Fugitive Dust					1.3300e-003	0.0000	1.3300e-003	1.4000e-004	0.0000	1.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0100e-003	0.0442	0.0387	1.0000e-004		1.8600e-003	1.8600e-003		1.7800e-003	1.7800e-003	0.0000	8.2518	8.2518	1.8700e-003	0.0000	8.2985
Total	**5.0100e-003**	**0.0442**	**0.0387**	**1.0000e-004**	**1.3300e-003**	**1.8600e-003**	**3.1900e-003**	**1.4000e-004**	**1.7800e-003**	**1.9200e-003**	**0.0000**	**8.2518**	**8.2518**	**1.8700e-003**	**0.0000**	**8.2985**

3.2 Site Prep - 2022

Mitigated 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	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	2.4000e-004	1.7000e-004	2.0100e-003	1.0000e-005	6.9000e-004	1.0000e-005	6.9000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5765	0.5765	1.0000e-005	0.0000	0.5769
Total	**2.4000e-004**	**1.7000e-004**	**2.0100e-003**	**1.0000e-005**	**6.9000e-004**	**1.0000e-005**	**6.9000e-004**	**1.8000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5765**	**0.5765**	**1.0000e-005**	**0.0000**	**0.5769**

3.3 Drilling - 2022

Unmitigated Construction On-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	tons/yr										MT/yr					
Fugitive Dust					5.2700e-003	0.0000	5.2700e-003	2.9000e-003	0.0000	2.9000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0413	0.3531	0.3298	8.9000e-004		0.0153	0.0153		0.0145	0.0145	0.0000	77.7647	77.7647	0.0199	0.0000	78.2621
Total	**0.0413**	**0.3531**	**0.3298**	**8.9000e-004**	**5.2700e-003**	**0.0153**	**0.0205**	**2.9000e-003**	**0.0145**	**0.0174**	**0.0000**	**77.7647**	**77.7647**	**0.0199**	**0.0000**	**78.2621**

3.3 Drilling - 2022

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	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	2.0500e-003	1.4600e-003	0.0169	5.0000e-005	5.7600e-003	4.0000e-005	5.8000e-003	1.5300e-003	4.0000e-005	1.5700e-003	0.0000	4.8425	4.8425	1.2000e-004	0.0000	4.8456
Total	**2.0500e-003**	**1.4600e-003**	**0.0169**	**5.0000e-005**	**5.7600e-003**	**4.0000e-005**	**5.8000e-003**	**1.5300e-003**	**4.0000e-005**	**1.5700e-003**	**0.0000**	**4.8425**	**4.8425**	**1.2000e-004**	**0.0000**	**4.8456**

Mitigated Construction On-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	tons/yr										MT/yr					
Fugitive Dust					5.2700e-003	0.0000	5.2700e-003	2.9000e-003	0.0000	2.9000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0413	0.3531	0.3298	8.9000e-004		0.0153	0.0153		0.0145	0.0145	0.0000	77.7646	77.7646	0.0199	0.0000	78.2620
Total	**0.0413**	**0.3531**	**0.3298**	**8.9000e-004**	**5.2700e-003**	**0.0153**	**0.0205**	**2.9000e-003**	**0.0145**	**0.0174**	**0.0000**	**77.7646**	**77.7646**	**0.0199**	**0.0000**	**78.2620**

3.3 Drilling - 2022

Mitigated 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	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	2.0500e-003	1.4600e-003	0.0169	5.0000e-005	5.7600e-003	4.0000e-005	5.8000e-003	1.5300e-003	4.0000e-005	1.5700e-003	0.0000	4.8425	4.8425	1.2000e-004	0.0000	4.8456
Total	**2.0500e-003**	**1.4600e-003**	**0.0169**	**5.0000e-005**	**5.7600e-003**	**4.0000e-005**	**5.8000e-003**	**1.5300e-003**	**4.0000e-005**	**1.5700e-003**	**0.0000**	**4.8425**	**4.8425**	**1.2000e-004**	**0.0000**	**4.8456**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	tons/yr										MT/yr					
Mitigated	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
Unmitigated	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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.552712	0.042774	0.202769	0.116939	0.015078	0.005847	0.021692	0.031910	0.002110	0.001769	0.004822	0.000710	0.000869

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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	tons/yr										MT/yr					
Other Asphalt Surfaces	0	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
Total		**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**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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	tons/yr										MT/yr					
Other Asphalt Surfaces	0	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
Total		**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**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	tons/yr										MT/yr					
Mitigated	6.6000e-004	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Unmitigated	6.6000e-004	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Total	**6.6000e-004**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.6000e-004**

Mitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Total	**6.6000e-004**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.6000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Perris North Monitoring Wells - SitePrep-Construction and Drilling Daily Max - withOUT RegCom

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	10.00	1000sqft	0.23	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - 'Each well site will have a MAX disturbance of 100x100 ft. during construction. Well infrastructure is likely to be much smaller (likely 100 square foot footprint or less)

Construction Phase - Site Prep is 5 days a week, drilling is 7 days a week.

Off-road Equipment - Based on engineering inputs and project description

Off-road Equipment - Based on engineering estimates

Off-road Equipment - Based on engineer input and project description

Trips and VMT - Based on egineering estimates

Vehicle Trips - based on engineering estimates and projectg experience

Road Dust - BMP

Area Coating - No painting needed, not applicable to this model run

Energy Use -

Construction Off-road Equipment Mitigation - Based on BMPs

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	600	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	14.00
tblConstructionPhase	NumDays	1.00	10.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	18.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblTripsAndVMT	WorkerTripNumber	28.00	25.00
tblTripsAndVMT	WorkerTripNumber	30.00	75.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	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
Year	lb/day										lb/day					
2022	8.2937	68.3702	66.0655	0.1766	2.4008	2.9296	5.3304	0.7675	2.7885	3.5560	0.0000	16,951.5439	16,951.5439	3.9838	0.0000	17,051.1389
Maximum	**8.2937**	**68.3702**	**66.0655**	**0.1766**	**2.4008**	**2.9296**	**5.3304**	**0.7675**	**2.7885**	**3.5560**	**0.0000**	**16,951.5439**	**16,951.5439**	**3.9838**	**0.0000**	**17,051.1389**

Mitigated Construction

	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
Year	lb/day										lb/day					
2022	8.2937	68.3702	66.0655	0.1766	2.4008	2.9296	5.3304	0.7675	2.7885	3.5560	0.0000	16,951.5439	16,951.5439	3.9838	0.0000	17,051.1388
Maximum	**8.2937**	**68.3702**	**66.0655**	**0.1766**	**2.4008**	**2.9296**	**5.3304**	**0.7675**	**2.7885**	**3.5560**	**0.0000**	**16,951.5439**	**16,951.5439**	**3.9838**	**0.0000**	**17,051.1388**

	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	N20	CO2e
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**

2.2 Overall Operational

Unmitigated Operational

	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					
Area	3.6400e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Energy	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
Mobile	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
Total	**3.6400e-003**	**1.0000e-005**	**1.0200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**	**0.0000**	**2.3300e-003**

Mitigated Operational

	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					
Area	3.6400e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Energy	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
Mobile	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
Total	**3.6400e-003**	**1.0000e-005**	**1.0200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**	**0.0000**	**2.3300e-003**

	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	N20	CO2e
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 Prep	Site Preparation	5/16/2022	5/20/2022	5	10	
2	Drilling	Grading	5/16/2022	5/29/2022	7	14	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.23

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Drilling	Air Compressors	1	18.00	78	0.48
Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Drilling	Cranes	1	18.00	231	0.29
Drilling	Generator Sets	1	18.00	84	0.74
Drilling	Off-Highway Trucks	1	9.00	402	0.38
Drilling	Off-Highway Trucks	1	6.00	402	0.38
Drilling	Off-Highway Trucks	2	6.00	402	0.38
Drilling	Tractors/Loaders/Backhoes	1	18.00	97	0.37
Drilling	Welders	1	12.00	46	0.45
Site Prep	Air Compressors	1	6.00	78	0.48
Site Prep	Cement and Mortar Mixers	1	2.00	9	0.56
Site Prep	Generator Sets	1	6.00	84	0.74
Site Prep	Off-Highway Trucks	1	3.00	402	0.38
Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Site Prep	Off-Highway Trucks	2	2.00	402	0.38
Site Prep	Pumps	1	6.00	84	0.74
Site Prep	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Prep	Welders	1	4.00	46	0.45
Drilling	Concrete/Industrial Saws	1	8.00	81	0.73
Site Prep	Graders	1	8.00	187	0.41
Drilling	Rubber Tired Dozers	1	1.00	247	0.40

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
Drilling	12	75.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Prep	11	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Prep - 2022

Unmitigated Construction On-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					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	2.0020	17.6845	15.4732	0.0381		0.7432	0.7432		0.7113	0.7113		3,638.4345	3,638.4345	0.8239		3,659.0325
Total	**2.0020**	**17.6845**	**15.4732**	**0.0381**	**0.5303**	**0.7432**	**1.2734**	**0.0573**	**0.7113**	**0.7685**		**3,638.4345**	**3,638.4345**	**0.8239**		**3,659.0325**

3.2 Site Prep - 2022

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	0.0000	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
Worker	0.0982	0.0617	0.8680	2.6800e-003	0.2794	2.0100e-003	0.2815	0.0741	1.8500e-003	0.0760		266.8158	266.8158	6.7400e-003		266.9844
Total	**0.0982**	**0.0617**	**0.8680**	**2.6800e-003**	**0.2794**	**2.0100e-003**	**0.2815**	**0.0741**	**1.8500e-003**	**0.0760**		**266.8158**	**266.8158**	**6.7400e-003**		**266.9844**

Mitigated Construction On-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					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	2.0020	17.6845	15.4732	0.0381		0.7432	0.7432		0.7113	0.7113	0.0000	3,638.4344	3,638.4344	0.8239		3,659.0325
Total	**2.0020**	**17.6845**	**15.4732**	**0.0381**	**0.5303**	**0.7432**	**1.2734**	**0.0573**	**0.7113**	**0.7685**	**0.0000**	**3,638.4344**	**3,638.4344**	**0.8239**		**3,659.0325**

3.2 Site Prep - 2022

Mitigated 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	0.0000	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
Worker	0.0982	0.0617	0.8680	2.6800e-003	0.2794	2.0100e-003	0.2815	0.0741	1.8500e-003	0.0760		266.8158	266.8158	6.7400e-003		266.9844
Total	**0.0982**	**0.0617**	**0.8680**	**2.6800e-003**	**0.2794**	**2.0100e-003**	**0.2815**	**0.0741**	**1.8500e-003**	**0.0760**		**266.8158**	**266.8158**	**6.7400e-003**		**266.9844**

3.3 Drilling - 2022

Unmitigated Construction On-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					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	5.8990	50.4391	47.1201	0.1278		2.1784	2.1784		2.0698	2.0698		12,245.8463	12,245.8463	3.1329		12,324.1690
Total	**5.8990**	**50.4391**	**47.1201**	**0.1278**	**0.7528**	**2.1784**	**2.9311**	**0.4138**	**2.0698**	**2.4836**		**12,245.8463**	**12,245.8463**	**3.1329**		**12,324.1690**

3.3 Drilling - 2022

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	0.0000	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
Worker	0.2945	0.1850	2.6041	8.0300e-003	0.8383	6.0300e-003	0.8444	0.2223	5.5500e-003	0.2279		800.4474	800.4474	0.0202		800.9531
Total	**0.2945**	**0.1850**	**2.6041**	**8.0300e-003**	**0.8383**	**6.0300e-003**	**0.8444**	**0.2223**	**5.5500e-003**	**0.2279**		**800.4474**	**800.4474**	**0.0202**		**800.9531**

Mitigated Construction On-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					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	5.8990	50.4391	47.1201	0.1278		2.1784	2.1784		2.0698	2.0698	0.0000	12,245.8463	12,245.8463	3.1329		12,324.1690
Total	**5.8990**	**50.4391**	**47.1201**	**0.1278**	**0.7528**	**2.1784**	**2.9311**	**0.4138**	**2.0698**	**2.4836**	**0.0000**	**12,245.8463**	**12,245.8463**	**3.1329**		**12,324.1690**

3.3 Drilling - 2022

Mitigated 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	0.0000	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
Worker	0.2945	0.1850	2.6041	8.0300e-003	0.8383	6.0300e-003	0.8444	0.2223	5.5500e-003	0.2279		800.4474	800.4474	0.0202		800.9531
Total	**0.2945**	**0.1850**	**2.6041**	**8.0300e-003**	**0.8383**	**6.0300e-003**	**0.8444**	**0.2223**	**5.5500e-003**	**0.2279**		**800.4474**	**800.4474**	**0.0202**		**800.9531**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	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
Unmitigated	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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.552712	0.042774	0.202769	0.116939	0.015078	0.005847	0.021692	0.031910	0.002110	0.001769	0.004822	0.000710	0.000869

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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					
Other Asphalt Surfaces	0	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
Total		**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**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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					
Other Asphalt Surfaces	0	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
Total		**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**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	3.6400e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Unmitigated	3.6400e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Total	**3.6300e-003**	**1.0000e-005**	**1.0200e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**		**2.3300e-003**

Mitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Total	**3.6300e-003**	**1.0000e-005**	**1.0200e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**		**2.3300e-003**

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

Perris North Monitoring Wells - SitePrep-Construction and Drilling Daily Max - with standard Mitigat

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	10.00	1000sqft	0.23	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Perris North Monitoring Wells - SitePrep-Construction and Drilling Daily Max - with standard Mitigat - South Coast Air Basin, Summer

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - 'Each well site will have a MAX disturbance of 100x100 ft. during construction. Well infrastructure is likely to be much smaller (likely 100 square foot footprint or less)

Construction Phase - Site Prep is 5 days a week, drilling is 7 days a week.

Off-road Equipment - Based on engineering estimates

Trips and VMT - Based on egineering estimates

Vehicle Trips - based on engineering estimates and projectg experience

Road Dust - BMP

Energy Use -

Construction Off-road Equipment Mitigation - Based on BMPs

Off-road Equipment - Based on engineering inputs and project description

Off-road Equipment - Based on engineer input and project description

Area Coating - No painting needed, not applicable to this model run

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	600	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	14.00
tblConstructionPhase	NumDays	1.00	10.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	PhaseEndDate	5/10/2022	5/29/2022
tblConstructionPhase	PhaseStartDate	5/9/2022	5/16/2022
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Cranes

tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	18.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblTripsAndVMT	WorkerTripNumber	30.00	75.00
tblTripsAndVMT	WorkerTripNumber	28.00	25.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	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
Year	lb/day										lb/day					
2022	8.2961	68.3877	66.0776	0.1767	2.4008	2.9301	5.3309	0.7675	2.7890	3.5565	0.0000	16,957.8223	16,957.8223	3.9858	0.0000	17,057.4680
Maximum	**8.2961**	**68.3877**	**66.0776**	**0.1767**	**2.4008**	**2.9301**	**5.3309**	**0.7675**	**2.7890**	**3.5565**	**0.0000**	**16,957.8223**	**16,957.8223**	**3.9858**	**0.0000**	**17,057.4680**

Mitigated Construction

	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
Year	lb/day										lb/day					
2022	8.2961	68.3877	66.0776	0.1767	1.6951	2.9301	4.6253	0.5084	2.7890	3.2974	0.0000	16,957.8223	16,957.8223	3.9858	0.0000	17,057.4680
Maximum	**8.2961**	**68.3877**	**66.0776**	**0.1767**	**1.6951**	**2.9301**	**4.6253**	**0.5084**	**2.7890**	**3.2974**	**0.0000**	**16,957.8223**	**16,957.8223**	**3.9858**	**0.0000**	**17,057.4680**

	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	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**29.39**	**0.00**	**13.24**	**33.76**	**0.00**	**7.28**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	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					
Area	3.6400e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Energy	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
Mobile	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
Total	**3.6400e-003**	**1.0000e-005**	**1.0200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**	**0.0000**	**2.3300e-003**

Mitigated Operational

	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					
Area	3.6400e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Energy	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
Mobile	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
Total	**3.6400e-003**	**1.0000e-005**	**1.0200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**	**0.0000**	**2.3300e-003**

	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	N20	CO2e
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	Drilling	Grading	5/16/2022	5/29/2022	7	14	
2	Site Prep	Site Preparation	5/16/2022	5/20/2022	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.23

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Prep	Off-Highway Trucks	1	3.00	402	0.38
Drilling	Off-Highway Trucks	1	9.00	402	0.38
Drilling	Tractors/Loaders/Backhoes	1	18.00	97	0.37
Drilling	Off-Highway Trucks	1	6.00	402	0.38
Drilling	Welders	1	12.00	46	0.45
Drilling	Air Compressors	1	18.00	78	0.48
Drilling	Off-Highway Trucks	2	6.00	402	0.38
Drilling	Generator Sets	1	18.00	84	0.74
Drilling	Concrete/Industrial Saws	1	8.00	81	0.73
Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Drilling	Cranes	1	18.00	231	0.29
Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Site Prep	Welders	1	4.00	46	0.45
Site Prep	Air Compressors	1	6.00	78	0.48
Site Prep	Pumps	1	6.00	84	0.74
Site Prep	Off-Highway Trucks	2	2.00	402	0.38
Site Prep	Cement and Mortar Mixers	1	2.00	9	0.56
Site Prep	Generator Sets	1	6.00	84	0.74
Site Prep	Graders	1	8.00	187	0.41
Drilling	Rubber Tired Dozers	1	1.00	247	0.40

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
Drilling	12	75.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Prep	11	25.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Drilling - 2022

Unmitigated Construction On-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					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	5.8990	50.4391	47.1201	0.1278		2.1784	2.1784		2.0698	2.0698		12,245.8463	12,245.8463	3.1329		12,324.1690
Total	**5.8990**	**50.4391**	**47.1201**	**0.1278**	**0.7528**	**2.1784**	**2.9311**	**0.4138**	**2.0698**	**2.4836**		**12,245.8463**	**12,245.8463**	**3.1329**		**12,324.1690**

3.2 Drilling - 2022

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	0.0000	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
Worker	0.2945	0.1850	2.6041	8.0300e-003	0.8383	6.0300e-003	0.8444	0.2223	5.5500e-003	0.2279		800.4474	800.4474	0.0202		800.9531
Total	**0.2945**	**0.1850**	**2.6041**	**8.0300e-003**	**0.8383**	**6.0300e-003**	**0.8444**	**0.2223**	**5.5500e-003**	**0.2279**		**800.4474**	**800.4474**	**0.0202**		**800.9531**

Mitigated Construction On-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					
Fugitive Dust					0.3387	0.0000	0.3387	0.1862	0.0000	0.1862			0.0000			0.0000
Off-Road	5.8990	50.4391	47.1201	0.1278		2.1784	2.1784		2.0698	2.0698	0.0000	12,245.8463	12,245.8463	3.1329		12,324.1690
Total	**5.8990**	**50.4391**	**47.1201**	**0.1278**	**0.3387**	**2.1784**	**2.5171**	**0.1862**	**2.0698**	**2.2560**	**0.0000**	**12,245.8463**	**12,245.8463**	**3.1329**		**12,324.1690**

3.2 Drilling - 2022

Mitigated 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	0.0000	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
Worker	0.2945	0.1850	2.6041	8.0300e-003	0.8383	6.0300e-003	0.8444	0.2223	5.5500e-003	0.2279		800.4474	800.4474	0.0202		800.9531
Total	**0.2945**	**0.1850**	**2.6041**	**8.0300e-003**	**0.8383**	**6.0300e-003**	**0.8444**	**0.2223**	**5.5500e-003**	**0.2279**		**800.4474**	**800.4474**	**0.0202**		**800.9531**

3.3 Site Prep - 2022

Unmitigated Construction On-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					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	2.0045	17.7020	15.4853	0.0382		0.7437	0.7437		0.7118	0.7118		3,644.7128	3,644.7128	0.8260		3,665.3616
Total	**2.0045**	**17.7020**	**15.4853**	**0.0382**	**0.5303**	**0.7437**	**1.2740**	**0.0573**	**0.7118**	**0.7690**		**3,644.7128**	**3,644.7128**	**0.8260**		**3,665.3616**

3.3 Site Prep - 2022

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	0.0000	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
Worker	0.0982	0.0617	0.8680	2.6800e-003	0.2794	2.0100e-003	0.2815	0.0741	1.8500e-003	0.0760		266.8158	266.8158	6.7400e-003		266.9844
Total	**0.0982**	**0.0617**	**0.8680**	**2.6800e-003**	**0.2794**	**2.0100e-003**	**0.2815**	**0.0741**	**1.8500e-003**	**0.0760**		**266.8158**	**266.8158**	**6.7400e-003**		**266.9844**

Mitigated Construction On-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					
Fugitive Dust					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	2.0045	17.7020	15.4853	0.0382		0.7437	0.7437		0.7118	0.7118	0.0000	3,644.7128	3,644.7128	0.8260		3,665.3616
Total	**2.0045**	**17.7020**	**15.4853**	**0.0382**	**0.2386**	**0.7437**	**0.9823**	**0.0258**	**0.7118**	**0.7375**	**0.0000**	**3,644.7128**	**3,644.7128**	**0.8260**		**3,665.3616**

3.3 Site Prep - 2022

Mitigated 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	0.0000	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
Worker	0.0982	0.0617	0.8680	2.6800e-003	0.2794	2.0100e-003	0.2815	0.0741	1.8500e-003	0.0760		266.8158	266.8158	6.7400e-003		266.9844
Total	**0.0982**	**0.0617**	**0.8680**	**2.6800e-003**	**0.2794**	**2.0100e-003**	**0.2815**	**0.0741**	**1.8500e-003**	**0.0760**		**266.8158**	**266.8158**	**6.7400e-003**		**266.9844**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	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
Unmitigated	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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.552712	0.042774	0.202769	0.116939	0.015078	0.005847	0.021692	0.031910	0.002110	0.001769	0.004822	0.000710	0.000869

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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					
Other Asphalt Surfaces	0	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
Total		**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**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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					
Other Asphalt Surfaces	0	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
Total		**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**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	3.6400e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Unmitigated	3.6400e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Total	**3.6300e-003**	**1.0000e-005**	**1.0200e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**		**2.3300e-003**

Mitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Total	**3.6300e-003**	**1.0000e-005**	**1.0200e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**		**2.3300e-003**

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

APPENDIX B: BIOLOGICAL RESOURCES ASSESSMENT

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February 14, 2020
Project No: 19-09026

Ms. Rosalyn Prickett
Woodard & Curran
9665 Chesapeake Drive, Suite 320
San Diego, California 92123

Subject: Biological Resources Assessment for the Perris North Basin Groundwater Contamination Monitoring Program, Riverside County, California

Dear Ms. Prickett:

This report documents the findings of a Biological Resources Assessment conducted by Rincon Consultants, Inc. (Rincon), for the proposed Perris North Basin Groundwater Contamination Monitoring Program ("project"). The Eastern Municipal Water District (EMWD) proposes the construction and operation of ten monitoring wells at ten locations throughout the cities of Moreno Valley and Perris in Riverside County, California. This assessment was completed to document existing site conditions via desktop analysis and field survey to determine potential impacts to sensitive biological resources for the ten proposed monitoring well sites (i.e., project site). The report also contains the results of a habitat assessment for burrowing owl (*Athene cunicularia*; BUOW) and includes an analysis of potential project-related impacts to the study area. The study area includes the proposed limits of work (0.23-acre project site) and an additional 500-foot buffer around the project site for the BUOW habitat assessment.

Project Location and Description

The project site is within the cities of Moreno Valley and Perris in western Riverside County, California (Figure 1 and Figure 2). The proposed ten monitoring well locations are generally bounded by the Box Spring Mountains to the north, March Air Reserve Base to the west, Ramona Expressway to the south, and Perris Reservoir to the east. More specifically, it lies in Township 2 south, Range 3 west, Section 31, Township 2 south, Range 4 west, Section 36, Township 3 south, Range 3 west, Sections 6, 7, 16, 19-21, 29-32, Township 3 south, Range 4 west, Sections 1, 11-14, 36, Township 4 south, Range 3 west, Sections 6-8, 17, 18, and Township 4 south, Range 4 west, Section 1 (San Bernardino base and meridian) and within the United States Geological Survey Riverside East, CA, Sunnymead, CA, and Perris, CA 7.5-minute topographic quadrangles. The project site is in an area characterized by a mix of agricultural, residential, commercial, and light industrial development.

EMWD proposes a groundwater monitoring project designed to monitor the presence of groundwater contaminants of concern (COCs) from nonpoint sources. These sources occur in the Perris North Basin, also referred to as the Perris North Groundwater Management Zone, which is within the San Jacinto Groundwater Basin. The source locations of contamination were not known at the time this report was written; however, some locations may be identified through analysis and reporting of data collected from the series of proposed monitoring wells.

The features of the project would be constructed and operated within defined sub-areas of EMWD's Perris North Groundwater Management Zone: (1) Moreno Valley Area, (2) North and East Area, and (3) South Area. Figure 2 shows the location of each monitoring well location within the Perris North Basin as identified below:

- Moreno Valley Area: Construction and operation of three monitoring wells;
- North and East Area: Construction and operation of five monitoring wells; and
- South Area: Construction and operation of two monitoring wells.

The construction of each monitoring well would require disturbance of an approximately 100 x 100-foot area. Operation of each well is estimated to disturb a 40 x 40-foot area. The wellheads would either be flush-mounted to sidewalks/streets, etc. or would consist of a standpipe surrounded by bollards. Data reads during operation would consist of a mobile trailer transported to and parked at the wellhead for four to eight hours twice per year.

Methodology

Regulatory Overview

Regulated or sensitive resources studied and analyzed herein include special status plant and wildlife species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement, and locally protected resources, such as protected trees.

Environmental Statutes

For the purpose of this report, the analysis of potential impacts to biological resources was guided by the following statutes:

- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- City of Perris Municipal Code (City of Perris, 1997)
- City of Moreno Valley Municipal Code (City of Moreno Valley, 1997)
- Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)(2003)

Guidelines for Determining CEQA Significance

The following threshold criteria, as defined by the CEQA Guidelines Appendix G Initial Study Checklist, were used to evaluate potential environmental effects. Based on these criteria, the proposed project would have a significant effect on biological resources if it would:

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 Wildlife or U.S. Fish and Wildlife Service.*

b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*

c) *Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal areas, etc.) through direct removal, filling, hydrological interruption, or other means.*

d) *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.*

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

f) *Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional or state habitat conservation plan.*

Literature Review

Prior to the biological reconnaissance field visit, a literature review was conducted to establish the environmental and regulatory setting of the proposed project. The literature review included review of the U.S. Department of Agriculture (USDA) *Soil Survey for the Western Riverside Area* (2020a), *Riverside East, CA*, *Perris, CA* and *Sunnymead, CA* USGS 7.5-minute topographic quadrangle maps, literature detailing the habitat requirements of subject species, and aerial photographs (Google Earth 2020) and topographic maps (USGS 1979). The MSHCP, species accounts, and other reference materials were reviewed for habitat assessment requirements as well as habitat suitability elements for special status species. The primary objective of the habitat assessment was to evaluate the study area's potential to support special status species as well as to determine the applicability of other MSHCP and CEQA requirements as they pertain to the proposed project.

The California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB; CDFW 2020a), Biogeographic Information and Observation System (BIOS; CDFW 2020b) and United States Fish and Wildlife Service (USFWS) Critical Habitat Portal (USFWS 2020a) and Information, Planning, and Consultation (IPaC; USFWS 2020b) system were reviewed to determine if any special status wildlife, plant or vegetation communities were previously recorded within five miles of the study area. Map review of the U.S. Forest Service (USFS) managed National Wild and Scenic River System was performed to assess whether wild or scenic rivers occurred on site (USFS 2020). The *National Wetlands Inventory* (NWI; USFWS 2020c) was reviewed to determine if any wetland and/or non-wetland waters had been previously documented and mapped on or in the vicinity of the proposed study area. Other resources reviewed included the California Native Plant Society (CNPS) online *Inventory of Rare and Endangered Plants of California* (2020), and CDFW *Special Vascular Plants, Bryophytes, and Lichens List* (2020c).

Field Reconnaissance Survey

A field reconnaissance survey of the study area was conducted to document existing site conditions and the potential presence of sensitive biological resources, including sensitive plant and wildlife species, sensitive plant communities, jurisdictional waters and wetlands, and habitat for nesting birds. Rincon Senior Biologist Ryan Gilmore conducted the reconnaissance survey on February 4, 2020. The biologist surveyed the study area on foot and visually inspected the area with the aid of binoculars (8 x 40) as necessary. During the survey, the biologist noted general site characteristics, documented vegetation, and took representative photographs (Appendix A). Survey conditions included temperatures ranging from 44-65 degrees Fahrenheit (°F), clear skies, and winds of 5-20 miles per hour (mph).

Identification of potentially jurisdictional aquatic resources during the reconnaissance survey included any potential wetlands and non-wetland waters that may constitute waters of the U.S., waters of the State, streambeds, and/or riparian/riverine or vernal pool resources.

BUOW Habitat Assessment

A BUOW habitat assessment and focused BUOW burrow survey were conducted on February 4, 2020 between the hours of 0830-1300. Rincon biologist, Ryan Gilmore, walked the entire study area (i.e., the 0.23-acre project site and 500-foot buffer, where accessible) to identify potential burrows and BUOW sign. Areas of particular interest included all topographic relief areas characterized by low growing vegetation, grasslands, shrub lands with low density shrub cover, earthen berms, and any large debris piles. Access to adjacent properties was not granted. Therefore, these areas were surveyed with binoculars to the maximum extent feasible from the edge of the project site boundary. The survey included a systematic search for burrows and BUOW sign by walking through potential habitat within the study area. Survey transects were spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines did not exceed 20 meters (approximately 65 feet) and were reduced to account for differences in terrain, vegetation density, and ground surface visibility. Burrow openings large enough to provide entry for BUOWs were carefully checked for prey remains, cast pellets, white-wash, feathers, or any other indication of BUOW presence. Potential burrows, BUOW individuals, and/or sign (if observed) were recorded and mapped using Global Positioning System (GPS) coordinates.

Existing Conditions

Physical Characteristics

The study area is located in arid western Riverside County which is characterized by long, hot, dry summers and short, relatively wet winters. Average temperatures range from 65 to 96 degrees °F during the summer and 41 to 65°F during the winter. The average annual precipitation in the region is 6-11 inches (United States Climate Data 2020).

Current land use at the project site consists of vacant lots, streets, sidewalks, and developed areas. Areas of similar land use are located in the surrounding vicinity. The locations for the proposed monitoring wells include EMWD maintained lots (MW-1 and MW-7) and streets (MW-2, -3, -4, -5, -6, -8, -9, and -10) adjacent to commercial and residential.

Rincon's biologist observed various levels of recent debris dumping (concrete and trash), large soil storage areas, small soil spoil piles, and homeless campsites throughout the entire study area.

Watershed and Drainages

The study area is within the approximate 2,650-square mile Santa Ana River Watershed. The Santa Ana River Watershed spans from portions of the San Jacinto Mountains, San Bernardino Mountains, San Gabriel Mountains, and Santa Ana Mountains, to the cities of Rialto, Lake Elsinore, Anaheim, Huntington Beach, and Irvine. Two major rivers drain the Santa Ana River watershed: the Santa Ana River and the San Jacinto River. A formal jurisdictional delineation of waters and wetlands was not completed as the project is not proposed to be located within or near potentially jurisdictional waters.

The project site is underlain by moderately well-drained soils. No evidence of standing water was observed at any of the sites. A maintained earthen bottom drainage was observed during the field survey approximately 50 feet to the west of the proposed Monitoring Well-1 location (Appendix A Photograph 2). A small number of riparian trees consisting of Fremont's cottonwood (*Populus fremontii*), Jerusalem thorn (*Parkinsonia aculeata*), and Mexican fan palm (*Washingtonia robusta*), were present in and around the drainage. The drainage was dry at the time of the field visit and exhibited signs of regular maintenance as it was clear of vegetation with the exception of the noted riparian trees. No persistent emergents, emergent mosses, or lichens were observed to be present. The drainage is located outside of the project site and is not proposed to be impacted as part of project construction or operation. Additionally, the drainage is separated from the proposed Monitoring Well-1 by a block wall and raised topography; thus, there is no connection from the site to the drainage.

A dry earthen bottom channel exists approximately 200 feet north of the proposed Monitoring Well-9 location. The drainage was dry at the time of the field visit and exhibited signs of regular maintenance as it was clear of vegetation. No persistent emergents, emergent mosses, or lichens were observed. The drainage is located outside of the project site and is not proposed to be impacted as part of project construction or operation. Additionally, the drainage is separated from the proposed Monitoring Well-9 by North Perris Boulevard; thus, there is no connection from the site to the drainage.

Topography and Soils

Topography at the project site is relatively level with elevations ranging from 1,455 feet above mean sea level (msl) in the southern portion of the project site and gradually increases to approximately 1,670 feet above msl in the northern portion of the site. Additionally, locations where monitoring wells are proposed consist of level ground within vacant, streets, sidewalks, and developed areas.

The National Resources Conservation Service (NRCS) Web Soil Survey identifies fourteen soil map units within the project site (Figure 3a, Figure 3b, and Figure 3c (NRCS 2020a)). These fourteen map units can be organized into eight soil series that are described below. Based on Rincon's observations of soil surface conditions during the reconnaissance survey, the soils on site are generally consistent with those mapped by the NRCS Web Soil Survey. No soils present at the project site are designated as hydric.

Greenfield Soils

Greenfield sandy loam with 0-15 percent slopes is found within the study areas for the following Monitoring Wells: 1, 2, 3, 6, 7, 8, and 10. This series consists of deep, well drained soils that formed in moderately coarse and coarse textured alluvium derived from granitic and mixed rock sources.

Greenfield sandy loam is found on alluvial fans and terraces at elevations from 100 to 3,500 feet in dry, subhumid and mesothermal climates. It can be used for the production of a wide variety of irrigated field, forage, and fruit crops as well as for growing dryland grain and pasture. Vegetation on uncultivated areas consists of annual grass, forbs, shrubs, and scattered oak (*Quercus* sp.) trees.

Hanford Soils

Hanford coarse sandy loam with 0-8 percent slopes is found within the study areas for the following Monitoring Wells: 1, 2, 3, 7, and 9. Additionally, Hanford fine sandy loam with 0-2 percent slopes is also found in these areas. This series consists of very deep, well drained soils that formed in moderately coarse textured alluvium dominantly from granite. Hanford soils are typically found on stream bottoms, flood plains and alluvial fans from 150 to 3,500 feet in dry, subhumid and mesothermal climates. They are used for growing a wide range of fruits, vegetables, and general farm crops, as well as for urban development and dairies. Vegetation in uncultivated areas is mainly annual grasses and associated herbaceous species.

Monserate Soils

Monserate sandy loam soil with 0-5 percent slopes is found within the study areas for the following Monitoring Wells: 4 and 5. This soil series is a member of the fine-loamy, mixed, thermic family of Typic Durixeralfs. Typically, Monserate soils have brown and yellowish-red, slightly acidic, sandy loam A horizons, reddish brown, neutral, sandy clay loam B2t horizons underlain by silica-cemented duripans. This series is typically found on nearly-level to moderately-steep old dissected terraces and fans from 700 to 2,500 feet in dry, subhumid and mesothermal climates. This soil type is used principally for growing grain, grain hay or pasture, some citrus, and field and truck crops when irrigation water is available. Naturalized vegetation is mainly annual grasses and forbs, widely spaced native canyon oak, and shrubs on eroded slopes.

Pachappa Soils

Pachappa fine sandy loam with 0-2 percent slopes is found within the study areas for the following Monitoring Wells: 3 and 10. The Pachappa series consists of well drained (minimal) Noncalcic Brown soils developed from moderately coarse textured alluvium. They occur on gently sloping alluvial fans and flood plains under annual grass-herb vegetation at elevations under 1,000 feet in a semiarid to dry subhumid mesothermal climate. Characteristically the Pachappa soils have grayish brown, slightly acid A1 horizons and brown, slightly finer textured neutral B2 horizons that overlie moderately alkaline, slightly calcareous B3ca horizons and very slightly calcareous stratified C horizons. This soil is mostly found under irrigation for alfalfa (*Medicago* sp.), small grains and row crops as well as dry farm small grains and normally generate good yields. Annual grasses, herbs, and shrubs are found growing on this soil.

Ramona Soils

Ramona fine sandy loam with 0-2 percent slopes and Ramona very fine sandy loam with 2-5 percent slopes, eroded is found within the study areas for the following Monitoring Wells: 5, 6, and 8. The Ramona series is a member of the fine-loamy, mixed, thermic family of Typic Haploxeralfs. Typically, Ramona soils have brown, slightly and medium acid, sandy loam and fine sandy loam A horizons, reddish brown and yellowish red, slightly acid, sandy clay loam B2t horizons, and strong brown, neutral, fine

sandy loam C horizons. This soil is typically found on nearly-level to moderately-steep terrace and fans derived from granitic and related rock sources at elevations of 250 to 3,500 feet in dry, subhumid and mesothermal climates. This soil type is mostly used for the production of grain, grain-hay, pasture, irrigated citrus (*Citrus* sp.), olives (*Olea* sp.), truck crops, and deciduous fruits. Uncultivated areas have a cover of annual grasses, forbs, chamise (*Adenostoma* sp.), or chaparral.

Domino Soils

Domino silt loam is found within the study area for Monitoring Well-9. The Domino Series consists of moderately deep, moderately well drained soils over lime-cemented hardpans. These soils are typically found on nearly level basin areas and toes of alluvial fans at elevations of 1,000 to 1,800 feet, usually within a semiarid climate. Domino soils typically support dry farmed grain and annual pasture, irrigated alfalfa, and salt-tolerant truck crops. Vegetation in uncultivated areas typically consists of saltgrass (*Distichlis spicata*), sedges, annual grasses, and forbs.

Tujunga Soils

Tujunga loamy sand with 0 to 8 percent slopes is found within the study area for Monitoring Well-1. The Tujunga series consists of very deep, somewhat excessively drained soils that formed in alluvium from granitic sources. These soils are typically found on alluvial fans and floodplains, including urban areas, from elevations of 5 to 1,970 feet. This soil is used for grazing, citrus, grapes (*Vitis* sp.), other fruits, and urban residential or commercial development. Uncultivated areas have a cover of shrubs, annual grasses and forbs. In urban areas ornamentals and turf-grass are common.

Exeter Soils

Exeter sandy loam with 0 to 2 percent slopes is found within the study areas for the following Monitoring Wells: 9 and 10. The Exeter series consists of moderately deep to a duripan, moderately well drained soils that formed in alluvium mainly from granitic sources. This soil is mainly found on alluvial fans and stream terraces at elevations of 20 to 700 feet. This soil is used for irrigated cropland growing oranges, olives and deciduous orchards, vineyards and row crops. It is also used for dairy and cattle production and building site development. Vegetation in uncultivated areas is mainly annual grasses and forbs.

Vegetation Communities

One vegetation community, non-native annual grassland, and two land cover types, channel and developed land, occur within the study area (Figure 4a Vegetation Communities Map

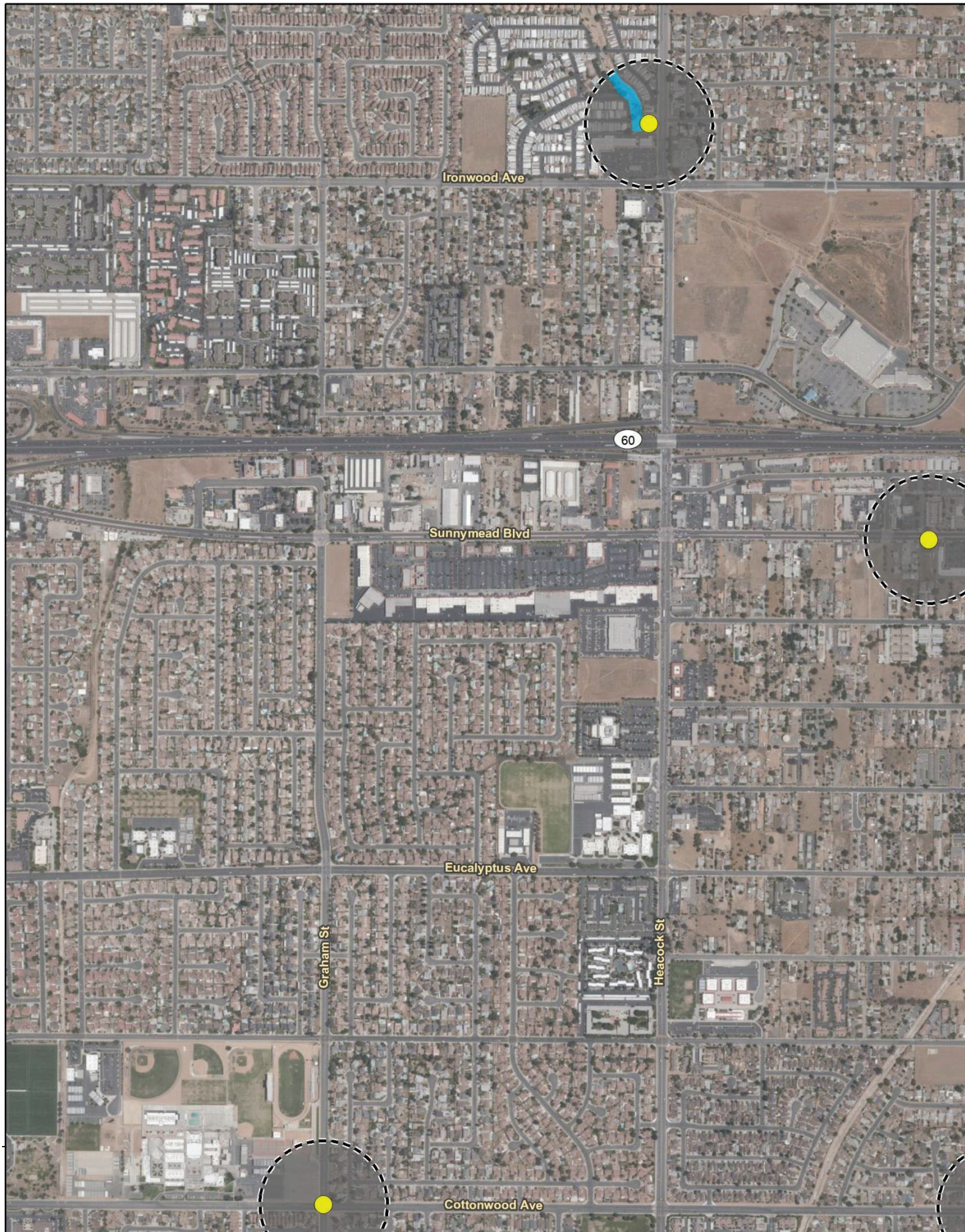
Ironwood Ave
60
Sunnymead Blvd
Eucalyptus Ave
Graham St
Heacock St
Cottonwood Ave

Figure 4b Vegetation Communities Map

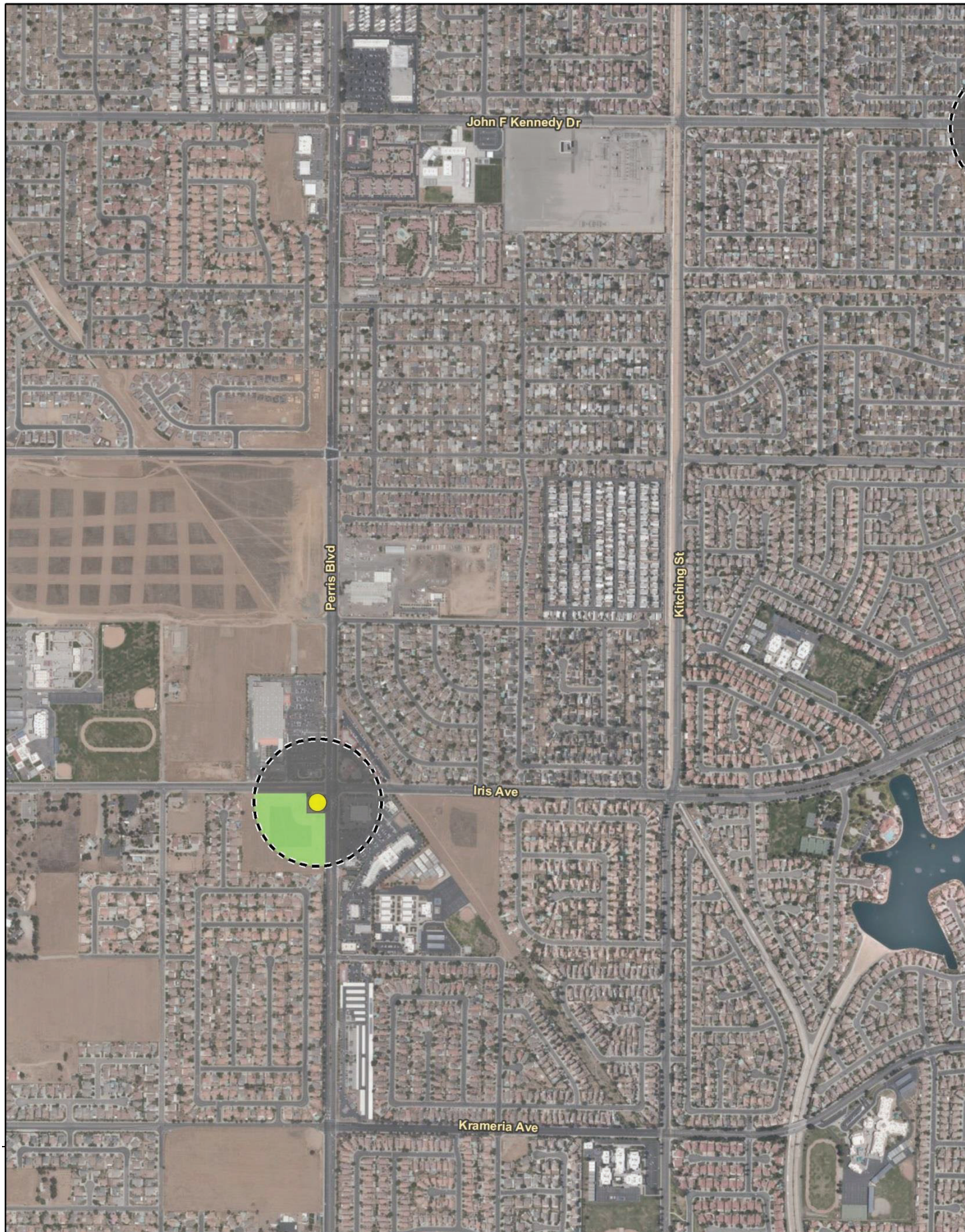
John F Kennedy Dr
Perris Blvd
Kitching St
Iris Ave
Krameria Ave

Figure a through Figure 4c). A list of plant species observed within the study area is included as Appendix B.

Channel

Channel land cover is located at Monitoring Well Sites -1 and -9. These areas have sandy bottoms and are mostly devoid of vegetation. Channel areas are actively maintained and kept clear of vegetation. Limited native vegetation and non-native trees can be present on the edges of a channel. This land cover type consists of 2.99-acres, or approximately 1.7 percent, of the study area.

Developed

Developed land cover is the dominant land cover type found at the project site and consists of development such as residential housing, commercial buildings, industrial buildings, asphalt roads, graveled access roads, parking areas, and storage areas. These areas have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. This land cover type consists of 147.40-acres, or approximately 81.8 percent, of the study area.

Non-Native Annual Grassland (42200)

Non-native annual grassland is the only vegetation community found within the project site. This community is typically dominated by a dense cover of annual grasses that usually include wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). On the project site, non-native annual grassland areas contained these annual grasses and also included Russian thistle (*Salsola tragus*), common fiddleneck (*Amsinckia intermedia*), and red stemmed filaree (*Erodium cicatarium)*. This community was found intermittently throughout the northern reach of the project site within vacant lots. This vegetation community consists of 29.76-acres, or approximately 16.5 percent, of the study area.

General Wildlife

The study area provides limited habitat for wildlife species that commonly occur within urban communities in Riverside County. Common urban-adapted avian species such as killdeer (*Charadrius vociferus*), red-tailed hawk (*Buteo jamaicensis*), Say's phoebe (*Sayornis saya*), black phoebe (*Sayornis nigricans*), mallard (*Anas platyrhynchos*), common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), California gull (*Larus californicus*), American kestrel (*Falco sparverius*), and western meadowlark (*Sturnella neglecta*) were observed on site during the survey. California ground squirrel (*Otospermophilus beecheyi*) was the only live mammal observed within the study area. Western fence lizard (*Sceloporus occidentalis*) was the only reptile observed within the study area. No sensitive species were observed within the study area.

Sensitive Biological Resources

Based on review of aerial photographs and the field reconnaissance survey, Rincon evaluated the potential presence of sensitive biological resources on and adjacent to the site.

Special Status Species

Local, state, and federal agencies regulate special status species and generally require an assessment of their presence or potential presence to be conducted prior to the approval of a proposed project. Assessments for the potential occurrence of special status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB, species occurrence records from other sites in the vicinity of the study area, and previous reports for the project site. The potential for each special status species to occur in the study area was evaluated according to the following criteria:

- **No Potential.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- **Low Potential.** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- **Moderate Potential.** Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential.** All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- **Present.** Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently (within the last 5 years).

The literature review identified 17 sensitive plant species and 35 sensitive wildlife species within five miles of the site (Appendix B; Table 1). One sensitive plant community, sycamore alder riparian woodland, was identified within five miles of the site. Sensitive plant and wildlife species typically have very specific habitat requirements, which are not found on the project site.

Special Status Plant Species

The project site is located within a highly developed urban transportation corridor. Additionally, proposed locations for monitoring wells are highly disturbed and surrounded by existing commercial and residential development. Due to the lack of specific habitat types or suitable substrates as well as the high levels of historic and existing disturbance, sensitive plant species are not expected to occur on the site.

Special Status Wildlife Species

The proposed project site is located within a highly developed urban transportation corridor and proposed locations for monitoring wells are highly disturbed and surrounded by existing commercial and residential development. Because of the lack of specific habitats as well as high levels of historic and existing disturbance, the site is not suitable for most special status wildlife species. The literature review identified 35 special status wildlife species recorded within five miles of the site. Thirty-three of these species are not expected to occur due to lack of suitable habitat (e.g., riparian, scrub, woodland).

Low quality or marginal foraging and/or nesting habitat for two sensitive wildlife species, BUOW and California horned lark (*Eremophila alpestris actia*) occurs within and adjacent to the site. Undeveloped areas at the project site which contain marginally suitably habitat are largely dominated by low-growing, non-native ruderal species. California horned lark are typically ground nesters and are capable of nesting on bare ground which is present within the site. In addition, burrows and California ground squirrels were present at three of the proposed monitoring well locations, which indicates the presence of suitable habitat for BUOW (Figure 5a, Figure 5b, and Figure 5c). However, the habitat is low quality and the potential for these species to occur is low due to the site's location within a heavily travelled urban transportation corridor and high levels of existing disturbance which would likely deter individuals from long-term use of the site. No horned larks, BUOW or signs of either species (e.g., pellets or whitewash) were observed during the reconnaissance field survey.

Nesting Birds

Shrubs and trees located within the survey area but not within the project site that could provide suitable nesting habitat for several common avian species that were observed during the reconnaissance survey. Birds, nests, and eggs are protected by CFGC 3503 and the MBTA. Common species such as mourning dove and house finch have the potential to nest in shrubs, even in highly disturbed settings. Some species, such as horned larks, are typically ground nesters and are capable of nesting on bare ground within the survey area but not within the project site due to the highly developed and/or disturbed nature of the project sites. However, habitat is considered low quality due to existing disturbances and proximity to heavily travelled roadways. No nests or birds exhibiting nesting behaviors were observed during the reconnaissance field survey.

Sensitive Plant Communities

No sensitive plant communities as defined by the CNDDB or local ordinances are present on the site.

Jurisdictional Waters and Wetlands

The project site consists largely of streets, sidewalks, vacant and developed areas. Additionally, locations where the monitoring wells are proposed are interconnected by urban roadways. The majority of surrounding land use includes streets, sidewalks, residential and commercially developed areas intermixed with small isolated areas of open space, vacant, and public lands. The NWI identified several potential jurisdictional features within or adjacent the project site; however, these features were photo-interpreted from black and white imagery in 1975 and based on the reconnaissance field survey these areas have since been developed with the features likely diverted into underground stormwater channels. Further, no hydric soils are present at the project site and no jurisdictional features were identified within the project site during the field reconnaissance survey. Therefore, no waters or wetlands potentially subject to the jurisdiction of the United States Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), or CDFW are located within the project site.

Riparian/Riverine, Vernal Pool and Fairy Shrimp Habitat

Riparian/riverine areas are lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or depend on a nearby freshwater source or areas that contain a freshwater flow during all or a portion of the year (Riverside County,

2003). These areas may support one or more species listed in the MSHCP. Vernal pools are seasonal wetlands that occur in depressions, typically have wetland indicators that represent all three parameters (soils, vegetation, and hydrology), and are defined based on vernal pool indicator plant species during the wetter portion of the growing season but normally lack wetland indicators associated with vegetation and/or hydrology during the drier portion of the growing season.

Based upon the findings of Rincon's reconnaissance survey, no riparian/riverine habitat is present within the project site. The survey area and project site are heavily disturbed due to past agricultural uses and urban development, and are currently either unvegetated, developed, or dominated by exotic upland species not conducive to supporting riparian/riverine habitat. The proposed project would be confined to the existing streets, sidewalks, and other developed areas.

No vernal pools or fairy shrimp habitat were observed within the project site. The project site is underlain by moderately to excessively well-drained soils. No areas with evidence of standing water were observed at the proposed monitoring well locations and the proposed project would be confined to the existing streets, sidewalks, and other developed areas.

Wildlife Movement

According to the Regional Conservation Authority (RCA) MSHCP Information App, the project site is not located within an MSHCP Criteria Area, Public-Quasi Public Reserve Lands or within a Core or Linkage (RCA 2020). The CDFW BIOS (2020b) does not include any mapped essential habitat connectivity areas in the immediate vicinity of the site. The closest mapped essential habitat connectivity areas are located approximately 1.5 miles to the east near the Perris Reservoir and approximately 1.1 miles to the northwest in the vicinity of Box Springs Mountain Reserve Park. The proposed project would be confined to the existing developed and disturbed areas identified above. Additionally, the study area is separated from these conservation areas by public roadways and residential areas, and therefore the site is not expected to serve as a significant wildlife migratory corridor.

Resources Protected by Local Policies and Ordinances

The project site is located within the County of Riverside Stephen's Kangaroo Rat Plan and Fee Area. County of Riverside Ordinance No. 663 (Stephen's Kangaroo Rat Mitigation Fee Ordinance) requires that all proposed development projects located within the fee area are reviewed to determine the most appropriate course of action to ensure the survival of the species through one or more of the following: (1) on-site mitigation of impacts to the Stephens' Kangaroo Rat through the reservation or addition of lands included within or immediately adjacent to a potential habitat reserve site, or (2) payment of the Mitigation Fee or (3) any combination of (1) and (2) consistent with the intent and purpose of the ordinance. No other resources protected by local policies or ordinances are present on the site.

Conservation Plans

The project site is located within the boundaries of the Western Riverside MSHCP. Portions of the site are located within a habitat assessment area for BUOW, but not within a designated survey area identified for any other MSHCP covered species. The proposed project is not located within a criteria cell or within Public/Quasi Public conserved lands. Public/Quasi-Public conserved lands are located approximately 1.5 mile east of the project site (Monitoring Well-9) in the Lake Perris State Recreation Area (Western Riverside County RCA 2020).

Impact Analysis and Mitigation Measures

Special Status Species

As mentioned above, 17 sensitive plant species and 35 sensitive wildlife species are known to occur or have potential to occur within a five-mile radius of the site. Due to the lack of specific habitats or suitable substrates as well as the high levels of historic and existing disturbance, sensitive plant species are not expected to occur on the site. Therefore, impacts to sensitive plant species would be less than significant.

Of the 35 sensitive wildlife species identified, 33 species are not expected to occur due to lack of suitable habitat (e.g., riparian, scrub, woodland). The remaining two species with low potential to occur within the study area are BUOW and California horned lark. Construction activities associated with the proposed project are primarily located within areas of high disturbance and surrounded by development and are temporary. Therefore, the proposed project is not expected to result in direct impacts or loss of suitable habitat for BUOW or California horned lark. In addition, vacant areas at the project site are highly fragmented. Such high level of disturbance would likely deter individuals from long-term use of the project site. Active ground squirrel burrows that could be potentially used by BUOW were mapped at the proposed monitoring well locations: 6, 7, and 10 though these locations are adjacent highly disturbed areas. As such, indirect impacts are also not expected as any project related disturbances would not rise above currently existing levels as the adjacent areas contain streets, sidewalks, residential and developed areas.

As described above, the survey area contains trees that could provide suitable nesting habitat for several common avian species. However, the proposed project sites do not contain trees and are primarily located within areas of high disturbance and surrounded by development. Therefore, the proposed project is not expected to result in direct impacts to nesting bird habitat. Additionally, indirect impacts are also not expected as any project related disturbances would not rise above currently existing levels as the adjacent areas contain streets, sidewalks, residential and developed areas.

Sensitive Plant Communities

The site does not contain riparian habitat or other sensitive natural communities. Therefore, no impacts are expected.

Jurisdictional Waters and Wetlands

The proposed monitoring well sites do not contain any jurisdictional drainages or wetlands. There are two potential jurisdictional features within the study area for Monitoring Well Sites -1 and -9. However, they are located outside the project site disturbance limits and no not have connectivity to the project site. No impacts to jurisdictional waters and wetlands are expected as a result of the proposed project.

Riparian/Riverine, Vernal Pool and Fairy Shrimp Habitat

Based upon the findings of Rincon's reconnaissance survey, no riparian/riverine habitat is present within the project site. The project site consists of streets, sidewalks, and other developed areas not conducive to supporting riparian/riverine habitat. The proposed project would be confined to the existing streets,

sidewalks, and other developed areas. No riparian/riverine habitat occurs within the proposed project site; and therefore, no further actions related to riparian/riverine habitat are required pursuant to the MSHCP. Additionally, no waters or streambeds under the jurisdiction of the USACE, RWQCB, or CDFW are located within the project site.

No vernal pools or fairy shrimp habitat were observed within the project site. The project site is underlain by moderately to excessively well-drained soils. No evidence of standing water was observed at any of the proposed monitoring well sites. In addition, areas within the study area are heavily disturbed due to past agricultural uses, existing development, and are currently either unvegetated, developed, or dominated by exotic upland species not conducive to supporting vernal pools or vernal pool species. The proposed project would be confined to the existing streets, sidewalks, and other developed areas. No vernal pool or fairy shrimp habitat occurs within the proposed project site; and therefore, no further actions related to vernal pools are required pursuant to the MSHCP.

Wildlife Movement

As discussed above, the sites are not located within an MSHCP Criteria Area, Public-Quasi Public Reserve Lands or within a Core or Linkage (RCA 2020). In addition, CDFW BIOS (2020b) does not include any mapped essential habitat connectivity areas within the immediate vicinity of the site. The closest mapped essential habitat connectivity areas are located approximately 1.5 miles to the east in the vicinity of the Perris Reservoir and approximately 1.1 miles to the northwest in the vicinity of Box Springs Mountain Reserve Park. The site is separated from these habitat connectivity areas by existing development and paved roadways. In addition, the sites are surrounded by existing development and heavily traveled transportation corridors, including the March Air Reserve Base and Interstate 215 freeway, and is therefore, not expected to serve as a significant migratory wildlife corridor. Therefore, no impacts to wildlife movement are less than significant.

Local Policies and Ordinances

The proposed project is located within the County of Riverside Stephen's Kangaroo Rat Plan and Fee Area. County of Riverside Ordinance No. 663 (Stephen's Kangaroo Rat Mitigation Fee Ordinance) requires that all proposed development projects located within the fee area are reviewed to determine the most appropriate course of action to ensure the survival of the species through one or more of the following: (1) on-site mitigation of impacts to the Stephens' Kangaroo Rat through the reservation or addition of lands included within or immediately adjacent to a potential habitat reserve site, or (2) payment of the Mitigation Fee or (3) any combination of (1) and (2) consistent with the intent and purpose of the ordinance. The proposed project site lacks suitable grassland, coastal scrub and sagebrush habitat to support Stephen's Kangaroo Rat and is located directly adjacent urban roadways. Construction activities associated with the proposed project are primarily confined within areas of high disturbance and surrounded by development and are temporary in nature. In addition, vacant areas at the project site are highly fragmented and surrounded by urban development. Therefore, the proposed project would not result in impacts to or loss of suitable habitat for Stephen's Kangaroo Rat. No other resources protected by local policies or ordinances are present on the site.

Conservation Plans

The proposed project is located within the boundaries of the Western Riverside MSHCP. Portions of the site are located within the habitat assessment area for BUOW, but not within a designated study area identified for any other MSHCP covered species. The proposed project is not located within a criteria cell or within Public/Quasi Public conserved lands. Public/Quasi-Public conserved lands are located approximately 1.5 mile east at the Lake Perris State Recreation Area. Based on the project's distance and separation from Public/Quasi-Public lands and the existing development between them, the proposed project is not expected to impact these conserved areas. As discussed above, no BUOW or their sign were observed during the reconnaissance-level biological resources field survey on February 4, 2020. The potential for BUOW to occur is low due to the site's locations within a highly disturbed areas surrounded by urban development which would likely deter individuals from long-term use of the site. Additionally, indirect impacts are also not expected as any project related disturbances would not rise above currently existing levels as the adjacent areas contain streets, sidewalks, residential and developed areas.

Thank you for the opportunity to provide this Biological Resources Assessment. Please contact the undersigned with any questions.

Sincerely,
Rincon Consultants, Inc.

Ryan Gilmore
Senior Biologist / Project Manager

Steven J. Hongola
Principal Biologist

Attachments

References
Figures
Appendix A Project Site Photographs
Appendix B Special Status Species Potential for Occurrence
Appendix C Observed Plant Species List

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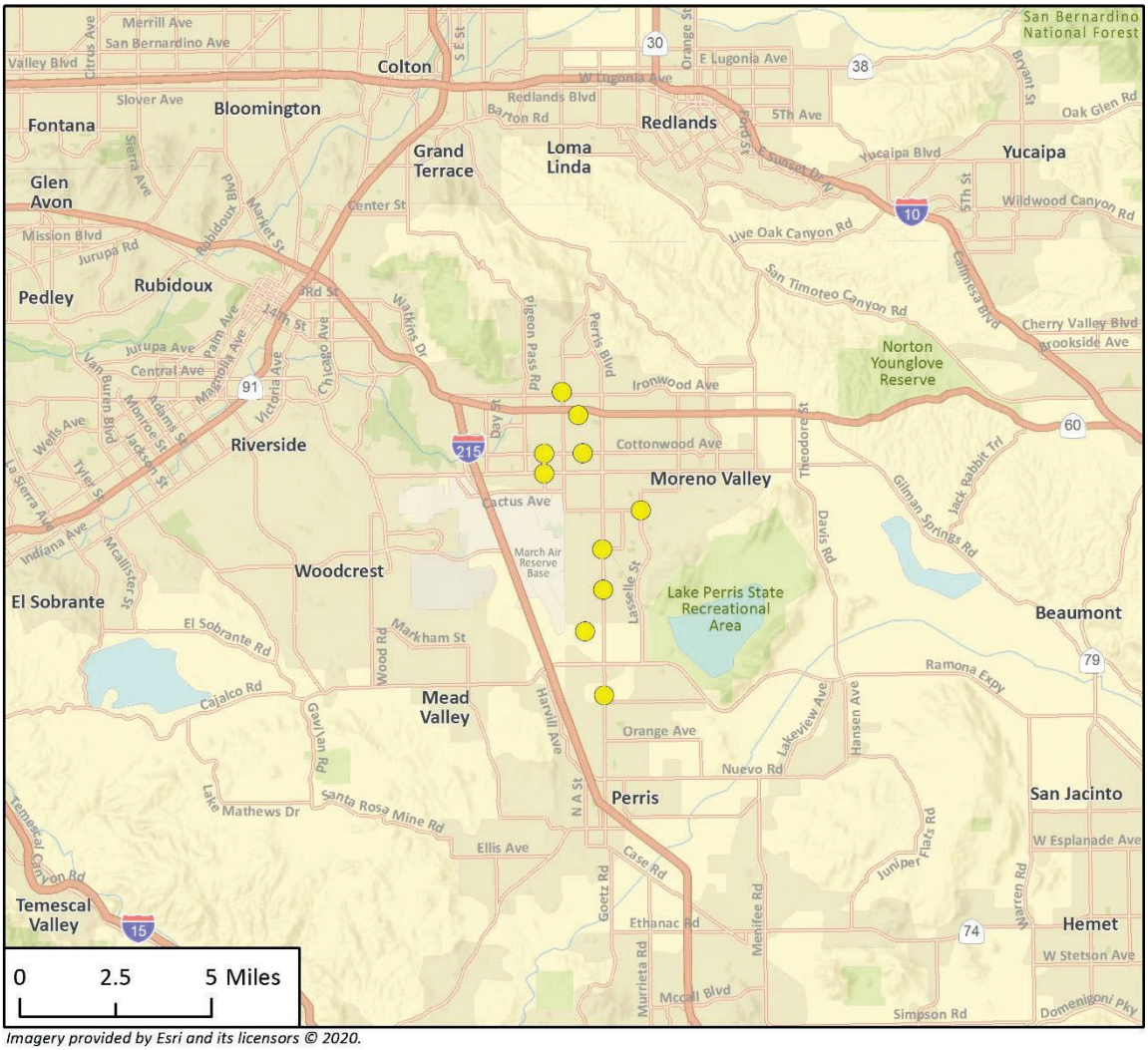
Figure 1 Regional Location



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Project Location

Figure 2 Project Location



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Figure 3a USDA Soils Map

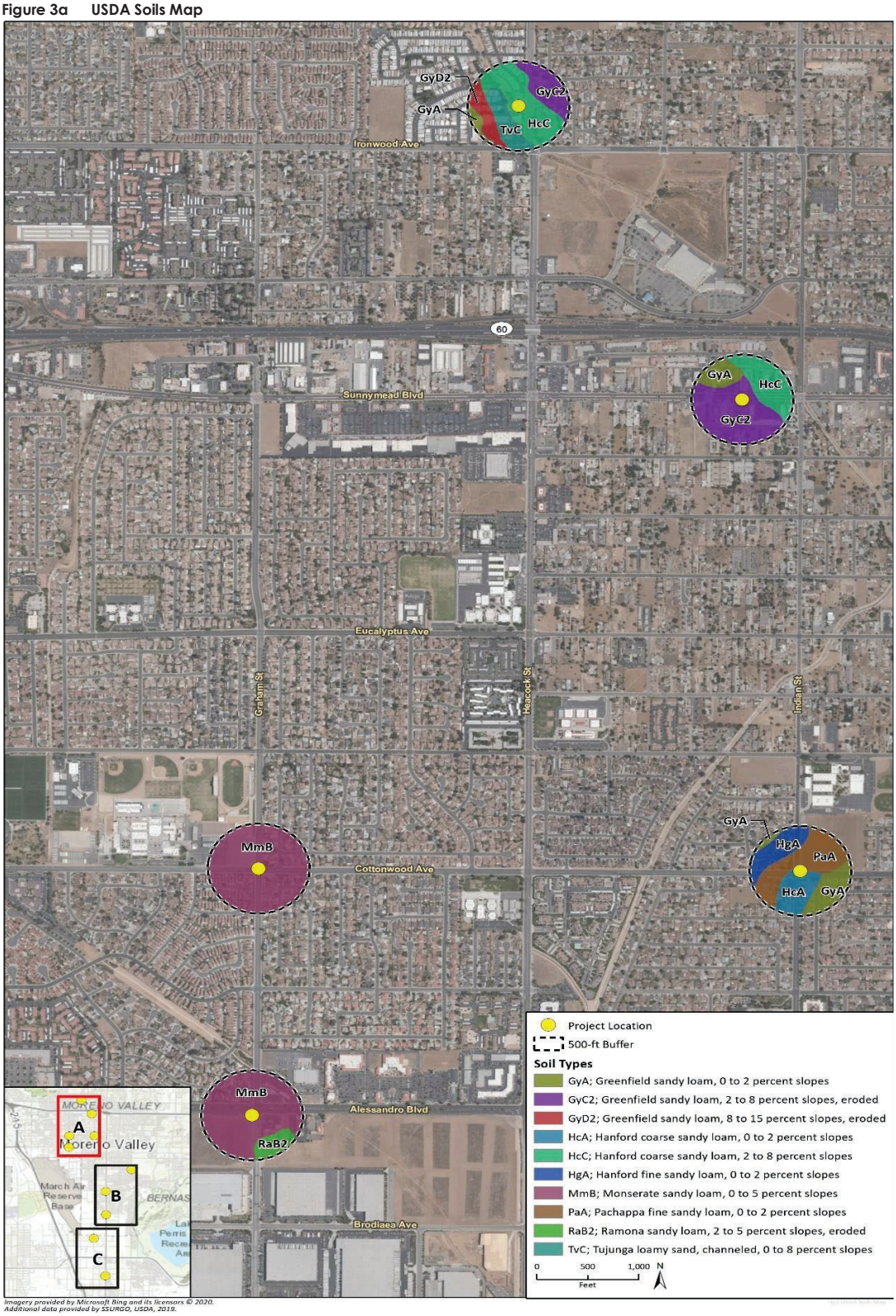

Figure 3b USDA Soils Map

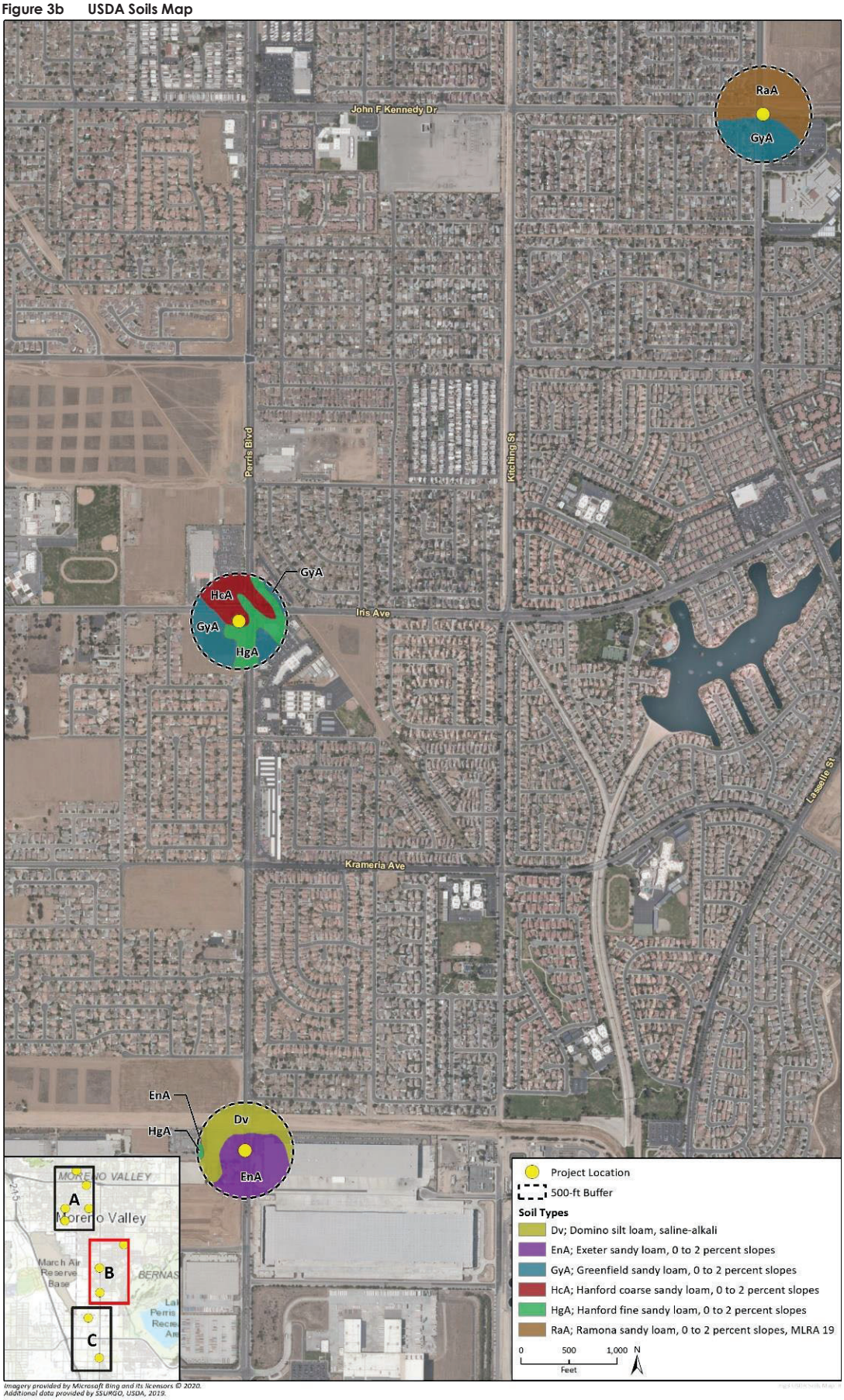

Figure 3c USDA Soils Map

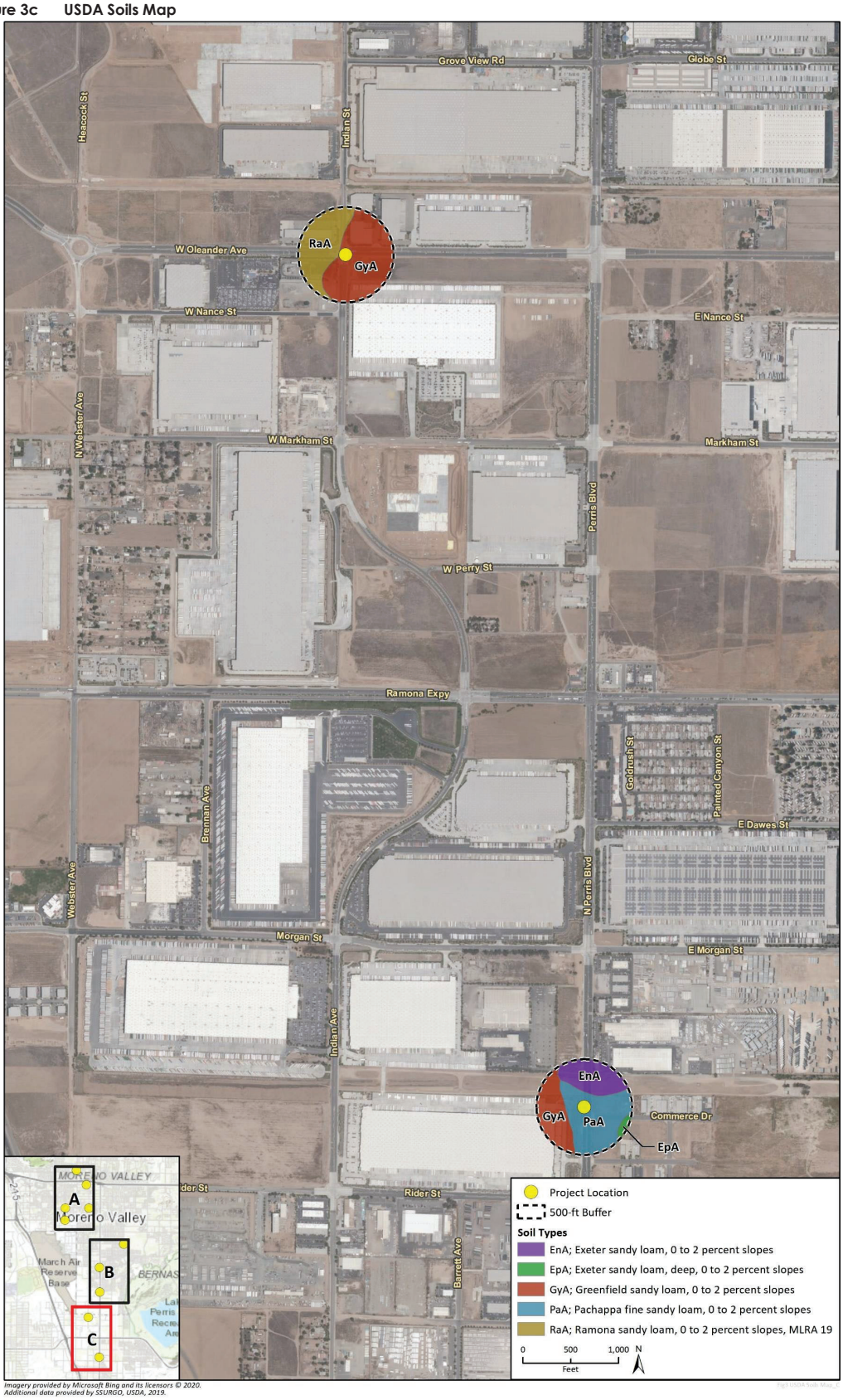

Figure 4a Vegetation Communities Map

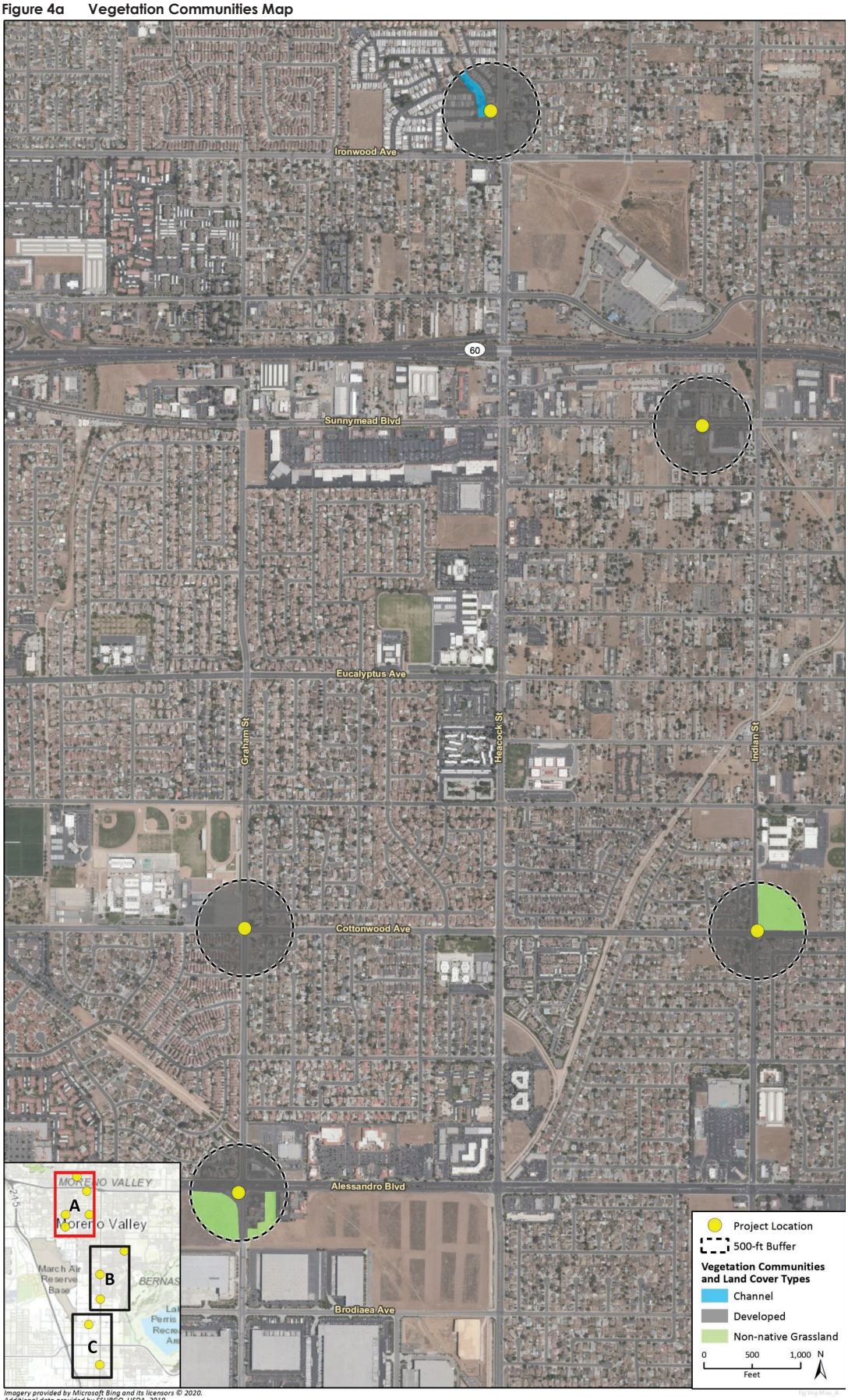

Figure 4b Vegetation Communities Map

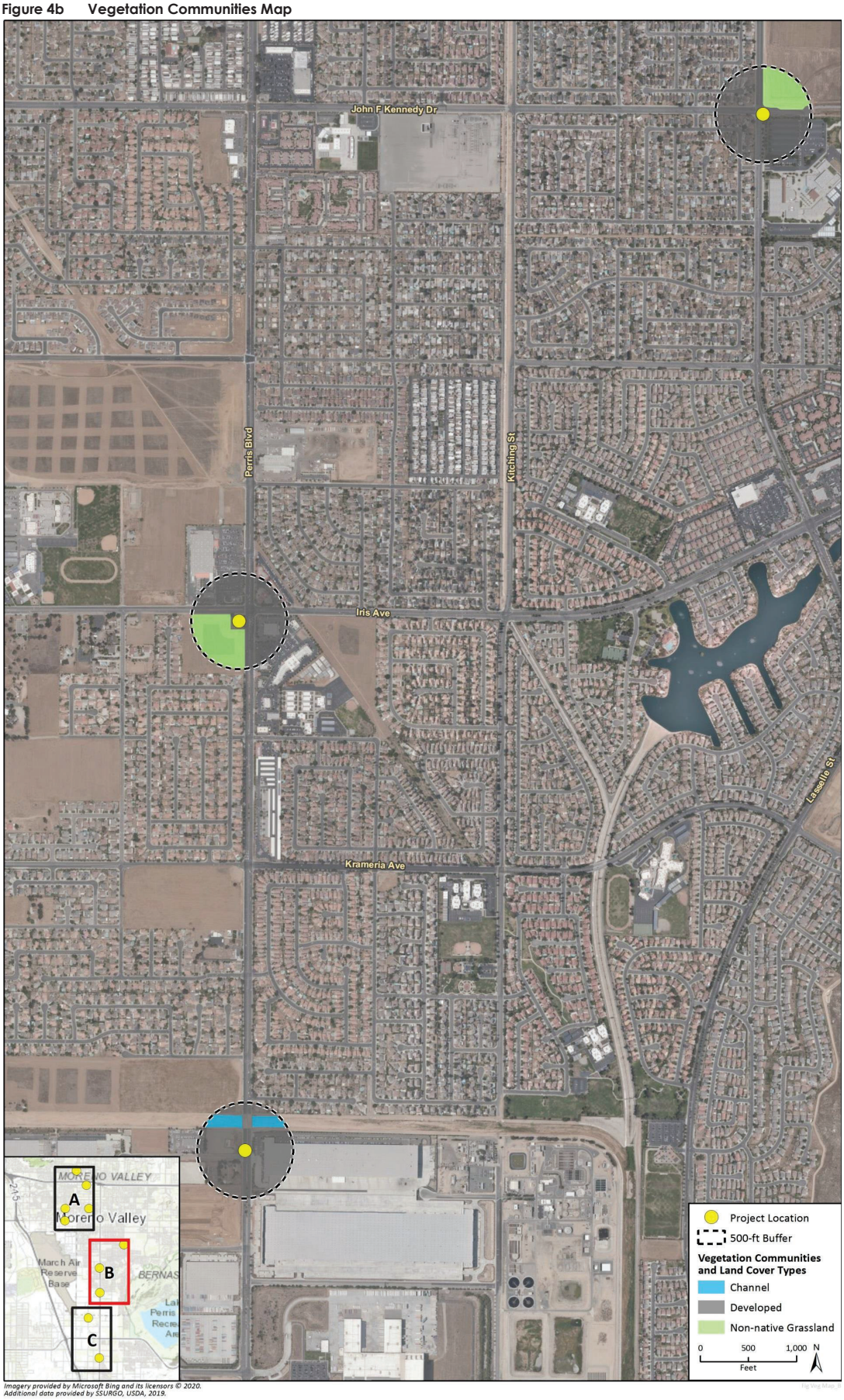

Figure 4c Vegetation Communities Map



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Additional data provided by SSURGO, USDA, 2019.

Figure 5a Potential BUOW Burrows



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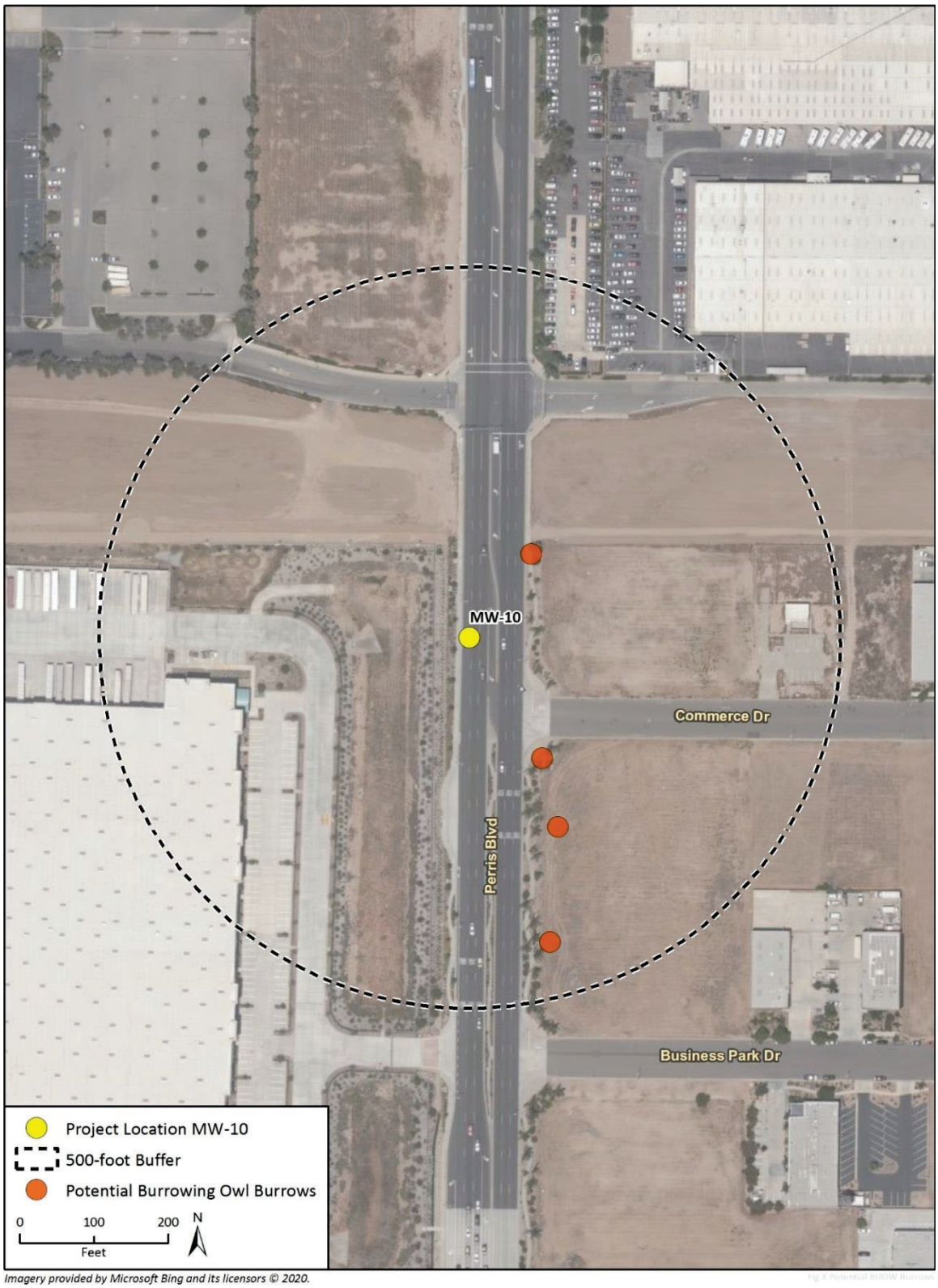
Figure 5b Potential BUOW Burrows



Imagery provided by Microsoft Bing and its licensors © 2020.

Figure 5c Potential BUOW Burrows



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Appendix A

Project Site Photographs



Photograph 1. Proposed location for Monitoring Well-1, at northeast corner of project site. View to the southwest.



Photograph 2. Drainage feature approximately 50 feet west from the proposed location for Monitoring Well-1. Note the block wall separating the creek bed from the project site. View to the north.



Photograph 3. Proposed location for Monitoring Well-2. View to the east.



Photograph 4. Proposed location for Monitoring Well-3. View to the south.



Photograph 5. Proposed location for Monitoring Well-4. View to the east.



Photograph 6. Proposed location for Monitoring Well-5. View to the north.



Photograph 7. Proposed location for Monitoring Well-6. View to the southwest.



Photograph 8. Ground squirrel burrows located across the street from Monitoring Well-6, facing north.



Photograph 9. Proposed location for Monitoring Well-7. View to the northwest.



Photograph 10. Ground squirrel burrows located in the field west of Monitoring Well-7, facing east.



Photograph 11. Proposed location for Monitoring Well-8. View to the west.



Photograph 12. Proposed location for Monitoring Well-9. View to the south.



Photograph 13. Proposed location for Monitoring Well-10. View to the west.



Photograph 14. Ground squirrel burrows located across the street from Monitoring Well-10, facing east.

Appendix B

Special Status Species Potential for Occurrence

Table 1 Special Status Species Potential for Occurrence

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Plants				
Senecio aphanactis chaparral ragwort	None/None G3/S2 2B.2	Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. 20-1020 m. Annual herb. Blooms Jan-April.	Not Expected	No suitable scrub, woodland, or chaparral habitat present on site. Study area is highly developed/disturbed.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	None/None G4T2/S2 1B.1	Coastal salt marshes, playas, vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. 1-1375 m. Annual herb. Blooms Feb-Jun.	Not Expected	No salt marshes, playas, or vernal pool habitat on site. Suitable alkaline soils do not occur on site. Study area is highly developed/ disturbed.
Centromadia pungens ssp. *laevis* smooth tarplant	None/None G3G4T2/S2 1B.1	Valley and foothill grassland, chenopod scrub, meadows and seeps, playas, riparian woodland. Alkali meadow, alkali scrub; also in disturbed places. 5-1170 m. annual herb. Blooms Apr-Sep	Not Expected	No suitable grassland, scrub, or riparian habitat present on site. Alkali soils and vegetation absent. Study area is highly developed/ disturbed.
Chorizanthe parryi var. *parryi* Parry's spineflower	None/None G3T2/S2 1B.1	Coastal scrub, chaparral, cismontane woodland, valley and foothill grassland. Dry slopes and flats; sometimes at interface of 2 vegetation types, such as chaparral and oak woodland. Dry, sandy soils. 90-1220 m. annual herb. Blooms Apr-Jun	Not Expected	No suitable scrub, woodland, or grassland habitat present on site. Study area is highly developed/disturbed.
Calochortus plummerae Plummer's mariposa-lily	None/None G4/S4 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m. Perennial herb. Blooms Mar-Jul.	Not Expected	No suitable scrub, chaparral, woodland, or grassland habitat present on site. Study area is highly developed/disturbed.
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	None/None G5T3/S3 4.3	Chaparral, coastal scrub. Dry soils, shrubland. 4-1435 m. Annual herb. Blooms Jan – Jul.	Not Expected.	No suitable chaparral or scrub habitat present on site. Project site is highly developed/disturbed.
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	Endangered/ Endangered G4?T1/S1 1B.2	Marshes and swamps, coastal dunes. Limited to the higher zones of salt marsh habitat. 0-10 m. Annual herb. Blooms Mar-Oct.	Not Expected	No salt marsh or swamp habitat present on site. Project site is highly developed/disturbed.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Trichocoronis wrightii var. *wrightii* Wright's trichocoronis	None/None G4T3/S1 2B.1	Marshes and swamps, riparian forest, meadows and seeps, vernal pools. Mud flats of vernal lakes, drying river beds, alkali meadows. 5-435 m. Annual herb. Blooms Mar-Sep.	Not Expected	No marsh, riparian, or vernal pool habitat present. Study area is highly developed/ disturbed.
Atriplex coronata var. *notatior* San Jacinto Valley crownscale	Endangered/ None G4T1/S1 1B.1	Playas, valley and foothill grassland, vernal pools. Alkaline areas in the San Jacinto River Valley. 35-460 m. Annual herb. Blooms Apr-Aug.	Not Expected	No playa, grassland, or vernal pool habitat present. Study area is highly developed/ disturbed.
Abronia villosa var. *aurita* chaparral sand-verbena	None/None G5T2?/S2 1B.1	Chaparral, coastal scrub, desert dunes. In sandy areas from -60 – 1570 m. Annual herb. Blooms Jan-Sep.	Not Expected	No chaparral, scrub, or dune habitat present. Study area is highly developed/disturbed.
Atriplex serenana var. *davidsonii* Davidson's saltscale	None/None G5T1/S1 1B.2	Coastal bluff scrub, coastal scrub in alkaline soil. 0-480 m. Annual herb. Blooms Apr-Oct.	Not Expected	No suitable coastal scrub habitat present. Study area is highly developed/ disturbed.
Chorizanthe polygonoides var. *longispina* long-spined spineflower	None/None G5T3/S3 1B.2	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools. Gabbroic clay. 30-1630 m.	Not Expected	No chaparral, coastal scrub, meadow, seeps, grassland, or vernal pool habitat present. Study area is highly developed/ disturbed.
Arenaria paludicola marsh sandwort	FE/SE G1/S1 1B.1	Marshes and swamps. Growing up through dense mats of Typha, Juncus, Scirpus, etc. in freshwater marsh. Sandy soil. 3-170 m. Perennial herb. Blooms May-Aug.	Not Expected	No marsh or swamp habitat present. Study area is highly developed/ disturbed.
Berberis nevinii Nevin's barberry	FE/SE G1/S1 1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub. On steep, N-facing slopes or in low grade sandy washes. 90-1590 m. Shrub. Blooms Mar-Jun.	Not Expected	No chaparral, woodland, coastal or riparian scrub present. Study area is highly developed/ disturbed.
Atriplex parishii Parish's brittlescale	None/None G1G2/S1 1B.1	Vernal pools, chenopod scrub, playas. Usually on drying alkali flats with fine soils. 4-1420 m. Annual herb. Blooms June-Oct.	Not Expected	No vernal pool, scrub, or playa habitat present. Study area is highly developed/disturbed.
Navarretia fossalis spreading navarretia	FT/None G2/S2 1B.1	Vernal pools, chenopod scrub, marshes and swamps, playas. San Diego hardpan and San Diego claypan vernal pools; in swales & vernal pools, often surrounded by other habitat types. 15-850 m. Annual herb. Blooms Apr-Jun.	Not Expected	No vernal pool, scrub, marsh, swamp, or playa habitat present. Study area is highly developed/ disturbed.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Brodiaea filifolia thread-leaved brodiaea	FT/SE G2/S2 1B.1	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools. Usually associated with annual grassland and vernal pools; often surrounded by shrubland habitats. Occurs in openings on clay soils. 15-1030 m. Perennial herb. Blooms Mar-Jun.	Not Expected	No chaparral, woodland, coastal scrub, grassland, or vernal pool habitat present. Study area is highly developed/ disturbed.
Invertebrates				
Streptocephalus woottoni Riverside fairy shrimp	Endangered/ None G1G2/S1S2	Endemic to Western Riverside, Orange, and San Diego counties in areas of tectonic swales/earth slump basins in grassland and coastal sage scrub. Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.	Not Expected	No suitable swales, grassland, scrub, or vernal pool habitat present on site. Study area is highly developed/disturbed.
Bombus crotchii Crotch bumble bee	None/SCE G2G4/S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	Not Expected	Suitable habitat for host plants not present on site. Study area is highly developed/disturbed.
Rhaphiomidas terminatus abdominalis Delhi Sands flower-loving fly	FE/None G1T1/S1	Found only in areas of the Delhi Sands formation in southwestern San Bernardino & northwestern Riverside counties. Requires fine, sandy soils, often with wholly or partly consolidated dunes & sparse vegetation. Oviposition req. shade.	Not Expected	Suitable habitat containing fine, sandy dunes not present on site. Study area is highly developed/ disturbed.
Amphibians				
Spea hammondii western spadefoot	None/None G3/S3 SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Not Expected	No suitable grassland, woodland or vernal pool habitat present on site. Study area is highly developed/disturbed.
Reptiles				
Arizona elegans occidentalis California glossy snake	None/None G5T2/S2 SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	Not Expected	No suitable scrub habitat present on site. Grassland habitat present on site consists of highly disturbed, ornamental, or fragmented areas surrounded by development. Project site is highly developed/ disturbed.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Aspidoscelis tigris stejnegeri coastal whiptail	None/None G5T5/S3 SSC	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland & riparian areas. Ground may be firm soil, sandy, or rocky.	Not Expected	No desert, woodland or riparian habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Crotalus ruber red-diamond rattlesnake	None/None G4/S3 SSC	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	Not Expected	No rocky areas or dense vegetation present on site. Study area is highly developed/disturbed and surrounded by existing development.
Phrynosoma blainvillii coast horned lizard	None/None G3G4/S3S4 SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Not Expected	No sandy washes or bushes present on site. Study area is highly developed/disturbed and surrounded by existing development.
Anniella stebbinsi southern California legless lizard	None/None G3/S2	Generally south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	Not Expected	No suitable soils or sparse vegetation present on site. Study area is highly developed/disturbed and surrounded by existing development.
Aspidoscelis hyperythra orange-throated whiptail	None/None G5/S2S3	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites.	Not Expected	Suitable habitat not present on site due to absence of scrub, chaparral, and woodland habitat. No sandy areas or washes on site. Study area is highly developed/ disturbed and surrounded by existing development.
Emys marmorata western pond turtle	None/None G3G4/S3	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Not Expected	No aquatic habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Diadophis punctatus modestus San Bernardino ringneck snake	None/None G5T2T3/S2?	Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams.	Not Expected	No suitable open, rocky or stream habitat present. Study area is highly developed/disturbed.
Birds				
Accipiter cooperii Cooper's hawk	None/None G5/S4 WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Not Expected	No suitable woodland or riparian habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Agelaius tricolor tricolored blackbird	None/ Threatened G2G3/S1S2 SSC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Not Expected	No suitable riparian habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	None/None G5T3/S3 WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	Not Expected	No suitable scrub habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Artemisiospiza belli belli Bell's sage sparrow	None/None G5T2T4/S3 WL	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range. Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.	Not Expected	No suitable chaparral or scrub habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Athene cunicularia burrowing owl	None/None G4/S3 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Low	Portions of the project site contain disturbed ruderal habitat and bare ground which may provide marginal habitat for this species. California ground squirrel burrows are present nearby. Habitat quality and potential for occurrence are low due to high levels of existing development/disturbance as well as the site's location surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Coccyzus americanus occidentalis western yellow-billed cuckoo	Threatened/ Endangered G5T2T3/S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	Not Expected	No suitable riparian habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Eremophila alpestris actia California horned lark	None/None G5T4Q/S4 WL	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Low	Portions of the project site contain disturbed ruderal habitat and bare ground with nearby fallow fields which may provide marginal habitat for this species. Habitat quality and potential for occurrence is considered low due to high levels of existing development/ disturbance as well as the site's location surrounded by existing development.
Icteria virens yellow-breasted chat	None/None G5/S3 SSC	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	Not Expected	No suitable riparian habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Lanius ludovicianus loggerhead shrike	None/None G4/S4 SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub & washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	Not Expected	No suitable woodland, savannah, or scrub habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Polioptila californica californica coastal California gnatcatcher	Threatened/ None G4G5T2Q/S2 SSC	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	Not Expected	No suitable scrub habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Spinus lawrencei Lawrence's goldfinch	None/None G3G4/S3S4	Nests in open oak or other arid woodland and chaparral, near water. Nearby herbaceous habitats used for feeding. Closely associated with oaks.	Not Expected	No suitable woodland or chaparral habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Vireo bellii pusillus least Bell's vireo	Endangered/ Endangered G5T2/S2	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Not Expected	No suitable riparian habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Buteo regalis ferruginous hawk	None/None G4/S3S4	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Not Expected	No suitable grassland, sagebrush, scrub, or pinyon and juniper woodland habitats present. Project site is highly disturbed/ developed and surrounded by existing development.
Mammals				
Chaetodipus fallax fallax northwestern San Diego pocket mouse	None/None G5T3T4/S3S4 SSC	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego County. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	Not Expected	No suitable scrub or grassland habitats present on site. Study area is highly developed/disturbed and surrounded by existing development.
Dipodomys stephensi Stephens' kangaroo rat	Endangered/ Threatened G2/S2	Primarily annual & perennial grasslands, but also occurs in coastal scrub & sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.	Not Expected	No suitable scrub or grassland habitats present on site. Study area is highly developed/disturbed and surrounded by existing development.
Eumops perotis californicus western mastiff bat	None/None G5T4/S3S4 SSC	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	Not Expected	No suitable woodland, scrub, grassland or chaparral habitats present on site. Study area is highly developed/disturbed and surrounded by existing development.
Lasiurus xanthinus western yellow bat	None/None G5/S3 SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	Not Expected	No suitable riparian habitats or trees for roosts present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Lepus californicus bennettii San Diego black-tailed jackrabbit	None/None G5T3T4/S3S4 SSC	Intermediate canopy stages of shrub habitats & open shrub/herbaceous & tree/herbaceous edges. Coastal sage scrub habitats in Southern California.	Not Expected	No suitable scrub habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Nyctinomops femorosaccus pocketed free-tailed bat	None/None G4/S3 SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	Not Expected	No suitable woodland, scrub, riparian or cliff habitats present on site. Study area is highly developed/disturbed and surrounded by existing development.
Onychomys torridus ramona southern grasshopper mouse	None/None G5T3/S3 SSC	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	Not Expected	No suitable scrub habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Perognathus longimembris brevinasus Los Angeles pocket mouse	None/None G5T1T2/S1S2 SSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	Not Expected	No suitable scrub or grassland habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Taxidea taxus American badger	None/None G5/S3	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Not Expected	No suitable shrub, forest, or herbaceous habitats present. Study area is highly developed/ disturbed.
Dipodomys merriami parvus San Bernardino kangaroo rat	FE/SCE	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Needs early to intermediate seral stages.	Not Expected	No suitable alluvial scrub vegetation present. Study area is highly developed/ disturbed.

Status: Federal/State

FE = Federal Endangered
FT = Federal Threatened
CFT = Candidate Federal Threatened
FDL = Federal Delisted
SE = State Endangered
ST = State Threatened
SCE = Candidate State Endangered
SR = State Rare
SDL = State Delisted
SSC = CDFW Species of Special Concern
FP = CDFW Fully Protected
WL = CDFW Watch List

CRPR (CNPS California Rare Plant Rank)

1A = Presumed Extinct in California
1B = Rare, Threatened, or Endangered in California and elsewhere
2 = Rare, Threatened, or Endangered in California, but more common elsewhere
3 = Need more information (a Review List)
4 = Plants of Limited Distribution (a Watch List)

CRPR Threat Code Extension

.1 = Seriously endangered in California (>80% of occurrences threatened/high degree and immediacy of threat)
.2 = Fairly endangered in California (20-80% of occurrences threatened)
.3 = Not very endangered in California (<20% of occurrences threatened)

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations

Other Statuses

G1 or S1	Critically Imperiled Globally or Subnationally (state)
G2 or S2	Imperiled Globally or Subnationally (state)
G3 or S3	Vulnerable to extirpation or extinction Globally or Subnationally (state)
G4/5 or S4/5	Apparently secure, common and abundant
GH or SH	Possibly Extirpated – missing; known from only historical occurrences but still some hope of rediscovery

Additional notations may be provided as follows

T – Intraspecific Taxon (subspecies, varieties, and other designations below the level of species)

Q – Questionable taxonomy that may reduce conservation priority

? – Inexact numeric rank

Appendix C

Observed Plant Species List

Observed Plant Species List

Scientific Name[1]	Common Name	Indicator Status[2]: Arid West Region
Amsinckia intermedia	common fiddleneck	NL (UPL)
Avena fatua	wildoats	NL (UPL)
Baccharis salicifolia	mulefat	FAC
Bromus madritensis ssp. *rubens*	red brome	UPL
Croton setiger	turkey-mullein	NL (UPL)
Erodium cicatarium	red stemmed filaree	NL (UPL)
Fraxinus uhdei	shamel ash	NL (UPL)
Helianthus annus	common sunflower	FACU
Heterotheca grandiflora	telegraph weed	NL (UPL)
Hirschfeldia incana	Mediterranean hoary mustard	NL (UPL)
Malva parviflora	cheeseweed	NL (UPL)
Parkinsonia aculeata	Jerusalem thorn	FAC
Populus fremontii	Fremont's cottonwood	NL (UPL)
Salix laevigata	red willow	FACW
Salsola tragus	Russian thistle	FACU
Schinus molle	Peruvian pepper tree	FACU
Schismus barbatus	Mediterranean schismus	NL (UPL)
Tribulus terrestris	puncture vine	NL (UPL)
Washingtonia robusta	Mexican fan palm	FACW

[1] Scientific Name as listed in the State of California 2016 Wetland Plant List for listed species, or from Jepson eFlora for taxa not currently included in the State of California 2016 Wetland Plant List

[2] Indicator Status Codes:

FAC	Equally likely to occur in wetlands and non-wetlands.
FACU	Plants that typically occur in xeric or mesic non-wetland habitats but may frequently occur in standing water or saturated soils.
UPL	Plants that rarely occur in water or saturated soils.
NL (UPL)	Species is not listed and therefore treated as an upland plant in this region

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APPENDIX C: CULTURAL RESOURCES ASSESSMENT

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Perris North Basin Groundwater Contamination Monitoring Program

Cultural Resources Assessment Report

prepared for

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February 2020

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Table of Contents

Executive Summary 1
Unanticipated Discovery of Cultural Resources 2
Human Remains 2
1 Introduction 3
1.1 Project Location 3
1.2 Project Description 3
1.3 Area of Potential Effects 4
1.4 Project Personnel 4
2 Regulatory Setting 9
2.1 Federal 9
2.2 State 10
3 Natural and Cultural Setting 12
3.1 Natural Setting 12
3.2 Cultural Setting 12
3.3 Ethnographic Context 14
3.4 History 19
4 Background and Methods 22
4.1 Cultural Resources Records Search 22
4.2 Native American Consultation 30
4.3 Local Historical Group Consultation 32
4.4 Historical Imagery Review 32
5 Field Survey 34
5.1 Methods 34
5.2 Results 34
6 Findings and Recommendations 37
6.1 Unanticipated Discovery of Cultural Resources 37
6.2 Human Remains 37
7 References 38

Figures

Figure 1 Project Location Map 5
Figure 2 Project Vicinity Map 6
Figure 3a Project Area of Potential Effect 7
Figure 3b Area of Potential Effects Map (continued) 8

Tables

Table 1 Previously Conducted Cultural Resources Studies within a 0.5-mile Radius of the APE . 22
Table 2 Previously Identified Cultural Resources within a 0.5-mile Radius of the APE 29

Photographs

Photograph 1 Monitoring Well #7 Site Within Locked EMWD Facility, Facing Northeast 35
Photograph 2 Landscaped Area within Monitoring Well #2 Site, Facing East 35
Photograph 3 Exposed Ground Surface at Monitoring Well #3 Site, Facing North 36
Photograph 4 Exposed Ground at Monitoring Well #5 Site, Facing East 36

Appendices

Appendix A Records Search Results (Confidential)
Appendix B Native American Consultation
Appendix C Historical Group Consultation
Appendix D Survey Notes

Executive Summary

Woodard & Curran retained Rincon Consultants, Inc. (Rincon) to perform a cultural resources assessment for the Eastern Municipal Water District's Perris North Basin Groundwater Contamination Monitoring Program (project) in the cities of Moreno Valley and Perris, Riverside County, California. The proposed project is a groundwater monitoring program designed to monitor the presence of groundwater contaminants of concern from nonpoint sources in the Perris North Basin, also referred to as the Perris North Groundwater Management Zone, which is within the San Jacinto Groundwater Basin. The project involves the construction and operation of up to 10 monitoring wells in various locations throughout Perris North Groundwater Management Zone. The purpose of this report is to document the tasks Rincon conducted; specifically, a cultural resources records search, Native American outreach, local historical group consultation, historical imagery review, and a field survey. This study has been completed in accordance with the requirements of a California Environmental Quality Act (CEQA)-Plus investigation, which includes an evaluation of project impacts under CEQA, Section 106 of the National Historic Preservation Act (NHPA), and the National Environmental Policy Act in case a federal nexus is established during the project (i.e., federal funding and/or permitting).

The records search identified 16 previously recorded cultural resources within 0.5 mile of the project's Area of Potential Effects (APE). All these resources date to the historic period and include nine buildings, three water conveyance structures, one building with associated archaeological remains, two archaeological sites, and one isolated feature. None of these resources lie within, or adjacent to, the project APE. No prehistoric archaeological resources were identified within the records search area.

A search of the Sacred Lands File at the Native American Heritage Commission returned negative results. Rincon subsequently conducted outreach efforts with local Native American groups to obtain information on known Native American resources located in the APE or vicinity. A total of 12 responses had been received by February 12, 2020.

In addition, Rincon also conducted outreach with local historical societies to obtain additional information on historic period cultural resources in the area. Three responses were received from the Moreno Valley Historical Society, the City of Moreno Valley Environmental and Historical Preservation Board, and the March Field Air Museum; and no responses were received from the Riverside African American Historical Society or the Perris Valley Historical Museum as a result of the historical group consultation efforts.

A pedestrian survey of the proposed monitoring well locations identified no cultural resources within the APE. The lack of surface evidence of archaeological remains does not preclude their subsurface existence as prehistoric and historic period resources have been recorded in the region. However, results of the records search indicate no substantial prehistoric or historic period archaeological remains are present within or adjacent to the project APE. Given these findings, the project APE does not appear to be highly sensitive for buried archaeological remains.

Based on the results of the records search, Native American and local historical group consultation, and field survey, no cultural resources were identified in the project's APE that will be impacted or adversely affected by the project. Therefore, Rincon recommends a finding of ***no impact to***

historical and archaeological resources under CEQA and ***no historic properties affected*** under Section 106 of NHPA. No further cultural resources work is recommended for the project.

Rincon presents the following recommendation in case of unanticipated discovery of cultural resources during project development. The project is also required to adhere to regulations regarding the unanticipated discovery of human remains, detailed below.

Unanticipated Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) should be contacted immediately to evaluate the find. If the discovery proves to be significant under NHPA and/or CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts.

Human Remains

If human remains are found, regulations outlined in the State of California Health and Safety Code Section 7050.5 state no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of being granted access and provide recommendations as to the treatment of the remains to the landowner.

1 Introduction

Woodard & Curran retained Rincon Consultants, Inc. (Rincon) to perform a cultural resources assessment for the Eastern Municipal Water District's (EMWD) Perris North Basin Groundwater Contamination Monitoring Program (project) in the cities of Moreno Valley and Perris, Riverside County, California. The purpose of this report is to document the tasks Rincon conducted; specifically, a cultural resources records search, Native American outreach, local historical group consultation, historical imagery review, and a field survey. Rincon understands the project requires review by the State Water Resources Control Board and may be completed using federal funding. Therefore, the cultural resources study was completed in accordance with California Environmental Quality Act (CEQA)-Plus standards for compliance with CEQA, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act (NHPA).

1.1 Project Location

The project site is within the cities of Moreno Valley and Perris in western Riverside County, California (Figure 1 and Figure 2). More specifically, it lies in Township 2 south, Range 4 west, section 36; Township 3 south, Range 3 west, sections 6, 7, 16, 17, 20, 22, and 30-32; Township 3 south, Range 4 west, sections 12 and 13; and Township 4 south, Range 3 west, sections 6-8 of the United States Geological Survey of *Riverside East, CA*, *Sunnymead, CA*, and *Perris, CA* 7.5-minute topographic quadrangles (Figure 3a and Figure 3b). The project site is in an area characterized by a mix of agricultural, residential, commercial, and light industrial development.

1.2 Project Description

The proposed project involves construction and operation of up to 10 monitoring wells in the Perris North Groundwater Management Zone, which is within the San Jacinto Groundwater Basin. EMWD manages the Perris North Groundwater Management Zone for water supply and quality, and it is an important resource to the region. Currently, groundwater in the Perris North Groundwater Management Zone is contaminated. The monitoring wells installed by the proposed project will improve EMWD's understanding of the level and extent of contamination and help inform management decisions related to the Perris North Groundwater Management Zone.

Description of Monitoring Wells

For each well, an 18-inch borehole would be drilled, and 6-inch casing would be installed, along with a sampling pump located inside the well. For wells within roadway rights-of-way or sidewalks, well heads would be flush-mounted to the road or sidewalk. Wells located within parcel lots would either have well heads flush-mounted to the sidewalk or pavement, or would include a standpipe surrounded by bollards. Standpipes would be aboveground completions extending two to three feet above grade, with traffic bollards installed around each for the protection of the well head. Wells would be drilled to a maximum depth of 200 to 800 feet deep, depending on where in the project area they are located. During operation of the wells, a 40-foot by 40-foot area would be required to provide access for temporary monitoring equipment for semi-annual data collection visits.

Well Construction

Monitoring well construction would involve asphalt removal in roadway rights-of-way or site clearing and grading on vacant parcels, well drilling and installation, and restoration of the site to pre-construction conditions. Each well would have an 18-inch borehole, and a 6-inch maximum casing. Construction of each well would require three weeks from mobilization to demobilization. Well drilling would require 24-hour drilling, including weekends, for a duration of up to two weeks per well. Wells would be constructed to avoid existing underground utilities.

Construction of the monitoring wells is assumed to temporarily disturb an area of 100 feet by 100 feet at each site, to allow for equipment and construction activities. Assuming a maximum depth of 800 feet, and an 18-inch borehole, approximately 55 cubic yards of drill cuttings would be exported from each well site. Additional material would be exported from each well site during grading and wellhead construction. The total material export associated with each well would average 100 cubic yards (i.e., 1,000 cubic yards of export total for all ten of the proposed project's wells). Cuttings from drilling activities would be disposed to the nearest landfill.

1.3 Area of Potential Effects

36 Code of Federal Regulations (CFR) 800.16(d) defines a project Area of Potential Effects (APE) as the "geographic area or areas within which a project may directly or indirectly cause changes in the character or use of historic properties if any such property exists." The APE generally depicts all areas expected to be affected by the proposed project, including construction staging areas. For this study, the APE includes the project disturbance footprint associated with the 10 proposed well location sites which includes the well site and surrounding 100 by 100 foot area (Figure 3a and Figure 3b). In total, the horizontal APE encompasses approximately 2.3 acres.

The APE must also be considered as a three-dimensional space and includes any ground disturbance associated with the project. The vertical depth of the APE is estimated to reach depths of 200 to 800 feet for the monitoring wells. Because most of the project elements will be subterranean, no indirect effects (i.e., visual, auditory, or atmospheric) are anticipated for the project.

1.4 Project Personnel

Rincon Archaeologist and Principal Investigator Tiffany Clark, PhD, Registered Professional Archaeologist (RPA) provided management oversight for this cultural resources study. Dr. Clark meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology (National Park Service 1983). Staff Architectural Historian James Williams, MA, assisted with the Native American outreach and local historical group consultation. Archaeologist Gena Granger, MA, RPA assisted with the Native American outreach, conducted the records search for the project, performed the field survey, and assisted in the preparation of this report. Geographic Information Systems Analyst Allysen Valencia prepared the figures found in this report. Principal Jennifer Haddow, PhD, reviewed this report for quality control.

Figure 1 Project Location Map

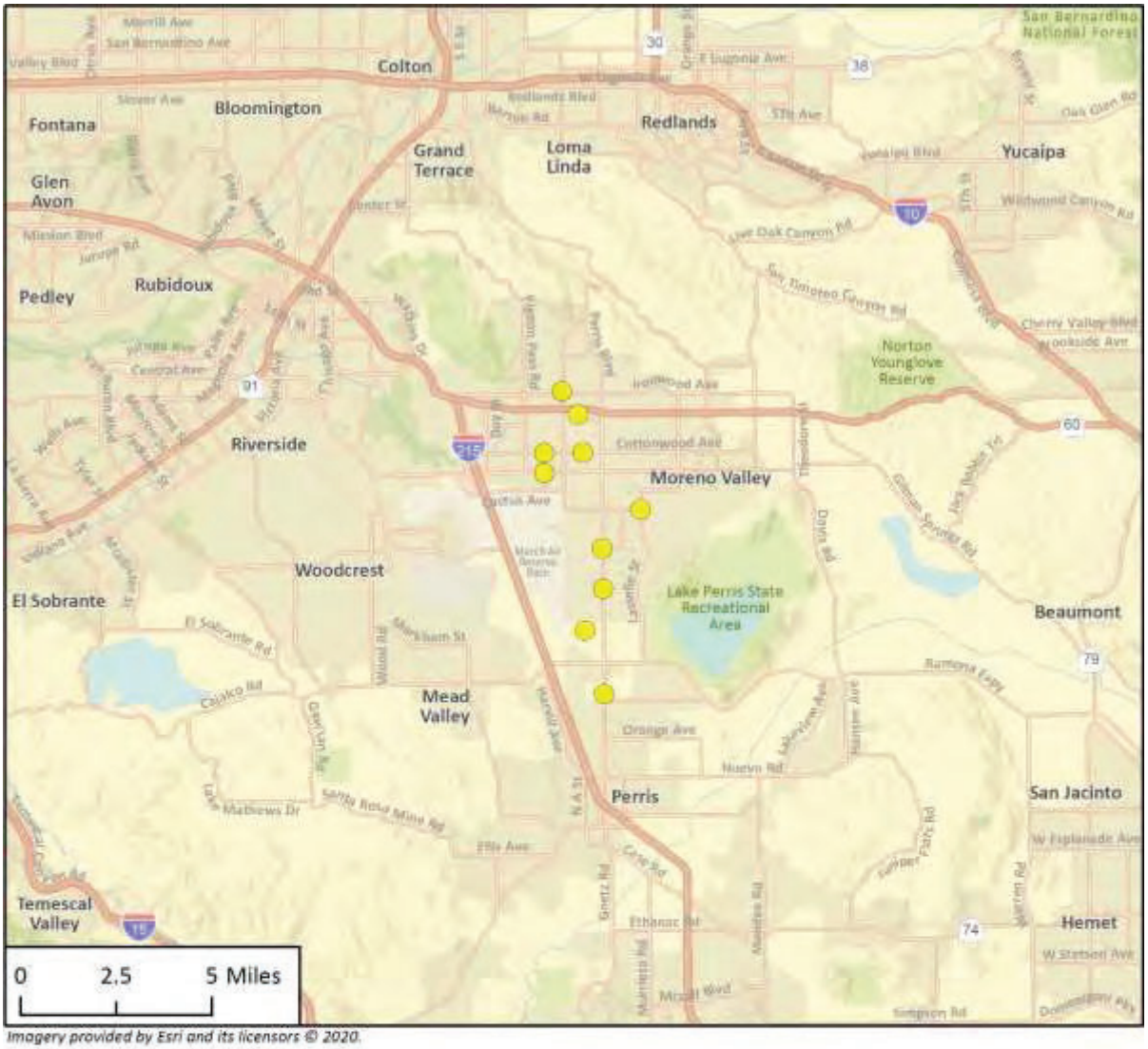



Figure 2 Project Vicinity Map



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Figure 3a Project Area of Potential Effect

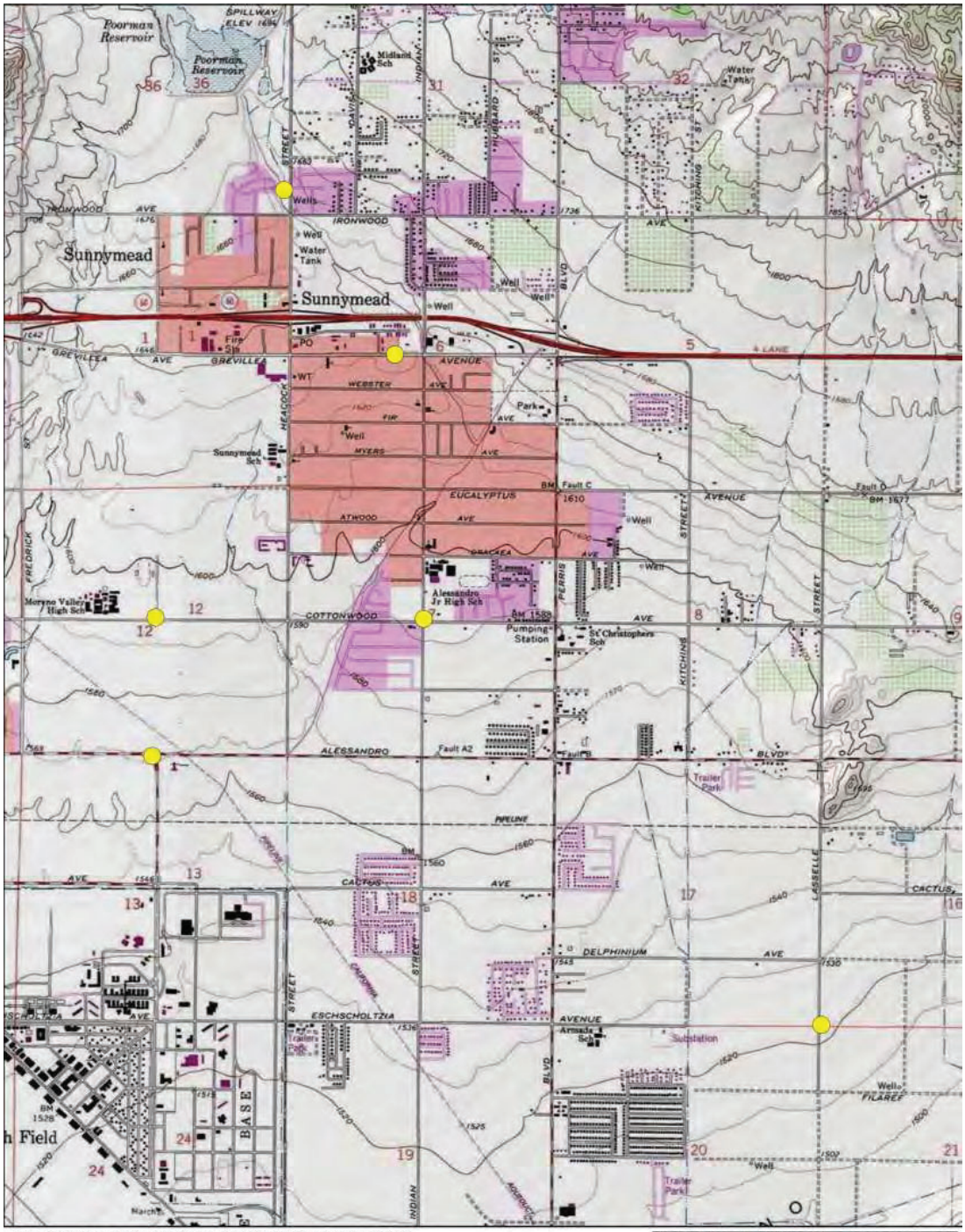
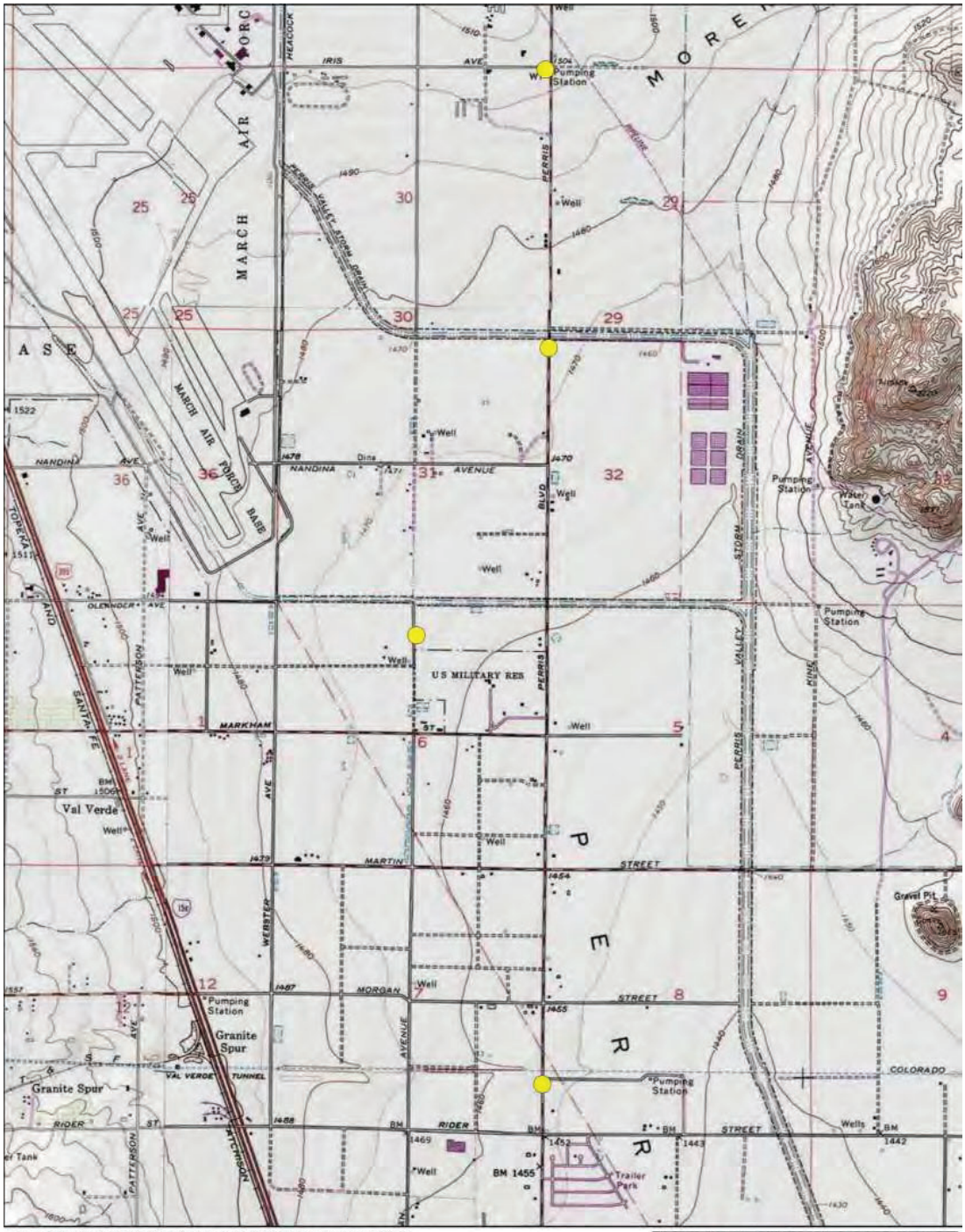


Figure 3b Area of Potential Effects Map (continued)



2 Regulatory Setting

This section includes a discussion of the applicable federal, state, and local laws, ordinances, regulations, and standards governing cultural resources, to which the proposed project should adhere before and during implementation.

2.1 Federal

National Historic Preservation Act

The proposed project is considered a federal undertaking due to the potential for federal funding; it is, therefore, subject to Section 106 of the NHPA, which applies when a project, activity, or program is funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including projects carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license, or approval. Cultural resources are considered during federal undertakings chiefly under Section 106 of the NHPA of 1966 (as amended) and through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), and the National Environmental Policy Act. Properties of traditional, religious, and cultural importance to Native Americans are considered under Section 101 (d)(6)(A) and Section 106 (36 CFR 800.3-800.10) of the NHPA. Other federal laws governing cultural resources include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1989, among others.

Section 106 of the NHPA (16 United States Code 470f) requires federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance is assessed of any adversely affected historic property and mitigation measures are proposed to resolve the adverse effects to an acceptable level. Historic properties are those significant cultural resources listed in or are eligible for listing in the National Register of Historic Properties (NRHP). Generally, districts, sites, buildings, structures, and object that possess integrity are eligible for inclusion in the NRHP if they meet the following the criteria (36 CFR 60.4):

a. Are associated with events that have made a significant contribution to the broad patterns of our history
b. Are associated with the lives of persons significant in our past
c. Embody the distinctive characteristics of a type, period, or method of installation, or that represent 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
d. Have yielded, or may be likely to yield, information important in prehistory or history

Ordinarily, cemeteries, birthplaces, or graves of historic figures; properties owned by religious institutions or used for religious purposes; structures having been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for NRHP listing, unless they satisfy certain conditions. In general,

a resource must be 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

2.2 State

California Environmental Quality Act

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC], Section 21084.1) or tribal cultural resources (PRC Section 21074[a][1][A]-[B]). A historical resource is a resource listed, or determined to be eligible for listing in the California Register of Historical Resources (CRHR); a resource included in a local register of historical resources; or an object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be *historically significant* (State CEQA Guidelines, Section 15064.5[a][1-3]).

A resource shall be considered *historically significant* 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 to 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

Generally, a cultural resource must be at least 50 years of age to be considered for listing on the CRHR. Resources that have achieved significance within the past 50 years may also be eligible for inclusion in the CRHR, provided enough time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource (Office of Historic Preservation n.d.:3).

If it can be demonstrated a project will cause damage to a *unique archaeological resource*, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a], [b]).

PRC Section 21083.2(g) defines a *unique archaeological resource* as an artifact, object, or site about which it can be demonstrated clearly that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
2) Has a special and particular quality such as being the oldest of its type or the best available example of its type
3) Is directly associated with a scientifically recognized important prehistoric or historic event or person

Assembly Bill 52

California Assembly Bill 52 (AB 52) was enacted July 1, 2015; it expands CEQA by defining a new resource category called *tribal cultural resources* (TCR). AB 52 establishes "a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a

significant effect on the environment" (PRC Section 21084.2). It further states the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a TCR, when feasible (PRC Section 21084.3).

PRC Section 21074(a)(1)(A) and (B) defines TCRs as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and meets either of the following criteria:

1) Listed or eligible for listing in the CRHR, or in a local register of historical resources, as defined in PRC Section 5020.1(k)
2) 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 PRC 5024.1. In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe

AB 52 also establishes a formal consultation process for California tribes regarding TCRs. Under AB 52, lead agencies are required to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those requesting notice of projects proposed within the jurisdiction of the lead agency. The consultation process for a project must take place prior to the adoption of a negative declaration or mitigation negative declaration or the certification of an environmental impact report.

3 Natural and Cultural Setting

3.1 Natural Setting

The project APE lies within the Moreno and Perris valleys which are bounded by the Badlands to the east, a series of low-lying granitic hills, including Box Spring Mountains, to the north and west, and the San Jacinto River to the south. The nearest major body of water is Lake Perris, which is located less than two miles to the east. The elevation of the project site ranges from 1,450 to 1,660 feet above mean sea level. Most of the project APE is developed and is characterized by a mix of agricultural, residential, commercial, and industrial uses.

3.2 Cultural Setting

During the twentieth century, many archaeologists developed chronological sequences to explain prehistoric cultural changes in all or portions of southern California (c.f., Jones and Klar 2007; Moratto 1984). Wallace (1955, 1978) devised a prehistoric chronology for the southern California region based on early studies and focused on data synthesis that included four horizons: Early Man, Milling Stone, Intermediate, and Late Prehistoric. Though initially lacking the chronological precision of absolute dates (Moratto 1984: 159), Wallace's (1955) synthesis has been modified and improved using thousands of radiocarbon dates obtained by southern California researchers over recent decades (Byrd and Raab 2007: 217; Koerper and Drover 1983; Koerper et al. 2002; Mason and Peterson 1994). The composite prehistoric chronological sequence for southern California is based on Wallace (1955), Warren (1968), and later studies including Koerper and Drover (1983).

Early Man Horizon (10,000 – 6000 BCE)

Numerous pre-8000 BCE sites have been identified along the mainland coast and Channel Islands of southern California (c.f., Erlandson 1991; Johnson et al. 2002; Jones and Klar 2007; Moratto 1984; Rick et al. 2001: 609). The Arlington Springs site on Santa Rosa Island produced human femurs dated to approximately 13,000 years ago (Arnold et al. 2004; Johnson et al. 2002). On nearby San Miguel Island, human occupation at Daisy Cave (SMI-261) has been dated to nearly 13,000 years ago and included basketry greater than 12,000 years old, the earliest on the Pacific Coast (Arnold et al. 2004).

Although few Clovis- or Folsom-style fluted points have been found in southern California (e.g., Dillon 2002; Erlandson et al. 1987), Early Man Horizon sites are associated generally with a greater emphasis on hunting than later horizons. Recent data indicate the Early Man economy was a diverse mixture of hunting and gathering, including a significant focus on aquatic resources in coastal areas (e.g., Jones et al. 2002) and on inland Pleistocene lakeshores (Moratto 1984). A warm and dry 3,000-year period called the Altithermal began around 6000 BCE. The conditions of the Altithermal are likely responsible for the change in human subsistence patterns at this time, including a greater emphasis on plant foods and small game.

Milling Stone Horizon (6000 – 3000 BCE)

The Milling Stone Horizon is defined as "marked by extensive use of milling stones and mullers, a general lack of well-made projectile points, and burials with rock cairns" (Wallace 1955: 219). The dominance of such artifact types indicates a subsistence strategy oriented around collecting plant foods and small animals. A broad spectrum of food resources was consumed including small and large terrestrial mammals, sea mammals, birds, shellfish and other littoral and estuarine species, near-shore fishes, yucca, agave, and seeds and other plant products (Kowta 1969; Reinman 1964). Variability in artifact collections over time and from the coast to inland sites indicates Milling Stone Horizon subsistence strategies adapted to environmental conditions (Byrd and Raab 2007: 220). Locally available tool stone dominates lithic artifacts associated with Milling Stone Horizon sites; ground stone tools, such as manos and metates, and chopping, scraping, and cutting tools, are common. Kowta (1969) attributes the presence of numerous scraper-plane tools in Milling Stone Horizon collections to the processing of agave or yucca for food or fiber. The mortar and pestle, associated with acorns or other foods processed through pounding, were first used during the Milling Stone Horizon and increased dramatically in later periods (Wallace 1955, 1978; Warren 1968).

Two types of artifacts considered diagnostic of the Milling Stone period are the cogged stone and discoidal, most of which have been found on sites dating between 4000 and 1000 BCE (Moratto 1984: 149), though possibly as far back as 5500 BCE (Couch et al. 2009). The cogged stone is a ground stone object that has gear-like teeth on the perimeter and is produced from a variety of materials. The function of cogged stones is unknown, but many scholars have postulated ritualistic or ceremonial uses (c.f., Dixon 1968: 64-65; Eberhart 1961: 367) based on the materials used and their location near to burials and other established ceremonial artifacts as compared to typical habitation debris. Similar to cogged stones, discoidals are found in the archaeological record subsequent to the introduction of the cogged stone. Cogged stones and discoidals were often buried purposefully, or "cached." They are most common in sites along the coastal drainages from southern Ventura County southward and are particularly abundant at some Orange County sites, although a few specimens have been found inland as far east as Cajon Pass (Dixon 1968: 63; Moratto 1984: 149). Cogged stones have been collected in Riverside County and their distribution appears to center on the Santa Ana River basin (Eberhart 1961), within which the project site lies.

Intermediate Horizon (3000 BCE – CE 500)

Wallace's Intermediate Horizon dates from approximately 3000 BCE to CE 500 and is characterized by a shift toward a hunting and maritime subsistence strategy, as well as greater use of plant foods. During the Intermediate Horizon, a noticeable trend occurred toward greater adaptation to local resources including a broad variety of fish, land mammal, and sea mammal remains along the coast. Tool kits for hunting, fishing, and processing food and materials reflect this increased diversity, with flake scrapers, drills, various projectile points, and shell fishhooks being manufactured.

Mortars and pestles became more common during this transitional period, gradually replacing manos and metates as the dominant milling equipment. Many archaeologists believe this change in milling stones signals a change from the processing and consuming of hard seed resources to the increasing reliance on acorn (c.f., Glassow et al. 1988; True 1993). Mortuary practices during the Intermediate typically included fully flexed burials oriented toward the north or west (Warren 1968: 2-3).

Late Prehistoric Horizon (CE 500 – Historic Contact)

During Wallace's (1955, 1978) Late Prehistoric Horizon the diversity of plant food resources and land and sea mammal hunting increased even further than during the Intermediate Horizon. More classes of artifacts were observed during this period and high quality exotic lithic materials were used for small finely worked projectile points associated with the bow and arrow. Steatite containers were made for cooking and storage and an increased use of asphalt for waterproofing is noted. More artistic artifacts were recovered from Late Prehistoric sites and cremation became a common mortuary custom. Larger, more permanent villages supported an increased population size and social structure (Wallace 1955: 223).

Warren (1968) attributes this dramatic change in material culture, burial practices, and subsistence focus to the westward migration of desert people he called the Takic, or Numic, Tradition in Los Angeles, Orange, and western Riverside counties. This Takic Tradition was formerly referred to as the "Shoshonean wedge" (Warren 1968), but this nomenclature is no longer used to avoid confusion with ethnohistoric and modern Shoshonean groups (Heizer 1978: 5; Shipley 1978: 88, 90). The Takic expansion remains a major question in southern California prehistory and has been a matter of debate in archaeological and linguistic research. Linguistic, biological, and archaeological evidence supports the hypothesis Takic peoples from the Southern San Joaquin Valley and/or western Mojave Desert entered southern California ca. 3,500 years ago to occupy the Los Angeles/Orange County area (Sutton 2009). Modern Gabrieleño/Tongva in western Riverside County are generally considered by archaeologists to be descendants of these prehistoric Uto-Aztecan, Takic-speaking populations who settled along the California coast during the Late Prehistoric Horizon. Sutton argues surrounding Cupan groups (Serrano, Cahuilla, Cupeño, and Luiseño), were biologically Yuman peoples who were in the area prior to the Takic expansion but adopted Takic languages around 1,500 years ago.

3.3 Ethnographic Context

The project site is situated in an area near the boundaries of several Native American groups documented by anthropologists in the early twentieth century (e.g., Kroeber 1908). The historically identified territories occupied by the Cahuilla, Luiseño, Serrano, and Gabrieleño all exist within a 25-mile range of the project site. While these boundaries are based on interviews with informants and research in archives, such as the records of the Hispanic Catholic Missions in the region, it is likely such boundaries were not static; rather, they were probably fluid and may have changed through time. Below are synopses of ethnographic data for each of the four Native American groups.

Cahuilla

The project site is situated in the vicinity historically occupied by a Native American group known as the Cahuilla, though near the boundary with the Juaneño and Luiseño (Bean 1978; Heizer 1978; Kroeber 1925). The term Cahuilla likely derived from the native word káwiya, meaning "master" or "boss" (Bean 1978: 575). Traditional Cahuilla ethnographic territory extended west to east from the present-day city of Riverside to the central portion of the Salton Sea in the Colorado Desert, and south to north from the San Jacinto Valley to the San Bernardino Mountains.

The Cahuilla, like their neighbors to west, the Luiseño and Juaneño, and the Cupeño to the south, are speakers of a Cupan language. The Cupan languages are part of the Takic linguistic subfamily of the Uto-Aztecan language family. Anthropologists posit the Cahuilla migrated to southern California

approximately 2,000 to 3,000 years ago, most likely from the southern Sierra Nevada mountain ranges of east-central California with other Takic speaking social groups (Moratto 1984: 559).

Cahuilla social organization was hierarchical and contained three primary levels (Bean 1978: 580). The highest level was the cultural nationality, encompassing everyone speaking a common language. The next level included the two patrimoieties of the Wildcats (tuktum) and the Coyotes (‘istam). Every clan of the Cahuilla was in one or the other of these moieties. The lowest level consisted of the numerous political-ritual-corporate units called sibs, or a patrilineal clan (Bean 1978: 580).

Cahuilla villages were usually located in canyons or on alluvial fans near a source of accessible water. Each lineage group maintained their own houses (kish) and granaries, and constructed ramadas for work and cooking. Sweathouses and song houses (for non-religious music) were also often present. Each community also had a separate house for the lineage or clan leader. Ceremonial houses associated with clan leaders were where major religious ceremonies were held. Houses and ancillary structures were often spaced apart, and a “village” could extend over a mile or two. Each lineage had ownership rights to various resource collecting locations, “including food collecting, hunting, and other areas. Individuals also owned specific areas or resources, e.g., plant foods, hunting areas, mineral collecting places, or sacred spots used only by shamans, healers and the like” (Bean 1990:2).

The Cahuilla hunted a variety of game, including mountain sheep, cottontail, jackrabbit, mice, and wood rats, as well as predators such as mountain lion, coyote, wolf, bobcat, and fox. Various birds were consumed, including quail, duck, and dove, plus various types of reptiles, amphibians, and insects. The Cahuilla employed a wide variety of tools and implements to gather and collect food resources. For hunting, these included the bow and arrow, traps, nets, slings and blinds for hunting land mammals and birds, and nets for fishing. Rabbits and hares were commonly brought down by the throwing stick, but when communal hunts were organized, the Cahuilla often utilized clubs and very large nets to capture these animals.

Foodstuffs were processed using a variety of tools, including portable stone mortars, bedrock mortars and pestles, basket hopper mortars, manos and metates, bedrock grinding slicks, hammerstones and anvils, and many others. Food was consumed from a number of woven and carved wood vessels and pottery vessels. The ground meal and unprocessed hard seeds were stored in large finely woven baskets, and the unprocessed mesquite beans were stored in large granaries woven of willow branches and raised off the ground on platforms to keep them from vermin. The Cahuilla made pottery vessels and traded with the Yuman-speaking groups across the Colorado River and to the south.

The Cahuilla had adopted limited agricultural practices by the time Euro-Americans traveled into their territory. Bean has suggested their “proto-agricultural techniques and a marginal agriculture” consisting of beans, squash and corn may have been adopted from the Colorado River groups to the east (Bean 1978: 578). Certainly, by the time of the first Romero Expedition in 1823-24, the Cahuilla were observed growing corn, pumpkins, and beans in small gardens around springs near the town of Thermal in the Coachella Valley (Bean and Mason 1962: 104). The introduction of European plants, such as barley and other grain crops, suggest an interaction with the missions or local Mexican rancheros. Despite the increasing use and diversity of crops, no evidence indicates small-scale agriculture was anything more than a supplement to Cahuilla subsistence, and it apparently did not alter social organization.

By 1819, several Spanish mission outposts, known as *asistencias*, were established near Cahuilla territory at San Bernardino and San Jacinto, including the asistencia near Redlands. Cahuilla interaction with Europeans at this time was not as intense as it was for native groups living along the coast, likely due to the local topography and lack of water which made the area less attractive to colonists. By the 1820s, European interaction increased as mission ranchos were established in the region and local Cahuilla were employed to work on them.

The Bradshaw Trail was established in 1862 and was the first major east-west stage and freight route through the Coachella Valley. Traversing the San Gorgonio Pass, the trail connected gold mines on the Colorado River with the coast. Bradshaw based his trail on the Cocomaricopa Trail, with maps and guidance provided by local Native Americans. Journals by early travelers along the Bradshaw Trail told of encountering Cahuilla villages and walk-in wells during their journey through the Coachella Valley. The continued influx of immigrants into the region introduced the Cahuilla to European diseases. The single worst recorded event was a smallpox epidemic which swept through Southern California in 1862-63, significantly reducing the Cahuilla population. By 1891, only 1,160 Cahuilla remained in what was left of their territory, down from an aboriginal population of 6,000–10,000 (Bean 1978: 583-584). By 1974, approximately 900 people claimed Cahuilla descent, most of whom resided on reservations.

Between 1875 and 1891, the United States established ten reservations for the Cahuilla in their traditional territory. These include the Agua Caliente, Augustine, Cabazon, Cahuilla, Los Coyotes, Morongo, Ramona, Santa Rosa, Soboba, and Torres-Martinez reservations (Bean 1978: 585). Other groups share four of the reservations, including the Chemehuevi, Cupeño, and Serrano.

Luiseño

The project site is located at the northern extent of the area traditionally occupied by the Luiseño, who inhabited the north half of San Diego County and western edge of Riverside County (Bean and Shipek 1978; Heizer 1978; Kroeber 1925). The term Luiseño was applied to the Native Americans managed by Mission San Luis Rey and later used for the Payomkawichum nation living in the area where the mission was founded (Mithun 2001: 539-540). Luiseño territory encompassed the drainages of the San Luis Rey River and the Santa Margarita River, covering numerous ecological zones (Bean and Shipek 1978).

Prior to European contact, the Luiseño lived in permanent, politically autonomous villages, ranging in size from 50 to 400 people, and associated seasonal camps. Each village controlled a larger resource territory and maintained ties to other villages through trade and social networks. Trespassing in another village's resource area was cause for war (Bean and Shipek 1978). Villages consisted of dome-shaped dwellings (kish), sweat lodges, and a ceremonial enclosure (vamkech). Leadership in the villages focused on the chief, or Nota, and a council of elders (puuplem). The chief controlled religious, economic, and war-related activities (Bean and Shipek 1978).

The Luiseño religion was focused on Chinigchinich, a mythological hero. Religious rituals took place in a brush enclosure housing a representation of Chinigchinich. Ritual ceremonies included puberty initiation rites, burial and cremation ceremonies, hunting rituals, and peace rituals (Bean and Shipek 1978).

Luiseño subsistence focused on the acorn and was supplemented by gathering other plant resources, and shellfish, fishing, and hunting. Plant foods typically included pine nuts, seeds from various grasses, manzanita, sunflower, sage, chia, lemonade berry, prickly pear, and lamb's-quarter. Acorns were leached and served in various ways. Seeds were ground. Prey included deer, antelope,

rabbit, quail, ducks, and other birds. Fish were caught in rivers and creeks. Fish and sea mammals were taken from the shore or dugout canoes. Shellfish were collected from the shore and included abalone, turbans, mussels, clams, scallops, and other species (Bean and Shipek 1978).

Serrano

The Serrano are another Native American group who occupied territory near the project site. The Serrano occupied an area in and around the San Bernardino Mountains between approximately 450 and 3,350 meters (1,500 to 11,000 feet) above mean sea level. Their territory extended west of the Cajon Pass, east past Twentynine Palms, north of Victorville, and south to Yucaipa Valley. The Serrano language is part of the Serran division of a branch of the Takic family of the Uto-Aztecan linguistic stock (Mithun 2006: 539, 543). The two Serran languages, Kitanemuk and Serrano, are closely related. Kitanemuk lands were northwest of Serrano lands. Serrano was spoken originally by a relatively small group located in the San Bernardino and Sierra Madre mountains, and the term "Serrano" has come to be ethnically defined as the name of the people in the San Bernardino Mountains (Kroeber 1925: 611). The Vanyume, who lived along the Mojave River and associated Mojave Desert areas and are also referred to as the Desert Serrano, spoke either a dialect of Serrano or a closely related language (Mithun 2001: 543). Year-round habitation tended to be located on the desert floor, at the base of the mountains, and up into the foothills, with all habitation areas requiring year-round water sources (Bean and Smith 1978; Kroeber 1908).

Most Serrano lived in small villages located near water sources (Bean and Smith 1978: 571). Houses measured 3.7 to 4.3 meters (12 to 14 feet) in diameter. They were domed and constructed of willow branches and tule thatching; they were occupied by a single, extended family. Many of the villages had a ceremonial house, used both as a religious center and as the residence of the lineage leaders. Additional structures in a village might include granaries and a large circular subterranean sweathouse. The sweathouses were typically built along streams or pools. A village was usually composed of at least two lineages. The Serrano were loosely organized along patrilineal lines and associated themselves with one of two exogamous moieties or "clans"—the Wahiyam (coyote) or the Tukum (wildcat).

The subsistence economy of the Serrano was one of hunting and collecting plant goods, with occasional fishing (Bean and Smith 1978: 571). They hunted large and small animals, including mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Plant staples consisted of seeds; acorn nuts of the black oak; piñon nuts; bulbs and tubers; and shoots, blooms, and roots of various plants, including yucca, berries, barrel cacti, and mesquite. The Serrano used fire as a management tool to increase yields of specific plants, particularly chía.

Trade and exchange were an important aspect of the Serrano economy. Those living in the lower-elevation, desert floor villages traded foodstuffs with people living in the foothill villages who had access to a different variety of edible resources. In addition to inter-village trade, ritualized communal food procurement events, such as rabbit and deer hunts and piñon, acorn, and mesquite nut-gathering events, integrated the economy and helped distribute resources available in different ecozones.

Contact between Serrano and Europeans was minimal prior to the early 1800s. As early as 1790, however, Serrano began to be drawn into mission life (Bean and Vane 2002). More Serrano were relocated to Mission San Gabriel in 1811 after a failed indigenous attack on the mission. Most of the remaining western Serrano were moved to an asistencia built near Redlands in 1819 (Bean and Smith 1978: 573).

A smallpox epidemic in the 1860s killed many indigenous southern Californians, including many Serrano (Bean and Vane 2002). Oral history accounts of a massacre in the 1860s at Twentynine Palms may have been part of a larger American military campaign lasting 32 days (Bean and Vane 2002: 10). Surviving Serrano sought shelter at Morongo with their Cahuilla neighbors; Morongo later became a reservation (Bean and Vane 2002). Other survivors followed the Serrano leader Santos Manuel down from the mountains and toward the valley floors and eventually settled what later became the San Manuel Band of Mission Indians Reservation, formally established in 1891.

In 2003, most Serrano lived either on the Morongo or San Manuel reservations (California Indian Assistance Program 2003). The Morongo Band of Mission Indians of the Morongo Reservation, established through presidential executive orders in 1877 and 1889, includes both Cahuilla and Serrano members. Established in 1891, the San Manuel Band of Mission Indians Reservation includes Serrano. Both Morongo and San Manuel are federally recognized tribes. People of both reservations participate in cultural programs to revitalize traditional languages, knowledge, and practices.

Gabrieleño

The project site is also located at the eastern edge of an area historically occupied by the Gabrieleño. Archaeological evidence points to the Gabrieleño arriving in the Los Angeles Basin sometime around 500 BCE; however, this has been a subject of debate. Many contemporary Gabrieleño identify themselves as descendants of the indigenous people living across the plains of the Los Angeles Basin and use the native term Tongva (King 1994). This term is used in the remainder of this section to refer to the pre-contact inhabitants of the Los Angeles Basin and their descendants. Surrounding native groups included the Chumash and Tataviam to the northwest, the Serrano and Cahuilla to the northeast, and the Juaneño and Luiseño to the southeast.

Tongva lands encompassed the greater Los Angeles Basin and three Channel Islands, San Clemente, San Nicolas, and Santa Catalina. The Tongva established large, permanent villages in the fertile lowlands along rivers and streams, and in sheltered areas along the coast, stretching from the foothills of the San Gabriel Mountains to the Pacific Ocean. A total tribal population has been estimated of at least 5,000 (Bean and Smith 1978: 540), but recent ethnohistoric work suggests a number approaching 10,000 (O'Neil 2002). Houses constructed by the Tongva were large, circular, domed structures made of willow poles thatched with tule holding up to 50 people (Bean and Smith 1978). Other structures served as sweathouses, menstrual huts, ceremonial enclosures, and probably communal granaries. Cleared fields for races and games, such as lacrosse and pole throwing, were created adjacent to Tongva villages (McCawley 1996: 27). Archaeological sites composed of villages with various sized structures have been identified.

The Tongva subsistence economy was centered on gathering and hunting. The surrounding environment was rich and varied, and the tribe exploited mountains, foothills, valleys, deserts, riparian, estuarine, and open and rocky coastal eco-niches. Like most native Californians, acorns were the staple food (an established industry by the time of the early Intermediate Period). Acorns were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora (e.g., islay, cactus, yucca, sages, and agave). Fresh water and saltwater fish, shellfish, birds, reptiles, and insects, as well as large and small mammals, were also consumed (Bean and Smith 1978: 546; Kroeber 1925: 631–632; McCawley 1996: 119–123, 128–131).

A wide variety of tools and implements were used by the Tongva to gather and collect food resources. These included the bow and arrow, traps, nets, blinds, throwing sticks and slings, spears, harpoons, and hooks. Groups residing near the ocean used oceangoing plank canoes and tule balsa

canoes for fishing, travel, and trade between the mainland and the Channel Islands (McCawley 1996: 7). Tongva people processed food with a variety of tools, including hammerstones and anvils, mortars and pestles, manos and metates, strainers, leaching baskets and bowls, knives, bone saws, and wooden drying racks. Food was consumed from a variety of vessels. Catalina Island steatite was used to make ollas and cooking vessels (Blackburn 1963; Kroeber 1925: 629; McCawley 1996: 129–138).

At the time of Spanish contact, the basis of Tongva religious life was the Chinigchinich cult, centered on the last of a series of heroic mythological figures. Chinigchinich gave instruction on laws and institutions, and taught the people how to dance, the primary religious act for this society. He later withdrew into heaven, where he rewarded the faithful and punished those who disobeyed his laws (Kroeber 1925: 637–638). The Chinigchinich religion seems to have been relatively new when the Spanish arrived. It was spreading south into the Southern Takic groups even as Christian missions were being built and may represent a mixture of native and Christian belief and practices (McCawley 1996: 143–144).

Deceased Tongva were either buried or cremated, with inhumation more common on the Channel Islands and the neighboring mainland coast and cremation predominating on the remainder of the coast and in the interior (Harrington 1942; McCawley 1996: 157). At the behest of the Spanish missionaries, cremation essentially ceased during the post-Contact period (McCawley 1996: 157).

3.4 History

The post-contact history of California is generally divided into three epochs: the Spanish period (1769–1822), the Mexican period (1822–1848), and the American period (1848–present). Each of these periods is described briefly below.

Spanish Period (1769–1822)

Spanish exploration of what was then known as Alta (upper) California began when Juan Rodriguez Cabrillo led the first European expedition into the region in 1542. For more than 200 years after his initial expedition, Spanish, Portuguese, British, and Russian explorers sailed the Alta California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968, Rolle 2003). Spanish entry into what was to become Riverside County did not occur until 1774 when Juan Bautista de Anza led an expedition from Sonora, Mexico to Monterey in northern California (Lech 1998).

In 1769, Gaspar de Portolá and Franciscan Father Junipero Serra established the first Spanish settlement at Mission San Diego de Alcalá. This was the first of 21 missions erected by the Spanish between 1769 and 1823. The establishment of the missions marks the first sustained occupation of Alta California by the Spanish. In addition to the missions, four presidios and three pueblos (towns) were established throughout the state (State Lands Commission 1982). In 1819, an asistencia was established near present-day Redlands to serve as an outpost for cattle grazing activities carried out by Mission San Gabriel's Rancho San Bernardino (County of San Bernardino 2017). Around the same time, Native Americans living at the asistencia were directed to dig a zanja (irrigation ditch) to serve the asistencia and surrounding area.

During this period, Spain also deeded ranchos to prominent citizens and soldiers, though very few in comparison to the subsequent Mexican Period. To manage and expand their herds of cattle on these large ranchos, colonists enlisted the labor of the surrounding Native American population (Engelhardt 1927a). The missions were responsible for administrating to the local indigenous people

as well as converting the population to Christianity (Engelhardt 1927b). The influx of European settlers brought the local Native American population in contact with European diseases which they had no immunity against, resulting in catastrophic reduction in native populations throughout the state (McCawley 1996).

Mexican Period (1822–1848)

The Mexican Period commenced when news of the success of the Mexican War of Independence (1810-1821) reached California in 1822. This period saw the federalization of mission lands in California with the passage of the Secularization Act of 1833. This enabled Mexican governors in California to distribute former mission lands to individuals in the form of land grants. Successive Mexican governors made more than 700 land grants between 1822 and 1846, putting most of the state's lands into private ownership for the first time. About 15 land grants (ranchos) were located in Riverside County. The project area is situated in what was once Rancho San Jacinto, which included much of the San Jacinto Plains stretching from Box Springs to the San Jacinto Mountains and between the Badlands and Temecula (Shumway 2007).

American Period (1848–Present)

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for ceded territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming, and pay an additional $3.25 million to settle American citizens claims against Mexico. Settlement of southern California increased dramatically in the early American Period. Many ranchos in the county were sold or otherwise acquired by Americans, and most were subdivided into agricultural parcels or towns.

The discovery of gold in northern California in 1848 led to the California Gold Rush, despite the first California gold being previously discovered in southern California at Placerita Canyon in 1842 (Guinn 1977; Workman 1935: 26). Southern California remained dominated by cattle ranches in the early American period, though droughts and increasing population resulted in farming and more urban professions supplanting ranching through the late nineteenth century. In 1850, California was admitted into the United States and by 1853, the population of California exceeded 300,000.

Local History

Throughout the second half of the nineteenth century, migration throughout the state increased, in particular following completion of the transcontinental railroad in 1869. The California Southern Railroad, which ran through the Perris and Moreno valleys, was completed in 1882 and settlers began to flock to the area. The town site of Perris was established as a station on the rail route in 1886; the town of Perris was incorporated in 1911. Early settlers to the Moreno and Perris valleys area were primarily engaged in dry farming, as a reliable water source had not yet been secured. In 1893, Riverside County was created from portions of San Bernardino and San Diego Counties.

Following his success in the establishment of and provision of reliable water to the community of Redlands, Frank E. Brown progressed to similar successes in Alessandro, Perris, and Moreno. In 1890, he founded the Bear Valley and Alessandro Development Company and recorded the first subdivision of the area. "Map No. 1" divided roughly 21,440-acres into ten-acre farm plots, with the 280-acre town site of Moreno located at the intersection of Redlands and Alessandro Boulevard. This initial subdivision included the project site (Block No. 54; Lot/Parcel No. 1-8). In the same year and also with heavy involvement from Brown, the Alessandro Irrigation District was established, and construction began on an intricate series of pipelines to bring water to the valley (Lech 2004).

The arrival of water, via the Moreno Tunnel, in Moreno in 1891 led to increased investment in the area's agricultural economy. Following this development, large-scale fruit and citrus farms were established in the area. In 1899, lawsuits over water rights led to a loss of water delivery in the Moreno Valley. As a result, the valley's population in the area greatly decreased. Some moved their homes to the city of Riverside; those who remained engaged in the dry farming of hay, grain, and grapes. Public and private wells were eventually produced and by 1912, the Moreno Mutual Water Company had identified a reliable source of water. In the adjacent Perris Valley, dry farming continued into the 1950s, at which point EMWD was established and water was brought into the valley (City of Perris 2020).

Originally established as Alessandro Flying Training Field in 1918, the nearby March Field was constructed in the Moreno Valley as the country anticipated entry into World War I. While March Field closed briefly in the 1920s, it reopened in 1927 and eventually expanded to encompass 7,000-acres. March Field has played a key role in providing skilled crews for many international conflicts and remains in operation as a reserve base today (*Riverside Magazine* 2019*)*. The founding and lasting presence of March Field has contributed to the expansion of the Moreno and Perris valleys, as amenities for those stationed there have remained a necessity since its founding.

Through the 1970s the Moreno and Perris valleys experienced steady growth. As residential development increased, so too did recreational amenities. The Riverside International Raceway and the Lake Perris Recreation Area were established in 1953 and 1973, respectively. The valleys experienced a boom in the 1980s; the decade saw the population increase two-fold (from roughly 25,000 to over 70,000). While votes for incorporation failed in 1968 and 1983, in 1984 the City of Moreno Valley was officially incorporated. The cities of Moreno Valley and Perris have continued to expand in recent decades and today the area is largely occupied by suburban development.

4 Background and Methods

4.1 Cultural Resources Records Search

California Historical Resources Information Center

On January 23, 2020, Rincon conducted a search of the California Historical Resources Information System at the Eastern Information Center at the University of California, Riverside. The search was conducted to identify any previously recorded cultural resources and previously conducted cultural resources studies within the APE and a 0.5-mile radius surrounding it. Rincon also reviewed the NRHP, the CRHR, the Archeological Determination of Eligibility list, and the California State Historic Resources Inventory. A summary of these results follows. Maps showing the locations of previous studies and known resources are included in Appendix A (Confidential).

The records search found 88 previously identified cultural resource studies completed within 0.5-mile of the project APE between 1953 and 2019 (Table 1). Eight of these previous studies (RI-0146, RI-2171, RI-3693, RI-5027, RI-6579, RI-6898, RI-6914, and RI-9311) encompass approximately 50 percent of the current project APE; none of these studies identified any cultural resources in the APE.

Table 1 Previously Conducted Cultural Resources Studies within a 0.5-mile Radius of the APE

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-00002	Rogers, Malcom	1953	*Miscellaneous Field Notes – Riverside County. San Diego Museum of Man*	Outside
RI-00026	Akin, Margie	1971	*A Survey of the Archaeological Resources of the Santa Ana and San Jacinto River Basins*	Outside
RI-00130	Clough, Helen	1974	*Filed Notes for the Archaeological Survey of PL984 Water Systems Additions*	Outside
RI-00133	King, Thomas, Marry Brown, Gerrit Fenenge, and Claudia Nissley	1974	*Archaeological Impact Evaluation: Southern California Edison Company's Devers-Vista 220 kV Transmission Line, Riverside County, California*	Outside
RI-00137	O'Conell, James, Philip Wilke, Thomas King, and Carol Mix	1974	*Perris Reservoir Archaeology, Late Prehistoric Demographic Change in Southeastern California*	Outside
RI-00146	Smith, Joan	1974	*Archaeological Impact Evaluation: Eastern Water District, Sewage Pipeline, Mariposa Avenue to Existing Reclamation Facility, Sun City*	**Within**
RI-00161	Greenwood, Roberta	1975	*Paleontological, Archaeological, Historical, and Cultural Resources, West Coast-Midwest Pipeline Project, Long Beach to Colorado River*	Outside

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-00535	Lowell, John, Sylvia Vane, Matthew Hall, Harry Lawton, Richard Logan, Lee Massey, John Oxendine, Charles Rozaire, and David Whistle	1979	*Cultural Resources and the Devers-Mira 500 kV Transmission Line Route (Valley to Mira Loma Section)*	Outside
RI-00572	Breece, William	1979	*Cultural Resource Survey of the Metro Park Project Proposed Race Track, Riverside County, California*	Outside
RI-01045	Chavez, David	1978	*Cultural Resources Evaluation of the Four Corners Interconnect Facilities, San Bernardino and Riverside Counties, California*	Outside
RI-01312	Meighan, Clement	1975	*Historical Resources in Three Southern California Counties*	Outside
RI-01665	Wirth Associates	1983	*Devers-Serrano-Villa Park Transmission System Supplement to the Cultural Resources Technical Report - Public Review Document and Confidential Appendices*	Outside
RI-01843	Scientific Resource Surveys, Inc.	1984	*Cultural Resource Survey Report on Wolfskill Ranch*	Outside
RI-01955	Heller, Rod, Tim Tetherow, and C. White	1977	*An Overview of the Sundesert Nuclear Project Transmission System Cultural Resource Investigation*	Outside
RI-01978	Brock, James	1985	*Letter Report: Archaeological Field Reconnaissance of Proposed Post Office Site in Sunnymead, California*	Outside
RI-02050	Perault, Gordon	1985	*Preliminary Historic Inventory - March Air Force Base, California*	Outside
RI-02061	Lerch, Michael	1986	*Archaeological Survey of Festival at Moreno Valley, Riverside County, California*	Outside
RI-02171	McCarthy, Daniel	1987	*Cultural Resources Inventory for the City of Moreno Valley, Riverside County, California*	**Within**
RI-03490	McIntosh, Beverly	1991	*The Juan Bautista De Anza Trail Past, Present and Future, Baja to Riverside, California*	Outside
RI-03604	Jones, Carleton	1992	*The Development of Cultural Complexity Among the Luiseño: A Thesis Presented to the Department of Anthropology, California State University, Long Beach in Partial Fulfillment of the Requirements for the Degree, Master of Arts*	Outside
RI-03693	Foster, John, James Schmidt, Carmen Weber, Gwendolyn Romani, and Roberta Greenwood	1991	*Cultural Resource Investigation: Inland Feeder Project, Metropolitan Water District of Southern California*	**Within**
RI-04404	Jones and Stokes Associates, Inc.	2000	*Final Cultural Resources Inventory Report for the Williams Communications, Inc., Fiber Optic Cable System Installation Project, Riverside to San Diego, California Vol I-IV.*	Adjacent

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-04745	Thal, Erika	1990	*Letter Report: Proposed Cellular Tower Project(s) in Riverside County, California, Site Name/Number: CA-8863A/Iris*	Outside
RI-04762	Barker, Leo, and Ann Huston (editors)	1990	*Death Valley to Deadwood; Kennecott to Cripple Creek. Proceedings of the Historic Mining Conference, January 23-27, 1989, Death Valley National Monument*	Outside
RI-04813	National Park Service	1993	*California Citrus Heritage Recording Project: Photographs, Written Historical and Descriptive Data, Reduced Copies of Measured Drawings For: Arlington Height Citrus Landscape, Gage Irrigation Canal, National Orange Company Packing House, Victoria Bridge, and Union Pacific Railroad Bridge*	Outside
RI-04992	McKenna et al.	2004	*An Architectural Evaluation of Structures Located Within Assessor Parcel Numbers 482-090009-0, -010-0, and 033-0, within the City of Moreno Valley, Riverside County, California*	Outside
RI-05027	McKenna, Jeanette	2000	*A Phase I Cultural Resources Investigation of the Vesta Telecommunications, Inc. Fiber Optic Alignment, Riverside County to San Diego County, California*	**Within**
RI-05035	McKenna et al.	2005	*Letter Report: Monitoring at the Site of the Proposed Indian Middle School in the City of Perris, Riverside County, California*	Outside
RI-05088	Cultural Systems Research, Inc.	2005	*Ethnographic Overview Inland Feeder Pipeline Project*	Outside
RI-05444	McKenna, Jeanette	2005	*A Phase I Cultural Resources Investigation of the Ridge Property in the City of Perris, Riverside County, California*	Outside
RI-05550	Earth Tech	1995	*Phase I Archaeological Survey of the Gregory Site, March Air Force Base, Riverside County, California*	Outside
RI-06072	Cotterman, Cary, Evelyn Chandler, and Roger Mason	2004	*Cultural Resources Survey of an 83.5 Acre in Perris, Riverside County, CA*	Outside
RI-06073	Cotterman, Cary, Evelyn Chandler, and Roger Mason	2004	*Archaeological Test Excavation of the Perris Indian School Site, Perris, Riverside County, California*	Outside
RI-06074	Cotterman, Cary, Evelyn Chandler, and Roger Mason	2004	*Executive Summary Report for the Archaeological Investigations Conducted Along Perris Boulevard, Perris, Riverside County, CA*	Outside
RI-06147	Dice, Michael	2003	*Letter Report: Cultural Resource Records Search and Site Visit Results for Sprint Telecommunication Facility Candidate Rv57xc602b (Moreno Valley Plaza), 23300 Cottonwood Avenue, Moreno Valley, Riverside County, CA*	Outside
RI-06579	Bodmer, Clarence, Robert Porter, and Laura H. Shaker	2006	*Historical/Archaeological Resources Survey Report, All American Asphalt Plant, Assessor's Parcel No. 30-020-026, in the City of Perris, Riverside County, California*	**Within**
RI-06898	McKenna, Jeanette	2006	*A Phase 1 Cultural Resources, Investigation of the Perris 2, Project Area in the City of Perris, Riverside, Co., California*	**Within**

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-06914	Harrison, Jim	2003	*Letter Report: Biological and Cultural Resources Due Diligence Regarding the 500-Acre Watson Land Company-Perris Property in Riverside County, California*	**Within**
RI-06956	Bholat, Sara	2007	*Cultural Resources Survey, of a 1.9 Acre Parcel, (APN-303-275-036), Perris, Riverside County, California*	Adjacent
RI-07127	Jordan, Stacey	2007	*Archaeological Survey Report for Southern California Edison Company: Conversion of Overhead to Underground Project on the Rule 20C, Riverside County, California (WO#65777281, AI#6-7227)*	Outside
RI-07396	Sanka, Jennifer	2007	*Phase I Cultural Resources Assessment and Paleontological Records Review: Perris Boulevard Project in Moreno Valley, Riverside County, California*	Outside
RI-07499	Bonner, Wayne, and Marnie Aislin-Kay	2007	*Letter Report: Cultural Resource Records Search Results and Site Visit for Royal Street Communications, LLC Candidate LA2360B (Motel 7), 23581 Alessandro Boulevard, Moreno Valley, Riverside County, California*	Adjacent
RI-07538	Tang, Bai "Tom", Michael Hogan, Clarence Bodmer, Josh Smallwood, and Melissa Hernandez	2007	*Cultural Resources Technical Report, North Perris Industrial Specific Plan, City of Perris, Riverside County, California*	Outside
RI-07539	Bonner, Wayne, and Marnie Aislin-Kay	2007	*Letter Report: Cultural Resources Records Search and Site Visit for Royal Street Telecommunications, LLC Candidate LA2356B (Sunnymead Plaza), 24903 Sunnymead Boulevard, Moreno Valley, Riverside County, California*	Outside
RI-07613	Patterson, J., and K. Tsunoda	2008	*Archaeological Survey Report for Southern California Edison Company O&M - 2008 B1355 Annual Capacitor Project for Pole #2037338e on the Chaney 12kv Circuit, Riverside County, California (WO#6077-5597, Ai#7-5504)*	Outside
RI-07620	Clifford, J. and B. Smith	2005	*A Cultural Resources Survey for the Idi Perris Project County of Riverside: APNS 302-080-011 through 302-080-017, 302-090-016, 302-090-017*	Adjacent
RI-07690	Rosenburg, Seth, and Brian Smith	2006	*A Phase I Archaeological Assessment for the La Corona Market Project, City of Perris, Riverside County, California*	Outside
RI-07862	Smallwood, Josh, Terri Jacquemain, and Laura H. Shaker	2008	*Historical/Archaeological Resources Survey Report Heacock Street Road-Widening Project, City of Moreno Valley, Riverside County, California*	Outside
RI-08078	ECORP Consulting, Inc.	2008	*Cultural Resource Inventory of Proposed Improvements to Indian Detention Basin and Ironwood Avenue in the City of Moreno Valley, Riverside County, California*	Outside
RI-08124	Bonner, Wayne, and Marnie Aislin-Kay	2008	*Letter Report: Cultural Resource Records Search and Site Visit Results for Royal Street Communications Candidate IE24896A (Extra Space Storage), 16340 Perris Boulevard, Moreno Valley, Riverside County, California*	Outside

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-08235	Workman, James	2001	*Cupules A Type of Petroglyphic Rock Art. A Study of the Pitted Boulders in the San Jacinto Wildlife Area and the Lake Perris State Recreational Area*	Outside
RI-08272	William Manely Consulting and Earth Tech	1995	*Historic Building Inventory and Evaluation, March Air Force Base, Riverside County, California*	Outside
RI-08292	Bonner, Wayne, and Arabesque Said	2009	*Cultural Resource Records Search Results for Royal Street Communications California, LLC, Candidate LA3105A (ATC Colo-301096 Moreno Valley High School), 23300 Cottonwood Avenue, Moreno Valley, Riverside County, California*	Outside
RI-08332	Wlodarski, Robert	2010	*Letter Report: Conducted a Record Search for the Proposed AT&T Wireless Telecommunications Site LAC297 (Moreno Valley High School) located at 23300 1/2 Cottonwood Avenue, Moreno Valley, California 92555*	Outside
RI-08389	McCorkle Apple, Rebecca, Christopher Shaver, and Monica Strauss	2010	*Archaeological Survey Report for the Los Alamos/Interstate 15 Overcrossing, City of Murrieta, County of Riverside, California.*	Adjacent
RI-08477	Heidelberg, Kurt	2009	*Archaeological Survey Report: for Southern California Edison's Service Pole Replacement on the Bazooka 12kV Transmission Line in Moreno Valley, Riverside County, California*	Outside
RI-08554	Hogan, Michael, Bai "Tom" Tang, John Goodman, and Daniel Ballester	2011	*California Living Moreno Valley Project*	Outside
RI-08654	Bonner, Wayne, Sarah Williams and Kathleen Crawford	2011	*Cultural Resources Search and Site Visit Results for T-Mobile USA Candidate IE24173B*	Outside
RI-08791	Tang, Bai "Tom", Michael Hogan, Deirdre Encarnacion, Daniel Ballester, and Nina Gallardo	2012	*Historical/Archaeological Resources Survey Report; Assessor's Parcel Nos. 302-030003, -006, and -011*	Outside
RI-08802	Tang, Bai "Tom", Michael Hogan, Deirdre Encarnacion, and Daniel Ballester	2012	*Phase I Archaeological Assessment: Moreno Master Drainage Plan Revision*	Outside
RI-08860	Tang, Bai "Tom" and Daniel Ballester	2012	*Addendum to Historical/Archaeological/Paleontological Resources Survey JMM Trailer Storage Facility Project, City of Perris, Riverside County, California*	Outside
RI-08880	Unknown	2012	*City of Moreno Valley: Initial Study: First Inland Logistics Center II (Plot Plan PA120023)*	Outside

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-09077	McKenna, Jeanette	2014	*A Phase I Cultural Resources Survey for the Proposed Walmart Supercenter on Approximately 22.28 Acres of Lands in the City of Moreno Valley, Riverside County, California*	Outside
RI-09277	Bellester, Daniel	2015	*Archaeological/Paleontological Monitoring Program ORE Industrial; Perris Valley Logistics; Tentative Parcel Map No. 36010 Project in the City of Perris, Riverside County, California, CRM TECH Contract No. 2783*	Outside
RI-09311	Wills, Carrie	2014	*Cultural Resource Records Search and Site Visit Results for Verizon Wireless Candidate 'Gentian', 16015 North Perris Boulevard, Moreno Valley, Riverside County, California*	**Within**
RI-09356	Irish, Leslie Nay, Kristie Belvins, Anna Hoover, and Hugh Wagner	2003	*A Phase I Archaeological and Paleontological Survey Report for Briggs Road, TT# 30433, APNS 467-140-005, -009 to -015, 467-220012 to -015, Riverside, Riverside County, California*	Outside
RI-09385	DeCarlo, Mathew, and Diane Winslow	2015	*Engineering Refinement Survey and Recommendation of Eligibility for Cultural Resources with Southern California Edison Company's West of Devers Upgrade Project, Riverside and San Bernardino Counties, California*	Outside
RI-09413	Brian F. Smith and Associates, Inc.	2013	*A Phase I Cultural Resource Assessment for the Modular Logistics Center, Moreno Valley, Riverside County, California*	Outside
RI-09422	Smith, Brian	2015	*Phase I Cultural Resources Survey for the Moval Burger Assemblage Project*	Outside
RI-09464	McKenna, Jeanette	2016	*A Phase I Cultural Resources Survey for the Proposed Commercial Development (Approximately 20 Acres) in the City of Moreno Valley, Riverside County, California*	Outside
RI-09546	Sanka, Jennifer, William Gillean, and Leslie Irish	2016	*Phase I Cultural Resources Assessment for the March Plaza Project +/- 8.40 Acres in the City of Perris, Riverside County, California*	Outside
RI-09621	Puckett, Heather	2014	*Cultural Resources Summary for the Proposed Verizon Wireless, Inc., Property at the Periwinkle Site, 57 Business Park Drive, Perris, Riverside County, California*	Outside
RI-09718	Brunzell, David	2016	*Cultural Resources Assessment of the Toby (MCE Design) Project, City of Moreno Valley, Riverside County, California (BCR Consulting Project No. TRF 1608)*	Outside
RI-09784	Kraft, Jennifer, and Brian F. Smith	2016	*Phase I Cultural Resources Survey of the Moreno Valley Festival Project*	Outside
RI-10016	Jew, Nicholas, and Dennis McDougall	2017	*Phase I Cultural Resource Assessment for the Perris Distribution Center Project, City of Perris, Riverside County, California*	Outside
RI-10018	Belcourt, Tria	2016	*Letter Report for Cultural and Paleontological Records Searches for the Brodiaea Site, Located in the City of Moreno Valley, Riverside County, California*	Outside
RI-10199	Fulton, Phil	2014	*Discovery and Monitoring Plan for the Mid-County Parkway*	Adjacent
RI-10273	Garrison, Andrew, and Brian Smith	2017	*Phase I Cultural Resources Survey for the Brodiaea Commerce Center Project, City of Moreno Valley, County of Riverside*	Outside

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-10277	Smith, Brian	2017	*Cultural Resources Monitoring Report for the First Nandina Logistics Center Project, City of Moreno Valley, Riverside County, California*	Outside
RI-10400	Smith, Brian	2018	*Phase I Cultural Resources Survey for the Centerpointe Project*	Outside
RI-10647	Becker, Steven, and James Warner	1981	*Riverside County Historic Resources Survey Final Report*	Outside
RI-10691	Curl, Alan	1979	*Phase I Survey of the City of Riverside Final Report*	Outside
RI-10764	Smith, Brian	2019	*Cultural Resources Monitoring Report for the Duke Warehouse Project, PM No. 37187, City of Perris, Riverside County, California*	Outside
RI-10784	Stropes, Tracy, Jennifer Stropes, and Brian Smith	2019	*A Class III Historic Resources Study for the Moreno Valley Festival Project for Section 106 Compliance SPL-2018-00821, City of Moreno Valley, California*	Outside
RI-10787	Smith, Brian	2018	*Cultural Resources Monitoring Report for the Rider Distribution Center I Project, DPR No. 06-0635, City of Perris, Riverside County, California*	Outside
RI-10788	Smith, Brian.	2018	*Cultural Resources Monitoring Report for the Rider Distribution Center III Project, PM 35268, City of Perris, Riverside County, California*	Outside
RI-10802	Stropes, Tracy, Jennifer Stropes, and Brian F. Smith	2019	*A Class III Historic Resources Study for the Moreno Valley Festival Project for Section 106 Compliance*	Outside
RI-10827	Williams, Sarah, and Carrie D. Willis	2019	*Cultural Resource Records Search and Site Visit Results for AT&T Mobility Candidate CSL02876 (Iris Plaza), 16110 Perris Boulevard, Moreno Valley, Riverside County, California (EBI Project Number 6119000825)*	Outside

[1]Adjacent reports are located within 500 feet of the project APE.

Source: Eastern Information Center January 2020

Sixteen cultural resources have been documented within the records search area (Table 2). All these resources date to the historic period and include nine buildings, three water conveyance structures, one building with associated archaeological remains, two archaeological sites, and one isolated feature. None of these resources lie within, or adjacent to, the project APE. No prehistoric archaeological resources were identified within the records search area.

Table 2 Previously Identified Cultural Resources within a 0.5-mile Radius of the APE

Resource Number	Resource Type	Description	Recorder(s) and Year(s)	NRHP/CRHR Status[1]	Relationship to APE[2]
P-33-005775	Historic Building	March Air Force Base Well and Well House	E. Diehl and R. Montijo 1999; EARTH TECH 1994	Ineligible for NRHP/Not evaluated for CRHR	Outside
P-33-007279	Historic Building	Single Family Residence	J. Warner 1983	Appears eligible for the NRHP and CRHR	Outside
P-33-007280	Historic Building	Single Family Residence	J. Warner 1983	Appears eligible for the NRHP and CRHR	Outside
P-33-007284	Historic Building	Single Family Residence	J. Warner 1983	Appears eligible for the NRHP and CRHR	Outside
P-33-007289	Historic Building	Single Family Residence	J. Warner 1983	Appears eligible for the NRHP and CRHR	Outside
P-33-007641	Historic Building	J.B. Mayer Ranch	B. Harmon 1982; J. Goodman 2006	Eligible for listing on local register (not evaluated for NRHP or CRHR)	Outside
P-33-011265	Historic Structure	Colorado River Aqueduct-Old Aqueduct Road	J. Goodman and J. Neves 2000; Michael Dice 2001; Brian Boggs, Gini Austerman, and Lashawn Lee 2003; Stacie Wilson, Andrea Craft, and Michael Wise2005; Peggy Beedle 2005; M. DeGiovine, T. Martin, S. Wilson, and K. Chimel 2009; Scott Kremkau 2011; Shannon Loftus 2016	Eligible for NRHP; automatically listed on the CRHR	Outside
P-33-011757	Historic Building	Mission Court Bungalows	Unknown 1994	NRHP listed	Outside
P-33-014109	Historic Building and Site	Perris Indian School and Smith-Lowery Farm	Evelyn N. Chandler and Cary D. Cotterman 2004; Cary D. Cotterman, Jay K. Sander, and Evelyn N. Chandler 2004	Not evaluated for the NRHP or CRHR	Outside
P-33-015853	Historic Site	Building foundations and associated agricultural features	J. Sanka and M. Aislin-Kay 2007	Not evaluated	Outside
P-33-015854	Historic Isolate	Concrete standpipe and well	J. Sanka and M. Aislin-Kay 2007	Not evaluated	Outside

Resource Number	Resource Type	Description	Recorder(s) and Year(s)	NRHP/CRHR Status[1]	Relationship to APE[2]
P-33-020334	Historic Site	Abandoned irrigation features	D. Ballester 2012	Recommended eligible for NRHP and CRHR	Outside
P-33-024867	Historic Structure	Segment of Lateral B-Oleander Channel	J. Smallwood 2016	Ineligible for NRHP and CRHR	Outside
P-33-028200	Historic Structure	Cactus Avenue Drainage Channel	S.Z. Boites 2018	Ineligible for NRHP and CRHR	Outside
P-33-17202	Historic Building	Single Family Residence	J. Smallwood 2008	Ineligible for NRHP and CRHR	Outside
P-33-17203	Historic Building	Single Family Residence	J. Smallwood 2008	Ineligible for NRHP and CRHR	Outside

[1]NRHP = National Register of Historic Places; CRHR = California Register of Historical Resources

[2]Adjacent resources are located within 500 feet of the project APE (Area of Potential Effects).

Source: Eastern Information Center, January 2020

4.2 Native American Consultation

Rincon contacted the Native American Heritage Commission (NAHC) on January 17, 2020 to request a Sacred Lands File search of the APE and a 0.5-mile radius surrounding it. As part of this request, Rincon asked the NAHC to provide a list of Native American groups and/or individuals culturally affiliated with the area who may have knowledge of cultural resources in the APE. Rincon prepared and mailed anticipatory Section 106 consultation letters to 19 Native American contacts on January 23, 2020 requesting information on known Native American cultural resources in the area and inviting the tribes to consult on the undertaking.

The NAHC responded on January 28, 2020, stating the results of the Sacred Lands File search were negative (see Appendix B). The contact list provided by the NAHC included 26 Native American contacts, which included seven individuals who had not been sent an anticipatory letter. On January 29, 2020, Rincon sent Section 106 consultation letters to these seven individuals. Appendix B provides examples of the letters sent to the Native American contacts. Four responses from Native American groups were received from this initial outreach effort.

On January 29, 2020, Rincon spoke with Mr. Michael Mirelez, Cultural Resources Coordinator for the Torres-Martinez Desert Cahuilla Indians. Mr. Mirelez asked to be sent a copy of the letter originally sent to Chairman Tortez on January 23, 2020. Mr. Mirelez stated the Torres-Martinez Desert Cahuilla Indians defer to the Soboba Band of Luiseño Indians for this project.

On January 30, 2020, Rincon received an email from Travis Armstrong, the Tribal Historic Preservation Officer for the Morongo Band of Mission Indians. Mr. Armstrong acknowledged receipt of the project notification letter and requested a records search at the appropriate California Historical Resources Information System center with at least a 1.0-mile search radius be conducted. Additionally, Mr. Armstrong requested copies of the site records for tribal cultural resources identified in the records search be sent and information regarding the vertical and horizontal APEs also be shared. Mr. Armstrong's request was forwarded to EMWD.

On February 5, 2020, Mr. Dorame of the Gabrielino Tongva Indians of California Tribal Council called and stated in the event cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, he would like to be notified. Additionally, Mr. Dorame stated if human

remains are unearthed and identified by the Coroner as indigenous people, the Gabrielino Tongva Indians of California Tribal Council would like to be contacted regardless of the most likely descendant (MLD) designation from the NAHC. Mr. Dorame's request was forwarded to EMWD.

On February 5, 2020, Alexandra McCleary, the Tribal Archaeologist for the San Manuel Band of Mission Indians (SMBMI), sent an email response to Rincon. Ms. McCleary stated the proposed project is located outside of Serrano ancestral territory and, as such, SMBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to legal and regulatory mandates.

On February 7, and 11, 2020, Rincon conducted follow-up phone calls with the Native American contacts who had not responded to the initiation letter. Eight additional responses were received as a result of the follow-up efforts. A summary of each response is provided below.

On February 7, 2020, Rincon called and spoke with Chairman Anthony Morales. He stated if archaeological and/or Native American monitoring is recommended, then the Gabrieleño/Tongva San Gabriel Band of Mission Indians would like to be notified. Additionally, Mr. Morales stated in the event cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, the Gabrieleño/Tongva San Gabriel Band of Mission Indians would like to be notified. Finally, Chairman Morales stated if human remains are unearthed and identified by the Coroner as indigenous people, the Gabrieleño/Tongva San Gabriel Band of Mission Indians would like to be contacted regardless of the MLD designation from the NAHC. Mr. Morales' request was forwarded to EMWD.

On February 7, 2020, Rincon called Chairman Mark Macarro of the Pechanga Band of Luiseño Indians. Rincon was able to reach Chairman Macarro's assistant who directed Rincon to contact either Paul Macarro or Ebru Ozdil in the Tribal Cultural Resources Department. A voicemail was left for Mr. Paul Macarro on February 7, 2020. Mr. Paul Macarro called back and responded by stating the Tribe has concerns regarding known cultural and tribal resources. He also stated the Tribe would prepare a written response to the project shortly. No further response has been received from Mr. Paul Macarro or Molly Earp, the Tribal Archaeologist.

On February 7, 2020, Rincon called and spoke with Chairwoman Donna Yocum of the San Fernando Band of Mission Indians. Chairwoman Yocum stated the San Fernando Band of Mission Indians defers to the local tribal groups for this project and does not have any further comments.

On February 7, 2020, Rincon called Chairman Steven Estrada of the Santa Rosa Band of Cahuilla Indians and spoke with Ms. Joenie Miranda. Ms. Miranda stated Mr. Steven Estrada is now the Vice Chairman and Ms. Mercedes Estrada is no longer working in the capacity of reviewing project notification letters. Ms. Miranda stated she is now reviewing project notification letters and asked for copies of the letter sent to Mr. Steven Estrada and Ms. Mercedes Estrada be emailed to her for her review. An email with the notification letter attached was sent to Ms. Miranda on February 7, 2020. Later that day, Ms. Miranda responded via email and stating the Tribe does not have any comments regarding this project.

On February 7, 2020, Rincon called and spoke with Co-Chairman Mark Cochrane of the Serrano Nation of Mission Indians. Mr. Cochrane stated if cultural resources or human remains are identified during the project, the Serrano Nation of Mission Indians would like to be notified. As a statement was made by Co-Chairman Cochrane on behalf of the Serrano Nation of Mission Indians, a follow-up call was not made to Co-Chairman Wayne Walker. Mr. Cochrane's request was forwarded to EMWD.

On February 7, 2020, Rincon called and spoke with Mr. Joseph Ontiveros of the Soboba Band of Luiseño Indians' Cultural Resources Department. Mr. Ontiveros stated the notification letter is currently being reviewed by Ms. Jessica Valdez the Tribal Cultural Resources Specialist. As Mr. Ontiveros made a statement about the Tribe reviewing the notification letter, a follow-up call was not made to Chairman Scott Cozart. No further response has been received from Mr. Ontiveros or Ms. Valdez.

On February 11, 2020, Rincon called Chairwoman Amanda Vance of the Augustine Band of Cahuilla Mission Indians and reached reception. The receptionist stated the letter had been forwarded to the appropriate individuals for review. No further response has been received from Ms. Vance.

On February 11, 2020, Rincon called Chairman Andrew Salas of the Gabrieleño Band of Mission Indians at the Tribal Office and left a voicemail. The phone call was returned by the secretary and she stated Chairman Salas defers the project to the Luiseño and an email stating such would also be sent. No email has been received to date and no further response has been received from Mr. Salas.

Appendix B provides copies of all non-confidential Native American outreach correspondence, including a summary correspondence table.

4.3 Local Historical Group Consultation

Rincon contacted the Moreno Valley Historical Society, City of Moreno Valley Environmental and Historical Preservation Board, Perris Valley Historical Museum, Riverside African American Historical Society, and March Field Air Museum, to request information regarding historical resources in the proposed project APE. Rincon prepared and mailed letters to each of these groups on January 23, 2020; follow-up phone calls were conducted on February 7 and 11, 2020 (Appendix C).

Three responses were received from the historical society consultation and are summarized below.

On January 28, 2020, Rincon called the March Field Air Museum and was informed the museum has no personnel tasked with handling Section 106 consultation. No further response has been received from the March Field Air Museum.

On February 3, 2020, Rincon called the City of Moreno Valley Environmental and Historical Preservation Board (EHPB) and spoke with Claudia Moreno, the EHPB secretary. Ms. Moreno stated the EHPB had no concerns regarding historic properties in or near the project area.

In an email sent on February 4, 2020, Deanna La Cava of the Moreno Valley Historical Society stated the consultation letter was received and forwarded to the appropriate individual. Ms. La Cava also stated if there were any concerns the Historical Society would be in touch. No further response has been received from the Moreno Valley Historical Society.

Appendix C provides a summary of the historical group consultation efforts, including a summary table.

4.4 Historical Imagery Review

A review of historical maps and aerial photographs of the project APE in 1966 shows much of the area surrounding the project APE is characterized by agricultural fields with sparse areas of residential development (NETROnline 2020). At that time, March Air Force Base is present south and west of the project APE. Residential development in the mid-1960s appears to be most dense near what is now Highway 60, near the east side of March Air Force Base, and in between Perris Boulevard and Kitching Street. The 1966 aerial photograph also depicts a southwest-northeast

drainage running between Cottonwood Avenue and Alessandro Boulevard with a second drainage running north-south along the west side of Kitching Street. Both drainages were channelized between 1978 and 1997. The aerial imagery indicates much of the APE experienced development in the 1980s and 1990s (NETROnline 2020).

5 Field Survey

5.1 Methods

On January 30, 2020, Rincon Archaeologist Gena Granger performed a cultural resources field survey of the APE. Ms. Granger was accompanied by Talitha Arceo, a tribal representative from the Soboba Band of Mission Indians. An intensive pedestrian survey was conducted within undeveloped or partially developed portions of the APE encompassing Monitoring Well Sites #1-6 and 8-10. Each of the proposed well locations, along with portions of the surrounding 100 foot by 100 foot area located within the public right-of-way and/or EMWD easement, were inspected by the archaeologist walking a series of transects spaced at approximately 5 meter (16 foot) intervals. As the Monitoring Well #7 Site was located within a locked EMWD facility, the ground surface in this portion of the APE was inspected from the fence boundary.

Ms. Granger examined the APE for evidence of artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), ecofacts (marine shell and bone), soil discolorations that might indicate the presence of cultural midden, soil depressions, and features indicative of the former presence of structures of buildings (e.g., standing exterior walls, postholes, foundations) or historic debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows and road cuts were also visually inspected. Field notes of survey conditions and observations were recorded using Rincon field forms and a digital camera. Copies of the original field notes and photographs are maintained at the Rincon Los Angeles office.

5.2 Results

Results of the field survey indicate that large portions of the APE are developed with the ground surface covered with pavement, existing facilities, sidewalks, gravel, and landscaping. Ground visibility was less than 10 percent at Monitoring Well Sites #2, 4, 6, 7, 9, and 10 (Photograph 1 and Photograph 2). Areas of exposed ground surface were observed during the pedestrian survey at Monitoring Well Sites #1, 3, 5, and 8. In these latter areas, visibility ranged from 20 to 50 percent (Photograph 3 and Photograph 4).

An examination of areas of exposed ground indicates native sediments consist of loosely consolidated reddish tan sandy silt with small gravel inclusions. Surficial sediments throughout the APE have been extensively disturbed. The field survey identified no archaeological resources or historic-age buildings or structures within the APE. Appendix D provides a detailed summary of the pedestrian survey findings.

Photograph 1 Monitoring Well #7 Site Within Locked EMWD Facility, Facing Northeast



Photograph 2 Landscaped Area within Monitoring Well #2 Site, Facing East



Photograph 3 Exposed Ground Surface at Monitoring Well #3 Site, Facing North



Photograph 4 Exposed Ground at Monitoring Well #5 Site, Facing East



6 Findings and Recommendations

The results of the cultural resources records search, Native American outreach, historical society outreach, historical imagery review, and field survey identified no cultural resources within the APE. Although the lack of surface evidence of archaeological remains does not preclude their subsurface existence, no archaeological resources have been previously recorded within or immediately adjacent to the project APE. In addition, the majority of resources documented within the records search area are historic period buildings and structures. These findings suggest that there is a relatively low potential for encountering substantial prehistoric archaeological remains during construction activities.

Rincon recommends a finding of ***no impact to historical and archaeological resources*** under CEQA and ***no historic properties affected*** under Section 106 of NHPA. The following recommendations are offered in the case of the unanticipated discovery of cultural resources during project development. The project is also required to adhere to regulations regarding the unanticipated discovery of human remains, detailed below.

6.1 Unanticipated Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) should be contacted immediately to evaluate the find. If the discovery proves to be significant under NHPA and/or CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts.

6.2 Human Remains

If human remains are found, regulations outlined in the State of California Health and Safety Code Section 7050.5 state no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission, which will determine and notify a MLD. The MLD shall complete the inspection of the site within 48 hours of being granted access and provide recommendations as to the treatment of the remains to the landowner.

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Appendix A

Records Search Results (Confidential)

CHRIS Information Center Records Search Data Sheet

Project Name: EMWD, Perris North

Project Number: 19-09026 Date: 1/23/2020

Information Center: EIC

Search Radius: Half Mile: X One Mile: _____ Other: _____

USGS Quadrangle: Riverside E, Sunnymead, Perris

Public Land Survey System (PLSS): Township: See Range: Notes Section: _____

County: Riverside

Previously Recorded Sites: see list, 16 resources

Previous Studies: see list; 89 reports

National Register of Historic Places:	Copies:	Y	N	
California Register of Historical Resources:	Copies:	Y	N	
California Points of Historical Interest:	Copies:	Y	N	check online
California Historical Landmarks List:	Copies:	Y	N	
Archaeological Determinations of Eligibility:	Copies:	Y	N	
California Historical Resources Inventory:	Copies:	Y	N	

Historic Maps: check online

Notes: T2S R3W S31; T2S R4W S34; T3S R3W S6, 7, 16, 17, 19-21, T3S R4W S1, 11-14; T3S R3W 19, 20, 29-32; T3S R4W S34; T4R3W S6-8, 17, 18; T4 R4W S1

rincon

Record Search Resources Proximity Sheet

Project Name: PCMS NOAH (19-090261)

Resource Number	Within Project Site	Adjacent to Project Site	Outside of Project Site
12721			X
~~P~~ 15854			X
24867			X
7641			X
8222			X
~~P 16H~~			X
7744			X
10260			X
6726H			X
170202			X
170203			X
7289			X
7284			X
7280			X
7279			X
~~7296~~			
11757			X

Trinomials

Primary

rincon

Record Search Report Proximity Sheet

Project Name: Perris North (19-090263) Pg. 1

	Report Number	Within Project Site	Adjacent to Project Site	Outside of Project Site
1	7862.			X
2	10784.			X
3	8078.			X
4	9784.			X
5	2061.			X
6	9395.			X
7	0130.			X
8	9356.			X
9	7539.			X
10	9554			X
11	4992.			X
12	9654.			X
13	10273.			X
14	10018.			X
15	9718.			X
16	1978.			X

Report #5

rincon

Record Search Report Proximity Sheet

Pg. 2

Project Name: ~~TBD~~ 19-09026

	Report Number	Within Project Site	Adjacent to Project Site	Outside of Project Site
17	9277.			X
18	7613.			X
19	10016.			X
20, 21, 22	6072, 6073, 6074.			X
23	5444.		X	X
24	6914.	X		
25	8389.		X	
26	7690.			X
27	5027.	X	X	
28	4404.		X	
29	9621.			X
30	10199.		X	
31	6956.		X	
32	6890.	X		
33	0572.			X
34	10788.			X
35	10787.			X
34	10764.			X

rincon

Record Search Report Proximity Sheet

Pg.3

Project Name: 19-09026

	Report Number	Within Project Site	Adjacent to Project Site	Outside of Project Site
37	9311	X	X	
38	5035			X
39	8477			X
40	10827			X
41	9413			X
42	0146	X		
43	9422			X
44	8880			X
45	4745			X
46	2171	X		
47	9464			X
48	7396			X
49	7538			X
50	9546			X
51	6579	X		
52	7620		X	X
53	5550			X
54	8791			X
55	0860			X
repeat overall	7538	X		X
56	8272			X
57	10277			X

Record Search Report Proximity Sheet

Pg. 4

Project Name: 19-09026

	Report Number	Within Project Site	Adjacent to Project Site	Outside of Project Site
58	3693	X		X
59	8802			X
60	1665			X
61	1843			X
62	9077			X
63	7127			X
64	10802			X
65	10900			X
66	7499		X	
67	8292			X
68	8332			X
69	6147			X
repeat	2171	X		
70/71	1045/1046			X
~~repeat~~	130			X
72	8124			X

rincon

Record Search Report Proximity Sheet

Pg. 5

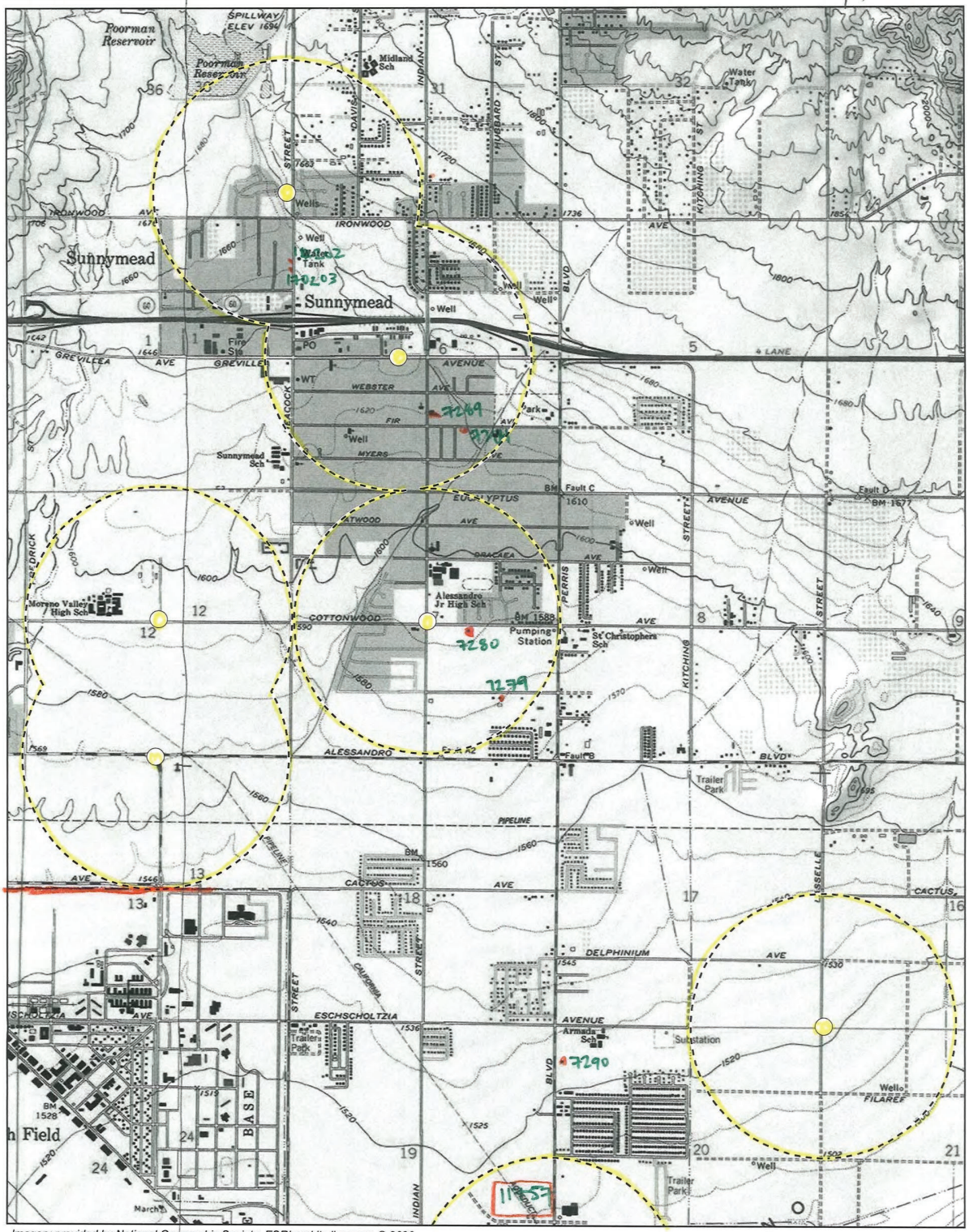
Overview reps

Project Name: 19-09024

	Report Number	Within Project Site	Adjacent to Project Site	Outside of Project Site
73	1955 •			
74	2050 •			
75	3604 •			
76	4762 •			
77	4813 •			
78	5088 •			
79	10691 •			
80	0026 •			
81	0535 •			
82	1312 •			
83	3490 •			
84	0187 •			
85	0161 •			
86	0133 •			
repeat	5088			
87	8235 •			
88	0002 •			
repeat	4762			
89	10647 •			

Riverside East | Sunnymead

Map A: Sites / Resources



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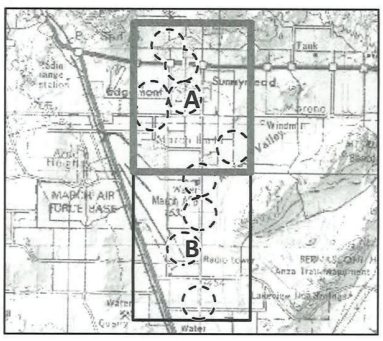


Area of Potential Effects

Half-Mile Buffer

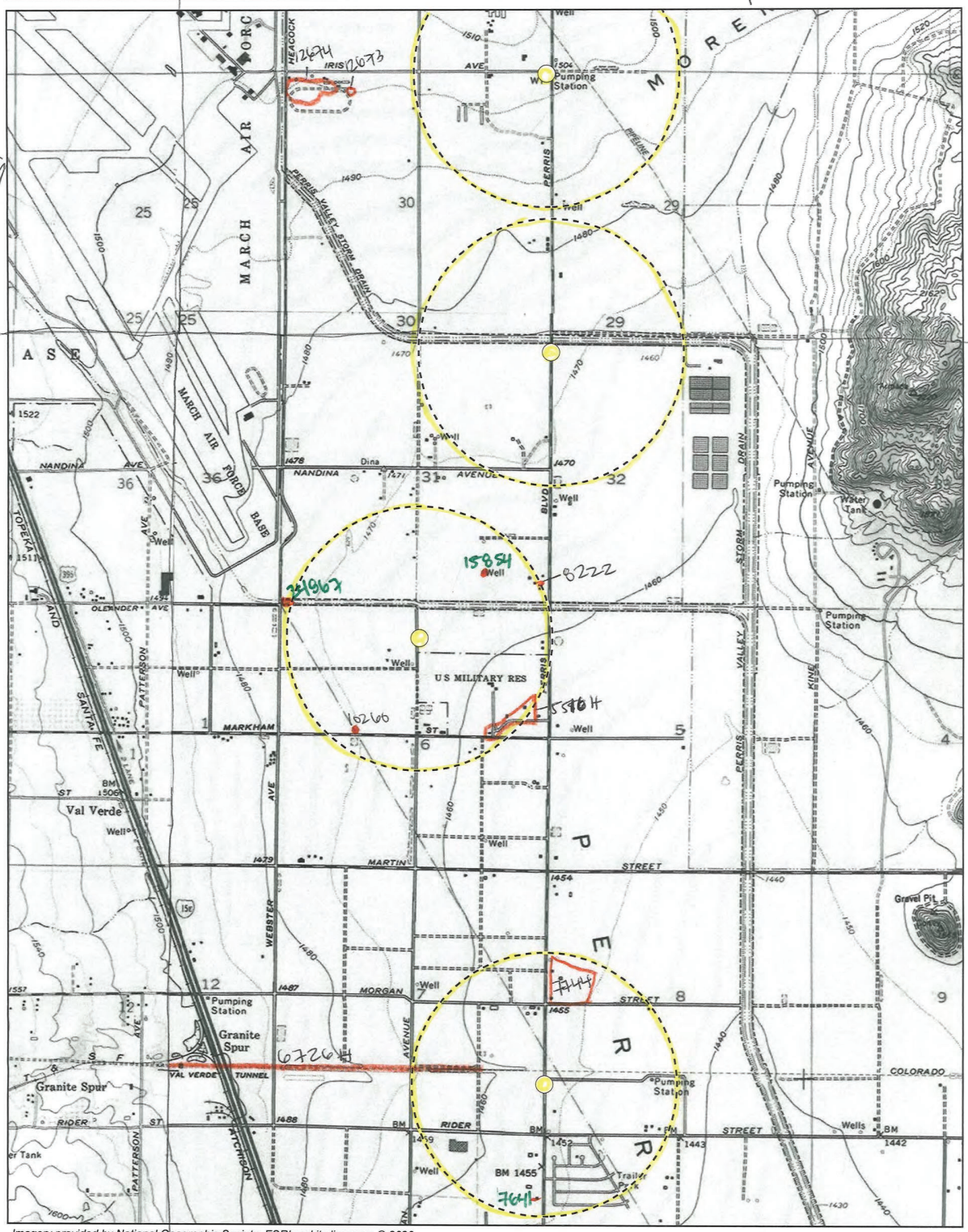
N

0 1,000 2,000 Feet

0 250 500 Meters

1:24,000

Records Search Map



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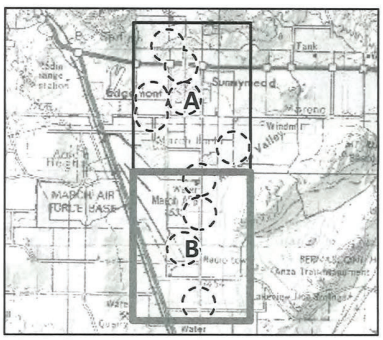


Area of Potential Effects

Half-Mile Buffer

N

0 1,000 2,000 Feet

0 250 500 Meters

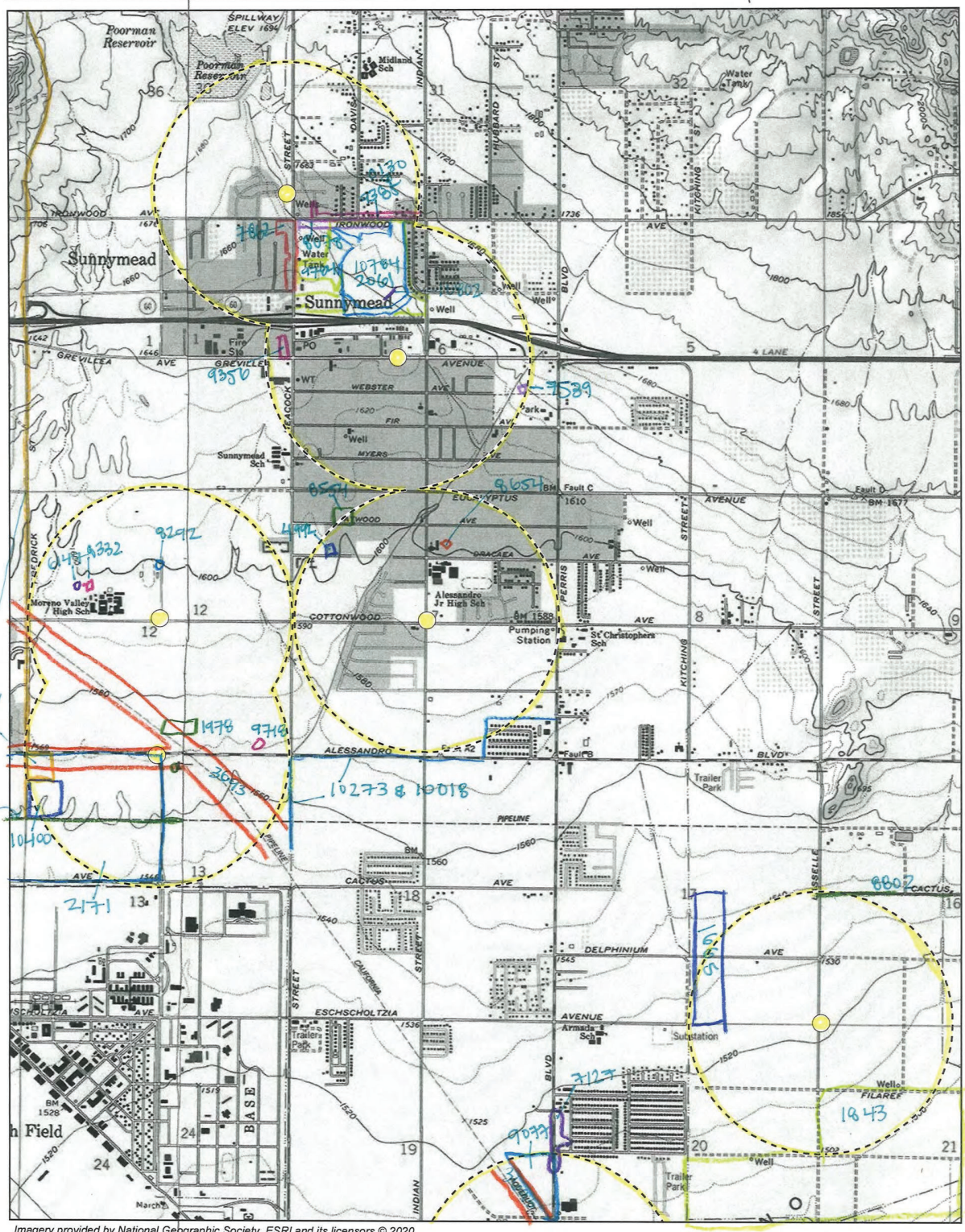
1:24,000

Records Search Map

Riverside East

Sunnymead

Map A: Reports



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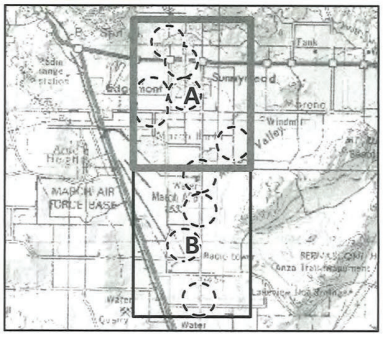


Area of Potential Effects

Half-Mile Buffer

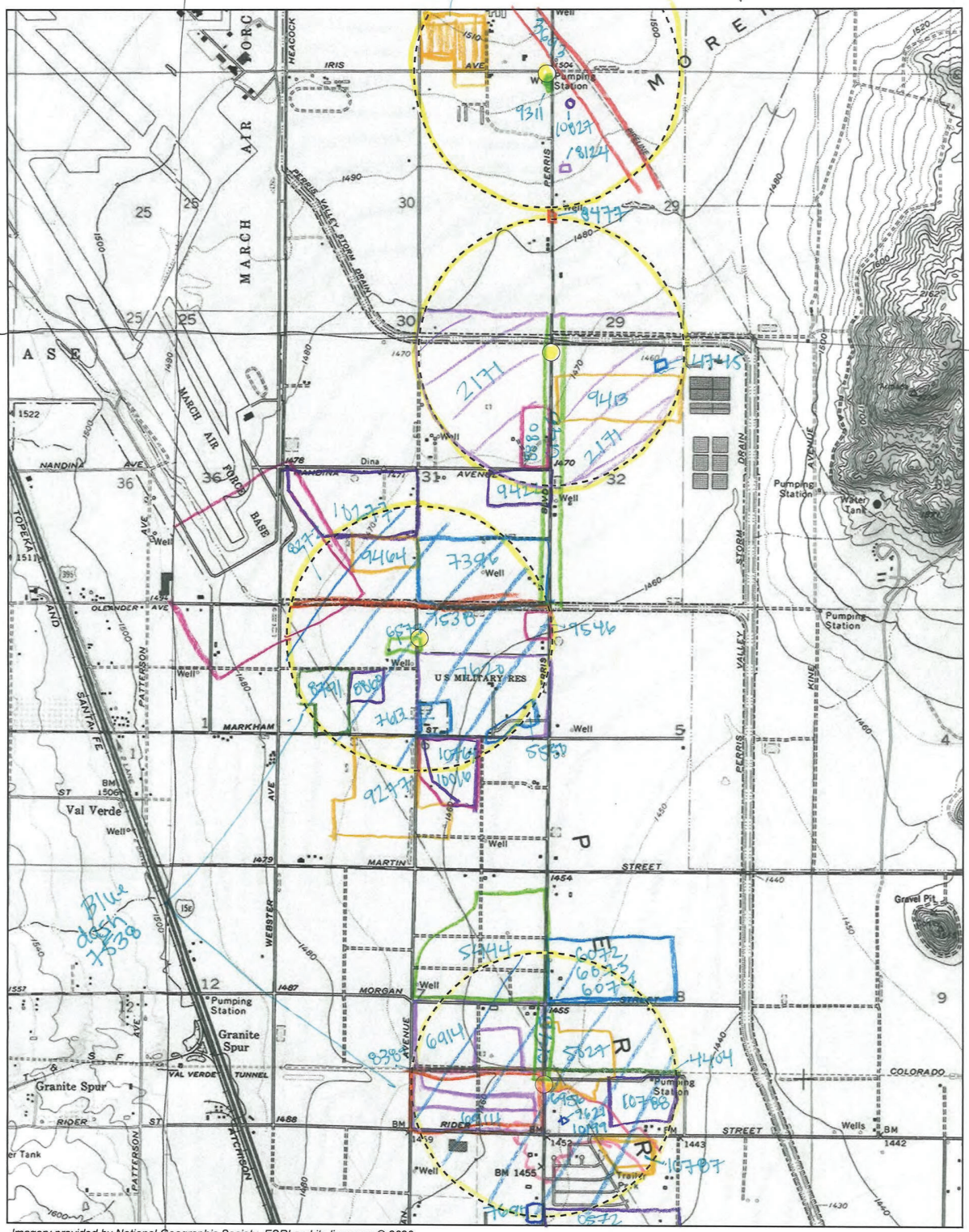
N

0 1,000 2,000 Feet

0 250 500 Meters

1:24,000

Records Search Map



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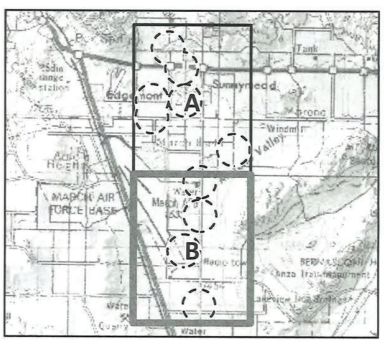

Area of Potential Effects

Half-Mile Buffer

N

0 1,000 2,000 Feet

0 250 500 Meters

1:24,000

Records Search Map

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-33-005775	CA-RIV-005516H		Building	Historic	HP34	1994 (E. Diehl/R. Montijo, EARTH TECH); 1999	RI-01010, RI-04299, RI-05550
P-33-007279				Historic		1983 (J. Warner, Riverside County Historical Comm.)	
P-33-007280				Historic		1983 (J. Warner, Riverside County Historical Comm.)	RI-08554
P-33-007284				Historic		1983 (J. Warner, Riverside County Historical Comm.)	RI-08554
P-33-007289				Historic		1983 (J. Warner, Riverside County Historical Comm.)	RI-08554
P-33-007641		Resource Name - J.B. Mayer Ranch	Building	Historic	HP02	1982 (B. Harmon, Riverside County Historical Comm.); 2006 (J. Goodman)	
P-33-011265	CA-RIV-006726H	Other - FS 51a, b, c, d; Other - Colorado River Aqueduct; Other - SRI-9990; Voided - 33-011138; Other - Colorado River Aqueduct-Old Aqueduct Road	District, Element of district	Historic	HP20	; 2000 (Goodman, J, and J. Neves, SWCA, Inc.); 2001 (Dice, Michael, L& L Environmental, Inc.); 2003 (Boggs, Brian, Gini Austerman, and Lashawn Lee, Statistical Research, Inc.); 2005 (Stacie Wilson, Andrea Craft, and Michael Wise, Mooney Jones & Stokes); 2005 (Beedle, Peggy, Applied EarthWorks, Inc.); 2005 (Beedle, Peggy, Applied EarthWorks, Inc.); 2009 (DeGiovine, M., T. Martin, S. Wilson, and K. Chimel, ICF Jones & Stokes); 2011 (Scott Kremkau, SRI); 2016 (Shannon Loftus, ACE Environmental, LLC.)	RI-04424, RI-06070, RI-06707, RI-06920, RI-07206, RI-07671, RI-08374, RI-08453, RI-09167
P-33-011757		Other - Mission Court Bungalows; National Register - 33-0043	Building	Historic	HP02; HP03	1994 (n/a, n/a)	

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-33-014109	CA-RIV-007744	Other - Perris Indian School; Other - Smith-Lowery Farm	Building, Site	Historic	AH02; AH04	2004 (Chandler, Evelyn N. and Cary D. Cotterman, Chambers Group, Inc.); 2004 (Cotterman, Cary D., Jay K. Sander, and Evelyn N. Chandler, Chambers Group, Inc.)	RI-06072, RI-06073, RI-06074
P-33-015853	CA-RIV-008222		Site	Historic	AH02; AH06; AH11	2007 (J. Sanka, M. Aislin-Kay, Michael Broadman Associates)	RI-07396
P-33-015854			Other	Historic	AH01	2007 (J. Sanka, Michael Broadman Associates)	RI-07396
P-33-020334	CA-RIV-010260	Other - CRM TECH 2592-1	Site	Historic	AH05	2012 (Daniel Ballester, CRM Tech)	RI-08791
P-33-024867		Other - AE-345-1H (Lateral B-Oleander Avenue)	Structure	Historic	HP20	2016 (Josh Smallwood, Applied EarthWorks, Inc.)	
P-33-028200	CA-RIV-012721	Other - CRM Tech 3375-LF1	Structure	Historic	HP20	2018 (Salvadore Z. Boites, CRM Tech)	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-00002	NADB-R - 1080003; Voided - MF-0003	1953	Malcolm J. Rogers	Miscellaneous Field Notes - Riverside County. San Diego Museum of Man	San Diego Museum of Man	
RI-00026	NADB-R - 1080025; Voided - MF-0032	1971	Margie Akin	A Survey of the Archaeological Resources of the Santa Ana and San Jacinto River Basins	Department of Anthropology, U.C. Riverside	
RI-00130	NADB-R - 1080145; Voided - MF-0110	1974	Helen Clough	Filed Notes for the Archaeological Survey of PL984 Weter Systems Additions.		33-001016, 33-001017
RI-00133	NADB-R - 1080150; Voided - MF-0114	1974	Thomas F. King, Mary A. Brown, Gerrit Fenenge, and Claudia Nissley	Archaeological Impact Evaluation: Southern California Edison Company's Devers-Vista 220 KV Transmission Line, Riverside County, California	Archaeological Research Unit, U.C. Riverside	
RI-00137	NADB-R - 1080155; Voided - MF-0117	1974	James F. O'Conell, Philip J. Wilke, Thomas F,. King, and Carol L. Mix	Perris Reservoir Archaeology, Late Prehistoric Demographic Change in Southeastern California	Archaeological Research Unit, U.C. Riverside	33-000012, 33-000021, 33-000062, 33-000202, 33-000331, 33-000419, 33-000452, 33-000455, 33-000463, 33-000464
RI-00146	NADB-R - 1080179; Submitter - 0111; Voided - MF-0130	1974	Joan R. Smith	Archaeological Impact Evalutation: Eastern Water District, Sewage Pipeline, Maripose Avenue to Existing Reclamation Facility, Sun City	Archaeological Research Unit, U.C. Riverside	33-000805
RI-00161	NADB-R - 1080200; Voided - MF-0144	1975	Roberta S. Greenwood	Paleontological, Archaeological, Historical, and Cultural Resources, West Coast-Midwest Pipeline Project, Long Beach to Colorado River	Greenwood and Associates	
RI-00535	NADB-R - 1080574; Voided - MF-0466	1979	Lowell John Bean., Sylvia Brakke Vane, Matthew C. Hall, Harry Lawton, Richard Logan, Lee Gooding Massey, John Oxendine, Charles Rozaire, and David P. Whistler	Cultural Resources and the Devers-Mira 500 kV Transmission Line Route (Valley to Mira Loma Section)	Cultural Systems Research, Incorporated, Menlo Park, CA	33-000114, 33-000630, 33-000714, 33-000807, 33-000984, 33-001078, 33-001241, 33-001442, 33-001448, 33-001449, 33-001450, 33-001649, 33-001651, 33-001652, 33-001653, 33-001654, 33-001656
RI-00572	NADB-R - 1080610; Voided - MF-0500	1979	William H. Breece	Cultural Resource Survey of the Metro Park Project Proposed Race Track, Riverside County, California	WESTEC Services Inc., Tustin, CA	
RI-00745	NADB-R - 1080795; Voided - MF-0665	1979	Stan Wilmoth	Environmental Impact Evaluation: Archaeological Assessment of Tentative Parcel 14422, Woodcrest Area of Riverside County, California	Archaelogical Research Unit, U.C	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-01045	NADB-R - 1081140; Voided - MF-0989	1978	David Chavez	Cultural Resources Evaluation of the Four Corners Interconnect Facilities, San Bernardino and Riverside Counties, California	Consulting Archaeologist, Mill Valley, CA	
RI-01046	NADB-R - 1083247; Voided - MF-0989	1978	David Chavez	Final Cultural Resources Evaluation for the Rialto Crude Oil Tank Farm to the Four Corners Pipeline, Kern County, Calfiornia.	URS Company, San Mateo, CA	33-000497
RI-01312	NADB-R - 1081485; Voided - MF-1313	1975	Clement W. Meighan	Historical Resources in Three Southern California Counties	Department of Archaeological Survey, U.C. Los Angeles	
RI-01665	NADB-R - 1081956; Voided - MF-1759	1983	Wirth Associates	Devers-Serrano-Villa Park Transmission System Supplement to the Cultural Resources Technical Report - Public Review Document and Confidential Appendices	Wirth Associates	33-002529, 33-002530, 33-002531, 33-002591, 33-002592, 33-013336, 33-013366, 33-013545
RI-01843	NADB-R - 1084680; Voided - MF-2010	1984	SCIENTIFIC RESOURCE SURVEYS, INC.	CULTURAL RESOURCE SURVEY REPORT ON WOLFSKILL RANCH	SCIENTIFIC RESOURCE SURVEYS, INC.	33-000012, 33-000021, 33-000202, 33-000419, 33-000420, 33-000421, 33-000464, 33-000530, 33-000531, 33-000532, 33-000533, 33-000534, 33-000535, 33-000536, 33-000537, 33-000538, 33-000539, 33-000540, 33-000541, 33-000542, 33-000543, 33-000544, 33-000608, 33-000609, 33-000610, 33-000715, 33-002829, 33-002867, 33-002950, 33-002951, 33-002952, 33-002953, 33-002954, 33-002955, 33-002956, 33-002957, 33-002958, 33-002959, 33-002960, 33-002961, 33-002962, 33-002963, 33-002964, 33-002965, 33-002966, 33-002967, 33-002968, 33-002969, 33-002993, 33-002994, 33-002995, 33-002996
RI-01955	NADB-R - 1082349; Voided - MF-2124	1977	HELLER, ROD, TIM TETHEROW, and C. WHITE	AN OVERVIEW OF THE SUNDESERT NUCLEAR PROJECT TRANSMISSION SYSTEM CULTURAL RESOURCE INVESTIGATION	WIRTH ASSOCIATES	
RI-01978	NADB-R - 1082396; Voided - MF-2169	1985	BROCK, JAMES	LETTER REPORT: ARCHAEOLOGICAL FIELD RECONNAISSANCE OF PROPOSED POST OFFICE SITE IN SUNNYMEAD, CALIFORNIA	ARCHAEOLOGICAL ADVISORY GROUP	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-02050	NADB-R - 1082479; Other - DAC05-85-0033; Voided - MF-2244	1985	PERAULT, GORDON	PRELIMINARY HISTORIC INVENTORY - MARCH AIR FORCE BASE, CALIFORNIA	FIELDS AND SILVERMAN ARCHITECTS	
RI-02061	NADB-R - 1082496; Voided - MF-2260	1986	LERCH, MICHAEL	ARCHAEOLOGICAL SURVEY OF FESTIVAL AT MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA	AUTHOR(S)	
RI-02171	NADB-R - 1082753; Submitter - 0870; Voided - MF-2358	1987	MCCARTHY, DANIEL F.	CULTURAL RESOURCES INVENTORY FOR THE CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA	ARCHAEOLOGICAL RESEARCH UNIT, U.C. RIVERSIDE	33-000361, 33-000395, 33-000497, 33-000857, 33-000860, 33-001063, 33-001064, 33-003223, 33-003224, 33-003225, 33-003226, 33-003227, 33-003228, 33-003229, 33-003230, 33-003231, 33-003232, 33-003233, 33-003234, 33-003235, 33-003236, 33-003237, 33-003238, 33-003239, 33-003240, 33-003241, 33-003242, 33-003243, 33-003244, 33-003245, 33-003246, 33-003247, 33-003248, 33-003249, 33-003250, 33-003254, 33-003258, 33-003259, 33-003260, 33-003261, 33-003262, 33-003263, 33-003264, 33-003265, 33-003266, 33-003267, 33-003268, 33-003269, 33-003270, 33-003271, 33-003272, 33-003273, 33-003304, 33-003305, 33-003306, 33-003341, 33-003342, 33-003343, 33-003344, 33-003345, 33-003346, 33-003347, 33-003351, 33-003352, 33-003353
RI-03490	NADB-R - 1084161; Voided - MF-3748	1991	MCINTOSH, BEVERLY CHILDS	The Juan Bautista De Anza Trail Past, Present and Future, Baja to Riverside, California	n/a	
RI-03604	NADB-R - 1084327; Voided - MF-3878	1992	Carleton S. Jones	The Development of Cultural Complexity Among the Luiseno: A Thesis Presented to the Department of Anthropology, California State University, Long Beach in Partial Fulfillment of the Requirements for the Degree, Master of Arts	California State University, Long Beach	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-03693	NADB-R - 1084465; Voided - MF-3996	1991	FOSTER, JOHN M., JAMES J. SCHMIDT, CARMEN A. WEBER, GWENDOLYN R. ROMANI, and ROBERTA S. GREENWOOD	CULTURAL RESOURCE INVESTIGATION: INLAND FEEDER PROJECT, METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	GREENWOOD & ASSOCIATES	33-000021, 33-000024, 33-000399, 33-000608, 33-001017, 33-001697, 33-002504, 33-002505, 33-002951, 33-003098
RI-04404	NADB-R - 1085736; Voided - MF-4913	2000	JONES AND STOKES ASSOCIATES, INC.	FINAL CULTURAL RESOURCES INVENTORY REPORT FOR THE WILLIAMS COMMUNICATIONS, INC., FIBER OPTIC CABLE SYSTEM INSTALLATION PROJECT, RIVERSIDE TO SAN DIEGO, CALIFORNIA VOL I-IV.	JONES AND STOKES ASSOCIATES, INC.	33-000816, 33-000817, 33-000862, 33-001845, 33-002970, 33-003081, 33-003839, 33-004202, 33-004624, 33-004744, 33-004768, 33-007587, 33-007601, 33-008105, 33-008172, 33-009772, 33-009773, 33-009774, 33-009775, 33-009776
RI-04762	NADB-R - 1083854; Voided - MF-3495	1990	BARKER, LEO R. and ANN E. HUSTON, EDITORS	DEATH VALLEY TO DEADWOOD; KENNECOTT TO CRIPPLE CREEK. PROCEEDINGS OF THE HISTORIC MINING CONFERENCE, JANUARY 23-27, 1989, DEATH VALLEY NATIONAL MONUMENT	Division of National Register Programs National Park Service	
RI-04813	NADB-R - 1086175; Other - 118, 119, 120, 121, 122, 123	1993	NATIONAL PARK SERVICE, HAER	CALIFORNIA CITRUS HERITAGE RECORDING PROJECT: PHOTOGRAPHS, WRITTEN HISTORICAL AND DESCRIPTIVE DATA, REDUCED COPIES OF MEASURED DRAWINGS FOR: ARLINGTON HEIGHT CITRUS LANDSCAPE, GAGE IRRIGATION CANAL, NATIONAL ORANGE COMPANY PACKING HOUSE, VICTORIA BRIDGE, AND UNION PACIFIC RAILROAD BRIDGE	NATIONAL PARK SERVICE, HISTORIC AMERICAN ENGINEERING RECORD	33-003361, 33-004768, 33-009772
RI-04992	NADB-R - 1086354; Submitter - 10-04-10-1001	2004	MCKENNA ET AL.	AN ARCHITECTURAL EVALUATION OF STRUCTURES LOCATED WITHIN ASSESSOR PARCEL NUMBERS 482-090-009-0, -010-0, AND 033-0, WITHIN THE CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA.	MCKENNA ET AL.	
RI-05027	NADB-R - 1086389; Submitter - Job No. 00-5-00-500	2000	Jeanette A. McKenna	A PHASE I CULTURAL RESOURCES INVESTIGATION OF THE VESTA TELECOMMUNICATIONS, INC. FIBER OPTIC ALIGNMENT, RIVERSIDE COUNTY TO SAN DIEGO COUNTY, CALIFORNIA	MCKENNA ET AL.	
RI-05035	NADB-R - 1086397; Submitter - 04.916	2005	MCKENNA ET AL.	LETTER REPORT: MONITORING AT THE SITE OF THE PROPOSED INDIAN MIDDLE SCHOOL IN THE CITY OF PERRIS, RIVERSIDE COUNTY, CALIFORNIA	MCKENNA ET AL.	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-05088	NADB-R - 1086450	2005	CULTURAL SYSTEMS RESEARCH, INC.	ETHNOGRAPHIC OVERVIEW INLAND FEEDER PIPELINE PROJECT	CULTURAL SYSTEMS RESEARCH, INC.	33-001162, 33-004624, 33-004627, 33-004628, 33-004930
RI-05444	NADB-R - 1086807; Submitter - 08-05-09-1121	2005	MCKENNA, JEANETTE	A PHASE I CULTURAL RESOURCES INVESTIGATION OF THE RIDGE PROPERTY IN THE CITY OF PERRIS, RIVERSIDE COUNTY, CA	MCKENNA ET AL	
RI-05550	NADB-R - 1086913	1995	EARTH TECH	PHASE I ARCHAEOLOGICAL SURVEY OF THE GREGORY SITE, MARCH AIR FORCE BASE, RIVERSIDE COUNTY, CA	EARTH TECH	33-005775
RI-06072	NADB-R - 1087435	2004	COTTERMAN, CARY, EVELYN CHANDLER, and RODGER MASON	CULTURAL RESOURCES SURVEY OF AN 83.5 ACRE IN PERRIS, RIVERSIDE COUNTY, CA	CHAMBERS GROUP, INC., Redlands, CA	33-014109
RI-06073	NADB-R - 1087436	2004	COTTERMAN, CARY, EVELYN CHANDLER, and ROGER MASON	ARCHAEOLOGICAL TEST EXCAVATION OF THE PERRIS INDIAN SCHOOL SITE, PERRIS, RIVERSIDE COUNTY, CALIFORNIA	CHAMBERS GROUP, INC.	33-014109
RI-06074	NADB-R - 1087437	2004	COTTERMAN, CARY, EVELYN CHANDLER, and ROGER MASON	EXECUTIVE SUMMARY REPORT FOR THE ARCHAEOLOGICAL INVESTIGATIONS CONDUCTED ALONG PERRIS BOULEVARD, PERRIS, RIVERSIDE COUNTY, CA	CHAMBERS GROUP, INC.	33-014109
RI-06147	NADB-R - 1087510	2003	DICE, MICHAEL	LETTER REPORT: CULTURAL RESOURCE RECORDS SEARCH ANS SITE VISIT RESULTS FOR SPRINT TELECOMMUNICATION FACILITY CANDIDATE RV57XC602B (MORENO VALLEY PLAZA) 23300 COTTONWOOD AVENUE, MORENO VALLEY, RIVERSIDE COUNTY, CA	MICHAEL BRANDMAN ASSOCIATES	
RI-06579	NADB-R - 1087946; Submitter - CRM TECH Contract #1944A	2006	CLARENCE BODMER, ROBERT PORTER, and LAURA H. SHAKER	HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT, ALL AMERICAN ASPHALT PLANT, ASSESSOR'S PARCEL NO. 30-020-026, IN THE CITY OF PERRIS, RIVERSIDE COUNTY, CALIFORNIA	CRM TECH, Riverside, CA	
RI-06898	Submitter - Job no. 09-06-10-1245	2006	McKenna, Jeanette A.	A Phase 1 Cultural Resources, Investigation of the Perris 2, Project Area in the City, of Perris, Riverside, Co., California	McKENNA et al., Whittier, CA	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-06914	Other - LSA Job No. GTX330	2003	Jim Harrison	Letter Report: Biological and Cultural Resources Due Diligence Regarding the 500-Acre Watson Land Company-Perris Property in Riverside County, California	LSA Associates, Inc., Irvine, CA	33-007648
RI-06956		2007	Bholat, Sara	Cultural Resources Survey, of a 1.9 Acre Parcel, (APN-303-275-036), Perris, Riverside County, California.	ECORP Consulting, Inc.	
RI-07127	Other - Contract No. 0056.07	2007	Jordan, Stacey C.	Archaeological Survey Report for Southern California Edison Company: Conversion of Overhead to Underground Project on the Rule 20C, Riverisde County, California (WO#6577-7281, AI#6-7227)	Jones & Stokes	
RI-07396		2007	Sanka, Jennifer M.	Phase I Cultural Resources Assessment and Paleontological Records Review: Perris Boulevard Project in Moreno Valley, Riverside County, California	MBA	33-015853, 33-015854
RI-07499		2007	Bonner, Wayne H. and Marnie Aislin-Kay	Letter Report: Cultural Resource Records Search Results and Site Visit for Royal Street Communications, LLC Candidate LA2360B (Motel 7), 23581 Alessandro Boulevard, Moreno Valley, Riverside County, California	Michael Brandman Associates	
RI-07538	Submitter - CRM TECH Contract #2109A	2007	Tang, Bai "Tom", Michael Hogan, Clarence Bodmer, Josh Smallwood, and Melissa Hernandez	Cultural Resources Technical Report, North Perris Industrial Specific Plan, City of Perris, Riverside County, California	CRM TECH	
RI-07539	Submitter - LA2356B Cultural Rpt	2007	Bonner, Wayne H. and Marnie Aislin-Kay	Letter Report: Cultural Resources Records Search and Site Visit for Royal Street Telecommunications, LLC Candidate LA2356B (Sunnymead Plaza), 24903 Sunnymead Boulevard, Moreno Valley, Riverside County, California	Michael Brandman Associates	
RI-07613	Other - 2007CWA104	2008	Patterson, J. and Tsunoda, K.	ARCHAEOLOGICAL SURVEY REPORT FOR SOUTHERN CALIFORNIA EDISON COMPANY O&M - 2008 B1355 ANNUAL CAPACITOR PROJECT FOR POLE #2037338E ON THE CHANEY 12KV CIRCUIT RIVERSIDE COUNTY, CALIFORNIA (WO#6077-5597, AI#7-5504)	JONES & STOKES	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-07620		2005	CLIFFORD, J. and SMITH, B.	A CULTURAL RESOURCES SURVEY FOR THE IDI PERRIS PROJECT COUNTY OF RIVERSIDE: APNS 302-080-011 THROUGH 302-080-017, 302-090-016, 302-090-017	BRIAN F. SMITH AND ASSOCIATES	
RI-07690		2006	Rosenburg, Seth A. and Brian F. Smith	A Phase I Archaeological Assessment for the La Corona Market Project, City of Perris, Riverside County, California	Brian F. Smith and Associates	
RI-07862	Submitter - CRM TECH Contract No. 2228	2008	Smallwood, Josh, Terri Jacquemain, and Laura H. Shaker	Historical/ Archaeological Resources Survey Report Heacock Street Road-Widening Project City of Moreno Valley Riverside County, California	CRM TECH	33-017202, 33-017203
RI-08078		2008	ECORP Consulting, Inc.	Cultural Resource Inventory of Proposed Improvements to Indian Detention Basin and Ironwood Avenue in the City of Moreno Valley Riverside, California	ECORP Consulting, Inc.	
RI-08124	Submitter - IE24896A	2008	Wayne Bonner and Marnie Aislin-Kay	Letter Report: Cultural Resource Records Search and Site Visit Results for Royal Street Communications Candidate IE24896A (Extra Space Storage), 16340 Perris Boulevard, Moreno Valley, Riverside County, California	Michael Brandman Associates, Irvine, California	
RI-08235		2001	James E. Workman	Cupules A Type of Petroglyphic Rock Art. A Study of the Pitted Boulders in the San Jacinto Wildlife Area and the Lake Perris State Recreational Area	Indian Rock Art Specialist	33-000012, 33-000062, 33-000202, 33-000331, 33-000395, 33-000419, 33-000421, 33-000428, 33-000452, 33-000464
RI-08272		1995	William Manely Consulting and Earth Tech	Historic Building Inventory and Evaluation, March Air Force Base, Riverside County, California	Michael Brandman Associates	
RI-08292		2009	Bonner, Wayne H and Said, Arabesque	Cultural Resource Records Search Results for Royal Street Communications Callifornia, LLC Candidate LA3105A (ATC Colo-301096 Moreno Valley High School), 23300 Cottonwood Avenue, Moreno Valley, Riverside County, California	Michael Brandman Associates	
RI-08332		2010	Robert J. Wlodarski	Letter Report: Conducted a Record Search for the Proposed AT&T Wireless Telecommunications Site LAC297 (Moreno Valley High Scool) located at 23300 1/2 Cottonwood Avenue, Moreno Valley, California 92555.	C.A.R.E.	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-08389		2010	Rebecca McCorkle Apple, Christopher L. Shaver, and Monica Strauss	Archeaeological Survey Report for the Los Alamos / Interstate 15 Overcrossing, City of Murrieta, County of Riverside, California.	AECOM	
RI-08477	Other - SCE Purchase Order Number: 4500032069; Other - WO 6077-4800/E-4843	2009	Kurt Heidelberg	Archaeological Survey Report: for Southern California Edison's Service Pole Replacement on the Bazooka 12kV Transmission Line in Moreno Valley, Riverside County, California	AECOM, Inc.	
RI-08554	Submitter - CRM TECH Project No. 2507; Submitter - CRM TECH Project No. 2507	2011	Michael Hogan, Bai "Tom" Tang, John Goodman, and Daniel Ballester	California Living Moreno Valley Project	CRM TECH	33-007280, 33-007284, 33-007285, 33-007289, 33-007297, 33-017202, 33-017203
RI-08654	Submitter - IE24173-B	2011	Wayne H. Bonner, Sarah A. Williams, and Kathleen A. Crawford	Cultural Resources Search and Site Visit Results for T-Mobile USA Candidate IE24173-B	Michael Brandman Associates	
RI-08791		2012	Bai 'Tom' Tang, Michael Hogan, Deirdre Encarnacion, Daniel Ballester, and Nina Gallardo	Historical/Archaeologcial Resources Survey Report; Assessor's Parcel Nos. 302-030-003, -006, and -011	CRM TECH	33-020334
RI-08802		2012	Bai "Tom" Tang, Michael Hogan, Deirdre Encarnacion, and Daniel Ballester	Phase I archaeological Assessment: Moreno Master Drainage Plan Revision	CRM TECH	
RI-08860	Submitter - CRM Tech Project No. 2592/2636	2012	Bai "Tom" Tang and Daniel Ballester	Addendum to Historical/Archaeological/Paleontological Resources Survey JMM Trailer Storage Facility Project, City of Perris, Riverside County, California	CRM Tech	
RI-08880	Other - Plot Plan PA12-0023	2012		City of Moreno Valley: Initial Study: First Inland Logistics Center II (plot Plan PA12-0023)	T&B Planning, Inc.	
RI-09077		2014	Jeanette A. McKenna	A Phase I Cultural Resources Survey For The Proposed Walmart Supercenter on Approximately 22.28 Acres of Landa In The City of Moreno Valley, Riverside County, Cailfornia	McKenna et al.	33-023936

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-09277		2015	Daniel Ballester	Archaeological/Paleontological Monitoring Program ORE Industrial; Perris Valley Logistics; Tentative Parcel Map No. 36010 Project in the City of Perris, Riverside County, California CRM TECH Contract No. 2783	CRM TECH	
RI-09311		2014	Carrie D Wills	Cultural Resource Records Search and Site Visit Results for Verizon Wireless Candidate 'Gentian', 16015 North Perris Boulevard, Moreno Valley, Riverside County, California.	First Carbon Solutions	
RI-09356		2003	Leslie Nay Irish, Kristie R. Blevins, Anna M. Hoover, and Hugh M. Wagner	A Phase I Archaeological and Paleontological Survey Report for Briggs Road, TT# 30433, APNS 467-140-005, -009 to -015, 467-220-012 to -015, Riverside, County of Riverside, California	L&L Environmental	
RI-09385		2015	Mathew M. DeCarlo and Diane L. Winslow	Engineering Refinement Survey and Recommendation of Eligibility for Cultural Resources with Southern California Edison Company's West of Devers Upgrade Project, Riverside and San Bernardino Counties, California	ASM Affiliates	
RI-09413		2013	Brian F. Smith and Associates Inc.	A Phase I Cultural Resource Assessment for the Modular Logisitics Center, Moreno Valley, Riverside County, California	Brian F. Smith and Associates, Inc.	
RI-09422		2015	Brian F. Smith	Phase I Cultural Resources Survey for the Moval Burger Assemblage Project	Brian F. Smith and Associates Inc.	
RI-09464		2016	Jeanette A. McKenna	A Phase I Cultural Resources Survey for the Proposed Commercial Development (Approximately 20 Acres) in the City of Moreno Valley, Riverside County, California	McKenna et al.	
RI-09546		2016	Jennifer M. Sanka, William R. Gillean, and Leslie Nay Irish	Phase I Cultural Resources Assessment for the March Plaza Project +- 8.40 Acres in the City of Perris, Riverside County, California	L&L Environmental, Inc.	
RI-09621		2014	Heather R. Puckett	Cultural Resources Summary for the Proposed Verizon Wireless, Inc., Property at the Periwinkle Site, 57 Business Park Drive, Perris, Riverside County, California 92571	Tetra Tech	
RI-09718		2016	David Brunzell	Cultural Resources Assessment of the Toby (MCE Design) project, City of moreno Valley, Riverside County, Califonia (BCR Counsulting Project No. TRF 1608)	BCR Consulting LLC	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-09784		2016	Jennifer R. Kraft and Brian F. Smith	Phase I Cultural Resources Survey of the Moreno Valley Festival Project	Brian F. Smith & Associates	
RI-10016		2017	NICHOLAS P. JEW and DENNIS MCDOUGALL	PHASE I CULTURAL RESOURCE ASSESSMENT FOR THE PERRIS DISTRIBUTION CENTER PROJECT, CITY OF PERRIS, RIVERSIDE COUNTY, CALIFORNIA	APPLIED EARTHWORKS, INC.	
RI-10018		2016	TRIA BELCOURT	RE: LETTER REPORT FOR CULTURAL AND PALEONTOLOGICAL RECORDS SEARCHES FOR THE BORDIAEA SITE, LOCATED IN THE CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA	MATERIAL CULTURE CONSULTING	
RI-10199	Other - 08-RIV-215 PM 28.0/34.3; Other - 08-RIV-MCP PM 0.0/16.3; Other - E.A. 08-0F3200 (PN 0800000125)	2014	PHIL FULTON	DISCOVERY AND MONITORING PLAN FOR THE MID COUNTY PARKWAY	LSA ASSOCIATES INC	33-016598, 33-019862, 33-019863, 33-019864, 33-019865, 33-019866
RI-10273		2017	Andrew J. Garrison and Brian F. Smith	Phase I Cultural Resources Survey for the Brodiaea Commerce Center Project, City of Moreno Valley, County of Riverside	Brian F. Smith and Associates, Inc.	
RI-10277	Other - PLOT PLAN PA-13-0037; Other - TENTATIVE PARCEL MAP PA13-0038	2017	BRIAN F. SMITH	CULTURAL RESOURCES MONITORING REPORT FOR THE FIRST NANDINA LOGISTICS CENTER PROJECT, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA	FIRST NANDINA LOGISTICS CENTER PROJECT	
RI-10400		2018	Brian F. Smith	Phase I Cultural Resources Survey for the Centerpointe Project	Brian F. Smith and Associates	
RI-10647	NA	1981	Stephen Becker and James Warner	Riverside County Historic Resources Survey Final Report	History Division Riverside County Parks Department	
RI-10691		1979	Alan Curl	Phase I Survey of the City of Riverside Final Report	Riverside Municiple Museum	
RI-10764		2019	Brian F. Smith	Cultural Resources Monitoring Report for the Duke Warehouse Project, PM No. 37187, City of perris, riverside County, California	Brian F. Smith and Associates, Inc.	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
RI-10784		2019	Tracy A. Stropes, Jennifer R.K. Stropes, and Brian F. Smith	A CLASS III HISTORIC RESOURCES STUDY FOR THE MORENO VALLEY FESTIVAL PROJECT FOR SECTION 106 COMPLIANCE SPL-2018-00821 CITY OF MORENO VALLEY, CALIFRONIA	Brian F. Smith and Associates, Inc.	
RI-10787	Other - DPR No. 06-0635	2018	Brian F. Smith	Cultural Resources Monitoring Report for the Rider Distribution Center I Project, DPR No. 06-0635, City of Perris, Riverside County, California	Brian F. Smith and Associates, Inc.	
RI-10788	Other - DPR No. 06-0432	2018	Brian F. Smith	Cultural Resources Monitoring Report for the Rider Distribution Center III Project, PM 35268, City of Perris, Riverside County, California	Brian F. Smith and Associates, Inc.	
RI-10802	OHP OTIS Report Nbr - COE_2019_0214_002	2019	Tracy A. Stropes, Jennifer R.K. Stropes, and Brian F. Smith	A CLASS III HISTORIC RESOURCES STUDY FOR THE MORENO VALLEY FESTIVAL PROJECT FOR SECTION 106 COMPLIANCE	Brian F. Smith and Associates	
RI-10827	OHP OTIS Report Nbr - FCC_2019_0402_003	2019	Sarah A. Williams and Carrie D. Wills	Cultural Resource Records Search and Site Visit Results for AT&T Mobility Candidate CSL02876 (Iris Plaza), 16110 Perris Boulevard, Moreno Valley, Riverside County, California (EBI Project Number 6119000825)	HELIX Environmental Planning, Inc.	

Appendix B

Native American Consultation

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

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Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Joseph Myers
Pomo

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

January 28, 2020

Tiffany Clark
Rincon Consultants, Inc.

Via Email to: tclark@rinconconsultants.com

Re: Perris North Basin Groundwater Contamination Monitoring Program Project, Riverside County

Dear Ms. Clark:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Staff Services Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
1/28/2020

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
P.O. Box 846 — Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161
hhaines@augustinetribe.com

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway — Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880
jstapp@cabazonindians-nsn.gov

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Los Coyotes Band of Cahuilla and Cupeño Indians
Shane Chapparosa, Chairperson
P.O. Box 189 — Cahuilla
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Perris North Basin Groundwater Contamination Monitoring Program Project, Riverside County.

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Pechanga Band of Luiseno Indians
Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

Ramona Band of Cahuilla
John Gomez, Environmental Coordinator
P. O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
jgomez@ramona-nsn.gov

Ramona Band of Cahuilla
Joseph Hamilton, Chairperson
P.O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramona-nsn.gov

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838 — Kitanemuk
Newhall, CA, 91322 — Vanyume
Phone: (503) 539 - 0933 — Tataviam
Fax: (503) 574-3308
ddyocum@comcast.net

San Manuel Band of Mission Indians
Lee Clauss, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
Fax: (909) 864-3370
lclauss@sanmanuel-nsn.gov

Santa Rosa Band of Cahuilla Indians
Steven Estrada, Chairperson
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
mflaxbeard@santarosacahuilla-nsn.gov

Santa Rosa Band of Cahuilla Indians
Mercedes Estrada,
P. O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
mercedes.estrada@santarosacahuilla-nsn.gov

Serrano Nation of Mission Indians
Mark Cochrane, Co-Chairperson
P. O. Box 343 — Serrano
Patton, CA, 92369
Phone: (909) 528 - 9032
serranonation1@gmail.com

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This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Perris North Basin Groundwater Contamination Monitoring Program Project, Riverside County.

Serrano Nation of Mission Indians
Wayne Walker, Co-Chairperson
P. O. Box 343 Serrano
Patton, CA, 92369
Phone: (253) 370 - 0167
serranonation1@gmail.com

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487 Cahuilla
San Jacinto, CA, 92583 Luiseno
Phone: (951) 654 - 2765
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Torres-Martinez Desert Cahuilla Indians
Michael Mirelez, Cultural Resource Coordinator
P.O. Box 1160 Cahuilla
Thermal, CA, 92274
Phone: (760) 399 - 0022
Fax: (760) 397-8146
mmirelez@tmdci.org

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Perris North Basin Groundwater Contamination Monitoring Program Project, Riverside County.

19-09026 Perris North Basin Groundwater Contamination Monitoring Program Section 106 Correspondence Tracking

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Agua Caliente Band of Cahuilla Indians **Jeff Grubbe, Chairperson** 5401 Dinah Shore Drive Palm Springs, CA, 92264 Phone: (760) 699 - 6800 Fax: (760) 699-6919	1/23/2020		2/7/2020		2/7/2020: Was referred to Ms. Patricia Garcia-Plotkin by Tribal Office
Agua Caliente Band of Cahuilla Indians **Patricia Garcia-Plotkin, Director** 5401 Dinah Shore Drive Palm Springs, CA, 92264 Phone: (760) 699 - 6907 Fax: (760) 699-6924 ACBCI-THPO@aguacaliente.net	1/29/2020 Via email	1/29/2020	2/7/2020	2/11/2020	Reached Patty and she stated she gets all the notification letters sent to Chairperson Jeff Grubbe but to go ahead and send the letter via email to her just to be sure. Letter emailed to ACBCI-THPO@aguacaliente.net 1/29/2020 2/7/2020: Called and left voicemail with contact info 2/11/2020: Called and left voicemail with contact info
Augustine Band of Cahuilla Mission Indians **Amanda Vance, Chairperson** P.O. Box 846 Coachella, CA, 92236 Phone: (760) 398 - 4722 Fax: (760) 369-7161 hhaines@augustinetribe.com	1/23/2020		2/7/2020	2/11/2020	2/7/2020: Called and left message and contact info with reception; told the message would be forwarded to Chairperson Vance and that the person who usually responds to project notification letters 2/11/2020: Called and left message with Kim at reception and she said the letter had been forwarded to the appropriate individuals for review.

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Cabazon Band of Mission Indians **Doug Welmas, Chairperson** 84-245 Indio Springs Parkway Indio, CA, 92203 Phone: (760) 342 - 2593 Fax: (760) 347-7880 jstapp@cabazonindians-nsn.gov	1/23/2020		2/7/2020	2/11/2020	2/7/2020: was directed to Nancy Markwardt's voicemail and left a voicemail with contact info 2/11/2020: Called and left voicemail for Nancy Markwardt with contact info
Cahuilla Band of Indians **Daniel Salgado, Chairperson** 52701 U.S. Highway 371 Anza, CA, 92539 Phone: (951) 763 - 5549 Fax: (951) 763-2808 Chairman@cahuilla.net	1/23/2020		2/7/2020	2/11/2020	2/7/2020: Referred to Andrea Candelaria (Environmental Officer/ Acting Director), extension 108; left voicemail with contact info 2/11/2020: Called and left voicemail for Andrea Candelaria with contact info
Campo Band of Diegueno Mission Indians **Ralph Goff, Chairperson** 36190 Church Road, Suite 1 Campo, CA, 91906 Phone: (619) 478 - 9046 Fax: (619) 478-5818 rgoff@campo-nsn.gov	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up
Ewiiaapaayp Band of Kumeyaay Indians **Michael Garcia, Vice Chairperson** 4054 Willows Road Alpine, CA, 91901 Phone: (619) 445 - 6315 Fax: (619) 445-9126 michaelg@leaningrock.net	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Ewiiaapaayp Band of Kumeyaay Indians **Robert Pinto, Chairperson** 4054 Willows Road Alpine, CA, 91901 Phone: (619) 445 - 6315 Fax: (619) 445-9126 wmicklin@leaningrock.net	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up
Gabrieleno Band of Mission Indians – Kizh Nation **Andrew Salas, Chairperson** P.O. Box 393 Covina, CA, 91723 Phone: (626) 926 – 4131 admin@gabrielenoindians.org	1/23/2020		2/7/2020	2/11/2020	2/7/2020: Called and left voicemail with contact info; received text message to call office at 844-390-0787; Called and left message with contact info with reception 2/11/2020: Called office and left voicemail with contact info; office called back and defer the project to the Luiseno. Was told an email would be sent formally stating the deferment.

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Gabrieleno/Tongva San Gabriel Band of Mission Indians **Anthony Morales, Chairperson** P.O. Box 693 San Gabriel, CA, 91778 Phone: (626) 483 - 3564 Fax: (626) 286-1262 GTTribalcouncil@aol.com	1/23/2020		2/7/2020		2/7/2020: Called and spoke with Chairman Morales. He stated that if archaeological and/or Native American monitoring is recommended that the Gabrieleno/Tongva San Gabriel Band of Mission Indians would like to be notified. Additionally, Mr. Morales stated that in the event that cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, the Gabrieleno/Tongva San Gabriel Band of Mission Indians would like to be notified. Chairman Morales also stated that if human remains are unearthed and identified by the Coroner as indigenous people, the Gabrieleno/Tongva San Gabriel Band of Mission Indians would like to be contacted regardless of the MLD designation from the NAHC.
Gabrielino /Tongva Nation **Sandonne Goad, Chairperson** 106 1/2 Judge John Aiso St., #231 Los Angeles, CA, 90012 Phone: (951) 807 - 0479 sgoad@gabrielino-tongva.com	1/23/2020		2/7/2020	2/11/2020	2/7/2020: Called and left voicemail with contact info 2/11/2020: Called and left voicemail with contact info

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Gabrielino Tongva Indians of California Tribal Council **Robert Dorame, Chairperson** P.O. Box 490 Bellflower, CA, 90707 Phone: (562) 761 - 6417 Fax: (562) 761-6417 gtongva@gmail.com	1/23/2020				2/5/2020: Mr. Dorame called and stated that in the event that cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, the Gabrielino Tongva Indians of California Tribal Council would like to be notified. Additionally, Mr. Dorame stated that if human remains are unearthed and identified by the Coroner as indigenous people, the Gabrielino Tongva Indians of California Tribal Council would like to be contacted regardless of the MLD designation from the NAHC.
Gabrielino-Tongva Tribe **Charles Alvarez,** 23454 Vanowen Street West Hills, CA, 91307 Phone: (310) 403 – 6048 roadkingcharles@aol.com	1/23/2020		2/7/2020	2/11/2020	2/7/2020: Called and left voicemail with contact info 2/11/2020: Called and left voicemail with contact info
Jamul Indian Village **Lisa Cumper, Tribal Historic Preservation Officer** P.O. Box 612 Jamul, CA, 91935 Phone: (619) 669 - 4855 lcumper@jiv-nsn.gov	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up
Jamul Indian Village **Erica Pinto, Chairperson** P.O. Box 612 Jamul, CA, 91935 Phone: (619) 669 - 4785 Fax: (619) 669-4817 epinto@jiv-nsn.gov	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
La Posta Band of Diegueno Mission Indians **Gwendolyn Parada, Chairperson** 8 Crestwood Road Boulevard, CA, 91905 Phone: (619) 478 - 2113 Fax: (619) 478-2125 LP13boots@aol.com	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up
La Posta Band of Diegueno Mission Indians **Javaughn Miller, Tribal Administrator** 8 Crestwood Road Boulevard, CA, 91905 Phone: (619) 478 - 2113 Fax: (619) 478-2125 jmiller@LPtribe.net	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up
Los Coyotes Band of Cahuilla and Cupeño Indians **Shane Chapparosa, Chairperson** P.O. Box 189 Warner Springs, CA, 92086-0189 Phone: (760) 782 - 0711 Fax: (760) 782-0712	1/23/2020		2/7/2020	2/11/2020	Mr. Ray Chapparosa is the current Chairman and not Shane Chapparosa. 2/7/2020: Called and left voicemail for Ray Chapparosa with contact info 2/11/2020: Called and left message with contact info with receptionist
Manzanita Band of Kumeyaay Nation **Angela Elliott Santos, Chairperson** P.O. Box 1302 Boulevard, CA, 91905 Phone: (619) 766 - 4930 Fax: (619) 766-4957	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Mesa Grande Band of Diegueno Mission Indians **Michael Linton, Chairperson** P.O Box 270 Santa Ysabel, CA, 92070 Phone: (760) 782 - 3818 Fax: (760) 782-9092 mesagrandeband@msn.com	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up
Morongo Band of Mission Indians **Robert Martin, Chairperson** 12700 Pumarra Rroad Banning, CA, 92220 Phone: (951) 849 – 8807 Fax: (951) 922-8146 dtorres@morongo-nsn.gov	1/23/2020				Travis Armstrong, the Tribal Historic Preservation Officer for the Morongo Band of Mission Indians sent email response 1/30; see below

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Morongo Band of Mission Indians **Denisa Torres, Cultural Resources Manager** 12700 Pumarra Rroad Banning, CA, 92220 Phone: (951) 849 - 8807 Fax: (951) 922-8146 dtorres@morongo-nsn.gov	1/29/2020 Via email	1/29/2020			Called and left message stating I would email copy of letter sent to Chairman Martin. Copy of letter emailed to dtorres@morongo-nsn.gov 1/29/2020. On January 30, 2020, Rincon received an email from Travis Armstrong, the Tribal Historic Preservation Officer for the Morongo Band of Mission Indians. Mr. Armstrong acknowledged receipt of the project notification letter and requested that a records search at the appropriate California Historical Resources Information Systems (CHRIS) center with at least a 1.0-mile search radius be conducted. Additionally, Mr. Armstrong requests copies of the site records for tribal cultural resources identified in the records search be sent and that information regarding the vertical and horizontal APEs also be shared.
Pechanga Band of Luiseno Indians **Mark Macarro, Chairperson** P.O. Box 1477 Temecula, CA, 92593 Phone: (951) 770 - 6000 Fax: (951) 695-1778 epreston@pechanga-nsn.gov	1/23/2020		2/7/2020		2/7/2020: Reached Chairman Macarro's assistant who directed me to Paul Macarro or Ebru Ozdil in the Cultural Resources Department. Phone number for Ms. Ozdil in case Paul Macarro is not responsive is 951-770-6313 Paul Macarro called back on 2/7/2020, see below

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Pechanga Band of Luiseno Indians **Paul Macarro, Cultural Resources Coordinator** P.O. Box 1477 Temecula, CA, 92593 Phone: (951) 770 - 6306 Fax: (951) 506-9491 pmacarro@pechanga-nsn.gov	1/29/2020 Via email	1/29/2020	2/7/2020		Called and spoke with Mr. Macarro and would like copy of letter sent to Chairman Mark Macarro sent to him. Email sent to Mr. Paul Macarro at pmacarro@pechanga-nsn.gov on 1/29/2020 2/7/2020: called and left voicemail with contact info; Mr. Paul Macarro called back and expressed concerns regarding cultural resources and tribal resources and will prepare a response in writing to include his detailed concerns. Also said response may come from Molly Earp, the Tribal Archaeologist.
Ramona Band of Cahuilla **John Gomez, Environmental Coordinator** P. O. Box 391670 Anza, CA, 92539 Phone: (951) 763 - 4105 Fax: (951) 763-4325 jgomez@ramona-nsn.gov	1/29/2020 Via email	1/29/2020	2/7/2020	2/11/2020	Spoke with Mr. Gomez and he requested the copy of the letter sent to Chairman Hamilton on 1/23 be sent to him via email. Email sent to jgomez@ramona-nsn.gov 1/29/2020 2/7/2020: Called and left message with contact info with reception 2/11/2020: Called office and no response, unable to leave voicemail through directory
Ramona Band of Cahuilla **Joseph Hamilton, Chairperson** P.O. Box 391670 Anza, CA, 92539 Phone: (951) 763 - 4105 Fax: (951) 763-4325 admin@ramona-nsn.gov	1/23/2020		2/7/2020	2/11/2020	2/7/2020: Called and left message with contact info with reception 2/11/2020: Called office and no response, unable to leave voicemail through directory

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
San Fernando Band of Mission Indians **Donna Yocum, Chairperson** P.O. Box 221838 Newhall, CA, 91322 Phone: (503) 539 - 0933 Fax: (503) 574-3308 ddyocum@comcast.net	1/23/2020		2/7/2020		2/7/2020: Called and spoke with Chairwoman Yocum. She stated that the San Fernando Band of Mission Indians defer to the local tribal groups for this project and do not have any further comments
San Manuel Band of Mission Indians **Lee Clauss, Director of Cultural Resources** 26569 Community Center Drive Highland, CA, 92346 Phone: (909) 864 - 8933 Fax: (909) 864-3370 lclauss@sanmanuel-nsn.gov	1/23/2020				On February 5, 2020, Alexandra McCleary, the Tribal Archaeologist for the San Manuel Band of Mission Indians sent an email response to Rincon. Ms. McCleary stated that the proposed project is located outside of Serrano ancestral territory and, as such, SMBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to legal and regulatory mandates.
San Pasqual Band of Diegueno Mission Indians **Allen Lawson, Chairperson** P.O. Box 365 Valley Center, CA, 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876 allenl@sanpasqualtribe.org	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Santa Rosa Band of Cahuilla Indians **Steven Estrada, Chairperson** P.O. Box 391820 Anza, CA, 92539 Phone: (951) 659 - 2700 Fax: (951) 659-2228 mflaxbeard@santarosacahuillansn.gov	1/23/2020		2/7/2020		Now Vice Chairman and letter sent 1/23/2020 would be forwarded to new Chairman as per phone convo with Tribal Office while trying to reach Ms. Mercedes Estrada on 1/29/2020 2/7/2020: Spoke with Joenie Miranda who will now be taking over responsibilities associated with project notification letters since Mercedes Estrada is no longer in that role. Ms. Miranda asked to be emailed the copy of the letter sent to on 1/23. Email sent on 2/7/2020 to jmiranda@santarosacahuilla-nsn.gov. Ms. Miranda emailed a response later in the day stating that the Tribe does not have any comments regarding this project.
Santa Rosa Band of Cahuilla Indians **Mercedes Estrada** P. O. Box 391820 Anza, CA, 92539 Phone: (951) 659 - 2700 Fax: (951) 659-2228 mercedes.estrada@santarosacahuilla-nsn.gov	1/29/2020 Via email	1/29/2020			Spoke with Tribal Office front desk. Ms. Estrada's last day was 1/28/2020 so **no further action necessary**. Additionally, Chairman Estrada is now Vice Chairman but was told the project notification letter sent on 1/23/2020 would be forwarded to the new Chairman.
Serrano Nation of Mission Indians **Mark Cochrane, Co-Chairperson** P. O. Box 343 Patton, CA, 92369 Phone: (909) 528 – 9032 serranonation1@gmail.com	1/23/2020		2/7/2020		2/7/2020: Called and spoke with Co-Chairman Cochrane. Mr. Cochrane stated that if cultural resources or human remains are identified during the project that the Serrano Nation of Mission Indians would like to be notified.

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Serrano Nation of Mission Indians **Wayne Walker, Co-Chairperson** P. O. Box 343 Patton, CA, 92369 Phone: (253) 370 – 0167 serranonation1@gmail.com	1/23/2020				See above: 2/7/2020: Called and spoke with Co-Chairman Cochrane. Mr. Cochrane stated that if cultural resources or human remains are identified during the project that the Serrano Nation of Mission Indians would like to be notified.
Soboba Band of Luiseno Indians **Joseph Ontiveros, Cultural Resource Department** P.O. BOX 487 San Jacinto, CA, 92581 Phone: (951) 663 - 5279 Fax: (951) 654-4198 jontiveros@soboba-nsn.gov	1/29/2020 Via email	1/29/2020	2/7/2020		Spoke with Mr. Ontiveros. He requested a copy of the letter via email to himself and Jessica Valdez (Cultural Resources Specialist). Email sent to jontiveros@soboba-nsn.gov and jvaldez@soboba-nsn.gov on 1/29/2020 2/7/2020: Called and spoke with Mr. Ontiveros. He stated that the letter is currently being reviewed by Ms. Jessica Valdez the Cultural Resources Specialist
Soboba Band of Luiseno Indians **Scott Cozart, Chairperson** P. O. Box 487 San Jacinto, CA, 92583 Phone: (951) 654 - 2765 Fax: (951) 654-4198 jontiveros@soboba-nsn.gov	1/23/2020				See above: 2/7/2020: Called and spoke with Mr. Ontiveros. He stated that the letter is currently being reviewed by Ms. Jessica Valdez the Cultural Resources Specialist
Sycuan Band of the Kumeyaay Nation **Cody Martinez, Chairperson** 1 Kwaaypaay Court El Cajon, CA, 92019 Phone: (619) 445 - 2613 Fax: (619) 445-1927 ssilva@sycuan-nsn.gov	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up

Contact List Received from NAHC on 1/28/2020	Date Letter Sent to contact	Date of Phone Contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Torres-Martinez Desert Cahuilla Indians **Michael Mirelez, Cultural Resource Coordinator** P.O. Box 1160 Thermal, CA, 92274 Phone: (760) 399 - 0022 Fax: (760) 397-8146 mmirelez@tmdci.org	1/29/2020 Via email	1/29/2020			Spoke with Mr. Mirelez and he asked the copy of the letter be sent via email but also would like it noted that the Tribe defers to the Soboba Band of Luiseno Indians for this project area. Email sent to mmirelez@tmdci.org 1/29/2020
Torres-Martinez Desert Cahuilla Indians **Thomas Tortez, Chairperson** P.O. Box 1160 Thermal, CA, 92274 Phone: (760) 397 - 0300 Fax: (760) 397-8146 tmchair@torresmartinez.org	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up
Viejas Band of Kumeyaay Indians **John Christman, Chairperson** 1 Viejas Grade Road Alpine, CA, 91901 Phone: (619) 445 - 3810 Fax: (619) 445-5337	1/23/2020				Sent letter preemptively before NAHC Response; not on NAHC list for this project therefore do not need to follow up

Rincon Consultants, Inc.
3600 Lime Street, Suite 226
Riverside, California 92501

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info@rinconconsultants.com
www.rinconconsultants.com

EXAMPLE LETTER

January 23, 2020

Charles Alvarez
Gabrielino-Tongva Tribe
23454 Vanowen Street
West Hills, CA, 91307
Phone: (310) 403 – 6048
roadkingcharles@aol.com

Subject: **Cultural Resources Assessment for Eastern Municipal Water District Perris North Basin Groundwater Contamination Monitoring Program, cities of Moreno Valley and Perris, Riverside County, California**

Dear Mr. Alvarez,

Rincon Consultants, Inc. has been retained to conduct a cultural resources assessment for the Eastern Municipal Water District's (EMWD) Perris North Basin Groundwater Contamination Monitoring Program (project). The proposed project is a groundwater monitoring program designed to monitor the presence of groundwater contaminants of concern from nonpoint sources in the Perris North Basin, also referred to as the Perris North Groundwater Management Zone, which is within the San Jacinto Groundwater Basin. The project involves the construction and operation of up to 10 monitoring wells in various locations throughout three sub-areas of the Perris North Basin in the cities of Moreno Valley and Perris, Riverside County, California. Maps showing the location of the proposed well locations are included.

The purpose of this letter is to inquire about your knowledge of potential cultural resources within the vicinity that may be impacted by project development. Rincon has submitted a Native American Heritage Commission Sacred Lands File (SLF) search request of the project area. In addition, Rincon will conduct a records search at the California Historical Resources Information System and a cultural resource survey of the project's Area of Potential Effects.

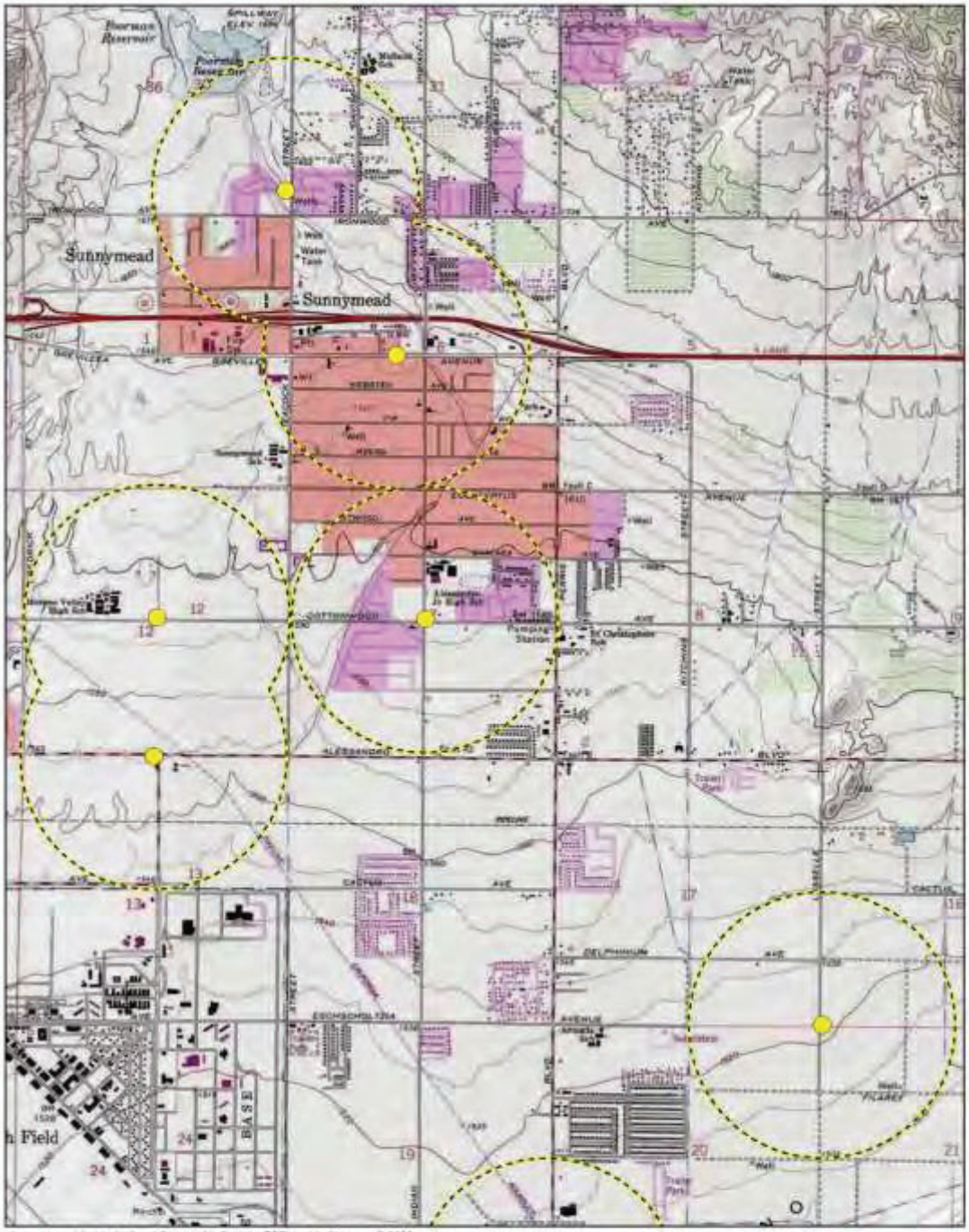
This project may involve federal funding; thus, the cultural resources study is being prepared in conformance with Section 106 of the National Historic Preservation Act. Rincon is assisting in the Section 106 consultation effort and we are writing to provide you with an opportunity to be involved in the Section 106 consultation process. If you or your organization has any knowledge or specific concerns regarding cultural resources in the project area, or would like to consult as part of the Section 106 process, please respond by telephone at (213) 788-4842 extension 149, or by email at tclark@rinconconsultants.com. Please respond within 30 days of receipt of this letter if you are interested in consultation.

Sincerely,
Rincon Consultants, Inc.

Tiffany Clark, PhD, RPA
Senior Archaeologist

Attached: Project Location Maps

Project Location Map (Page 1 of 2)



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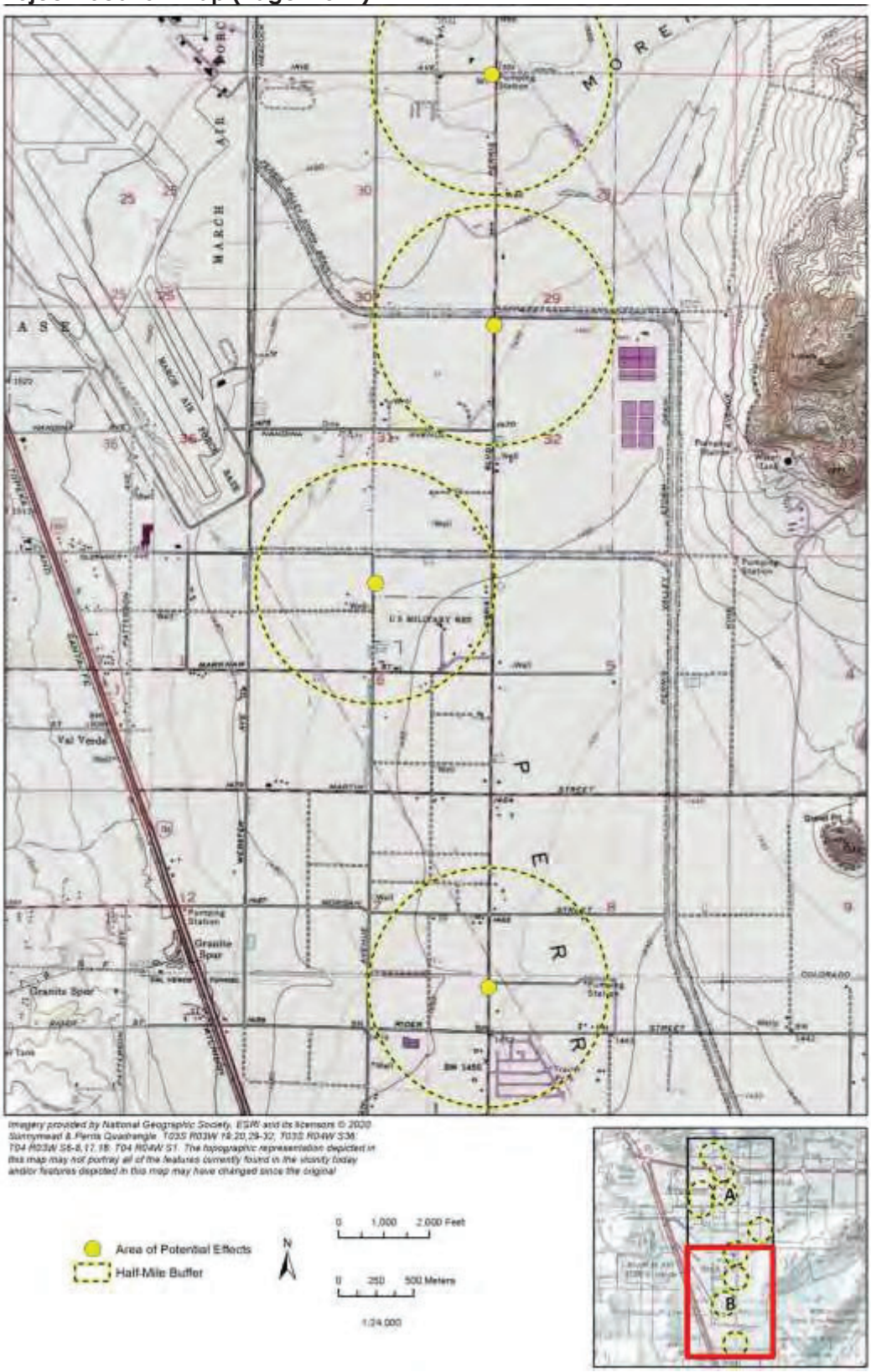
Project Location Map (Page 2 of 2)



Gena Granger

From: Joenie Miranda <JMiranda@santarosacahuilla-nsn.gov>
Sent: Friday, February 7, 2020 10:39 AM
To: Gena Granger
Subject: [EXT] RE: Project Notification Letter for Perris North Basin Groundwater Contamination Monitoring Program sent via USPS to Vice Chairman Estrada on 1/23/2020

CAUTION: This email originated from outside of Rincon Consultants. Be cautious before clicking on any links, or opening any attachments, until you are confident that the content is safe .

Hello Gena,
The Tribe does not have any comments at this time.

Respectfully,
Joenie Miranda
Receptionist

Ph: 951-659-2700
Fax: 951-659-2228

From: Gena Granger <ggranger@rinconconsultants.com>
Sent: Friday, February 7, 2020 10:28 AM
To: Joenie Miranda <JMiranda@santarosacahuilla-nsn.gov>
Subject: Project Notification Letter for Perris North Basin Groundwater Contamination Monitoring Program sent via USPS to Vice Chairman Estrada on 1/23/2020

Hi Joni,

As per our phone conversation a few minutes ago attached you will find the project notification letter that was originally sent to now Vice Chairman Estrada on 1/23/2020. Please feel free to contact me if you have any questions.

Thanks again for your time!

Gena Granger, M.A. RPA, Project Manager/Archaeologist
Rincon Consultants, Inc.
Environmental Scientists | Planners | Engineers
(213) 788-4842 x3006

(213) 634-3337 Direct
rinconconsultants.com



Ranked 2019 "Hot Firm" and "Best Firm to Work For" by Zweig Group
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Appendix C

Historical Group Consultation

Historic Groups Consulted

Local Group/Government Contact	Rincon Coordination Efforts	Response to Coordination Efforts
Moreno Valley Historical Society P.O. Box 66 Moreno Valley, CA 92556 morenovalleyhistoricalsociety@gmail.com	January 23, 2020: Rincon mailed consultation letter via USPS. February 3, 2020: Followed up via email.	Deanna La Cava of the MVHS responded by email on 2/4/2020: "Your email was received. I did a forward to the appropriate people. If there are any concerns, we will be in touch soon. Thank you for your contact." As of 2/11/2020, MVHS has not contacted Rincon with further information.
Riverside African American Historical Society P.O. Box 209 Riverside, CA 92502 Website: https://raahsinc.org/about/civil-rights-institute/	January 23, 2020: Rincon mailed consultation letter via USPS. February 3, 2020: Left follow-up voicemail. February 11, 2020: Rincon submitted follow-up message via the organization's messaging system at https://raahsinc.org/contact/.	Rincon has received no response as of 2/11/2020.
City of Moreno Valley Environmental and Historical Preservation Board c/o Claudia Manrique Moreno Valley Community Development Department 14177 Frederick Street Moreno Valley, CA 92553 Main line: (951)413-3206	January 23, 2020: Rincon mailed consultation letter via USPS.	February 3, 2020: Spoke with Claudia Moreno, EHPB secretary, who said the board had no concerns re: historic properties in or near the project area. No further consultation is necessary.
March Field Air Museum 22550 Van Buren Boulevard Riverside, CA 92518 Main line: (951)413-3206	January 23, 2020: Rincon mailed consultation letter via USPS.	January 28, 2020: During follow-up phone call, was informed by front desk receptionist that the museum had no personnel tasked with handling Section 106 consultation. No further consultation is necessary.

Local Group/Government Contact	Rincon Coordination Efforts	Response to Coordination Efforts
Perris Valley Historical Museum 120 W 4th Street Perris, CA 92570 (951)657-0274	January 23, 2020: Rincon mailed consultation letter via USPS. February 11, 2020: Left follow-up voicemail.	As of 2/11/2020, the PVHM has not responded.

Rincon Consultants, Inc.
3600 Lime Street, Suite 226
Riverside, California 92501

951 782 0061 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

EXAMPLE LETTER

January 23, 2020

March Field Air Museum
22550 Van Buren Boulevard
Riverside, CA 92518
(951)413-3206

Subject: **Cultural Resources Assessment for Eastern Municipal Water District Perris North Basin Groundwater Contamination Monitoring Program, cities of Moreno Valley and Perris, Riverside County, California**

To Whom It May Concern,

Rincon Consultants, Inc. has been retained to conduct a cultural resources assessment for the Eastern Municipal Water District's Perris North Basin Groundwater Contamination Monitoring Program (project). The proposed project is a groundwater monitoring project designed to monitor the presence of groundwater contaminants of concern from nonpoint sources in the Perris North Basin, also referred to as the Perris North Groundwater Management Zone, which is within the San Jacinto Groundwater Basin. The project involves the construction and operation of up to 10 monitoring wells in various locations throughout three sub-areas of the Perris North Basin in the cities of Moreno Valley and Perris, Riverside County, California. Maps showing the location of the proposed well locations are included.

This project may involve federal funding; thus, the cultural resources study is being prepared in conformance with Section 106 of the National Historic Preservation Act. Rincon is assisting in the Section 106 consultation effort and we are writing to provide you with an opportunity to be involved in the Section 106 consultation process. If you or your organization has any knowledge or specific concerns regarding cultural resources in the project area, please respond by telephone at (213) 788-4842 extension 149, or by email at tclark@rinconconsultants.com. Please respond within 30 days of receipt of this letter if you are interested in consultation.

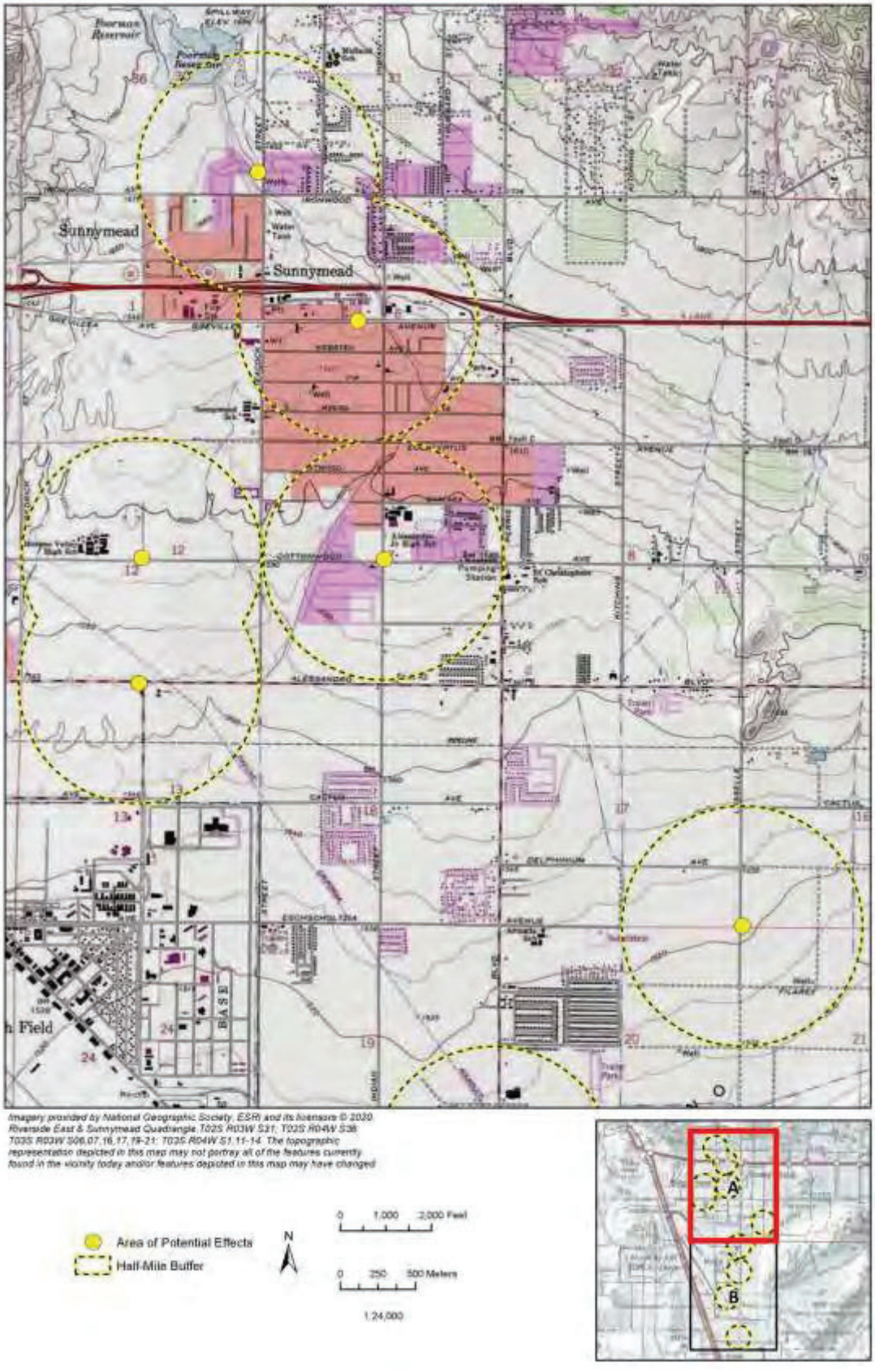
Please respond within 30 days of receipt of this letter if you are interested in consultation. Thank you for your assistance.

Sincerely,
Rincon Consultants, Inc.

Tiffany Clark, PhD, RPA
Senior Archaeologist

Attached: Project Location Maps

Project Location Map (Page 1 of 2)



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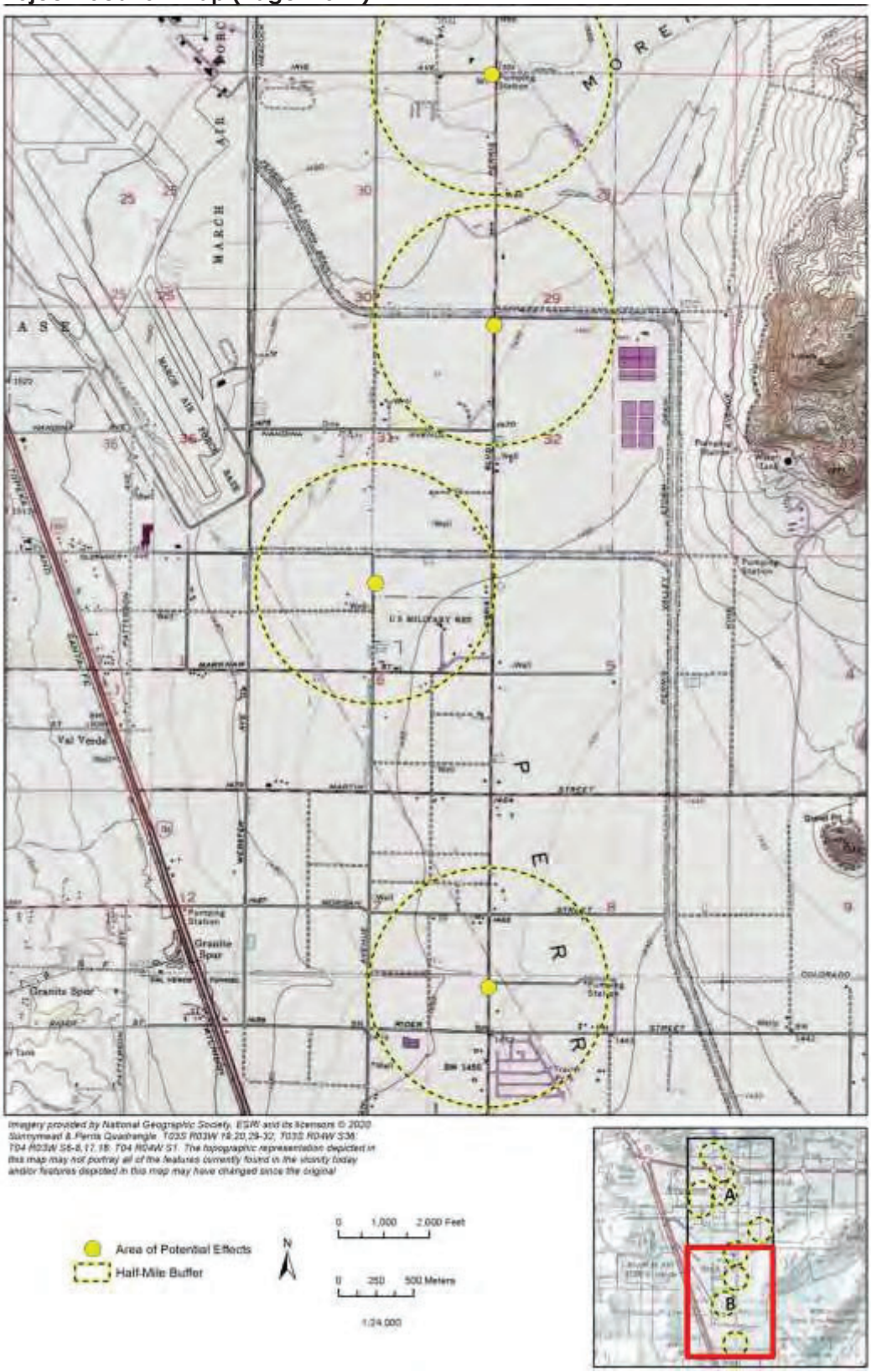
Project Location Map (Page 2 of 2)



Reply all Delete Junk Block ···

[EXT] Re: Section 106 Historic Consultation for the EMWD Cactus Corridor and Perris North Projects

HS

Historical Society <morenovalleyhistoricalsociety@gmail.com>
Tue 2/4/2020 2:03 PM
James Williams; Deanna La Cava <deanna.lacava@yahoo.com>; Alice Bradley <afbradley45@gmail.com>

CAUTION: This email originated from outside of Rincon Consultants. Be cauous be fore clicking on any links, or opening any a achments, unl y ou are confident that the content is safe .

Your email was received. I did a forward to the appropriate people. If there are any concerns, we will be in touch soon. Thank you for your contact.
Deanna La Cava, Vice President
Moreno Valley Historical Society

On Mon, 3 Feb 2020, 12:55 pm James Williams, <jwilliams@rinconconsultants.com> wrote:

> Greengs,
>
> I am wring t o follow-up on two Secon 106 c onsultaons sen t to your organizaon las t month. Specifically, we contacted your organizaon t o ask if it had comments or concerns regarding potenal impacts t o historic resources posed by the Eastern Municipal Water District's Cactus Corridor and Perris North projects. For your convenience I have a ached copies of both le ers to this message.
>
> If your organizaon w ould like to comment on either project, please contact me at this email address or by phone at (805)644-4455 ext. 2028.
>
> Sincerely,
>
> James Williams
> Architectural Historian
> Rincon Consultants

Appendix D

Survey Notes

Survey Observations for Proposed Monitoring Well Sites and Marked Parcel Locations

Location Name	Description
Monitoring Well #1	Well site is within an open lot parcel that has been graded and gravel treated in most areas. Possible existing well is present in the west end of the lot. One tree is present in the SE corner of the lot. Loose asphalt, concrete fragments are sparsely scattered across the site as is modern refuse. Native soils appear to be reddish tan sandy loam with gravel inclusions. Ground visibility is ~50%. No cultural resources observed
Monitoring Well #2	Well site located on Sunnymead Boulevard southern ROW/easement. Manicured landscaping and paved lot with building in SE corner and grassy/weedy area in SW corner of lot. Soils appear to be native tan reddish sandy loam in west and southwest of lot and mixed fill within the planters along the sidewalk. Ground visibility is ~5-10%. No cultural resources were observed
Monitoring Well #3	Well site is located at NW corner of Cottonwood Avenue and Indian Street within disturbed but open lot that appears to have been tilled/disked. Modern refuse and sparse concrete fragments are present. A gasline marker is present in the southern end of the lot along Cottonwood Avenue and a locked panel or vault is present as well. Grasses 3-6" tall are present. Soils are light tan sandy loam and ground visibility is ~40%. No cultural resources were observed.
Monitoring Well #4	Well site located in the ROW or easement at corner of Moreno Valley High School at the northwest corner of Cottonwood Avenue and Graham Street. ROW/easement consists of sidewalk, parking lot for the high school, and a section of decomposing granite (DG) path. Ground visibility is close to 0% as the only open area is covered by DG. No cultural resources were observed.
Monitoring Well #5	Well site is located on southwest corner of Graham Street and Alessandro Boulevard. The corner appears to have been built to accommodate for a separate right-hand turn lane onto Graham Street but appears to have been abandoned as the lane is blocked off and only partially paved/treated with gravel. South of the abandoned lane and concrete sidewalks/curb is an open lot with medium vegetation, heavy disturbance from tilling or disking, and disturbance from krotovina. Modern refuse is also prevalent. Soils appear to be disturbed tan reddish silty sandy loam. Grasses and non-native brush grow 6-24" tall. Ground visibility is ~20-30%. No cultural resources were observed.
Monitoring Well #6	Well site is located at corner of Vista Del Lago High School on the southwest corner of the John F. Kennedy Drive and Lasselle Street. ROW/easement area at the corner consists of concrete sidewalks and curb and manicured lawn and fenceline for the school. The ground visibility is near 0%. The corner north of the site was also surveyed as it is more open and vacant and native tan reddish sandy loam soils could be observed. No cultural resources were observed at either corners of the intersection.
Monitoring Well #7 (EMWD Facility)	Well site is located within this locked EMWD facility at the corner of Iris Avenue and Perris Boulevard. Observations made from outside the fence was that the lot has been graded and treated with gravel. The ground cover is likely less than ~5% as gravel and concrete foundations cover most of the facility. No cultural resources were observed.
Monitoring Well #8	Well site is located at the southeastern corner of the Harley Knox Boulevard and Indian Avenue within an open undeveloped parcel. Grasses 6-12' tall are present as is modern refuse and krotovina. The soils appear to consist of a tan sandy loam and ground visibility is ~50%. A possible EMWD well appears to be present in the northern end of the site ~100ft north of the stoplight at the corner. No cultural resources were observed.
Monitoring Well #9	Well site is located in west easement of Perris Boulevard, north of Rivard Road. The easement lies in front of a fenced residence (17041 N. Perris Blvd.) and is covered on 3-6" of grasses and concrete sidewalk. Ground visibility is ~5%. No cultural resources were observed.

Location Name	Description
Monitoring Well #10	Well site is located in west easement of Perris Boulevard, north of Commerce Drive. The easement consists of manicured landscaping and concrete sidewalks. Ground visibility is close to 0%. No cultural resources were observed.

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APPENDIX D: PALEONTOLOGICAL RESOURCES ASSESSMENT

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February 14, 2020
Project No: 19-09026

Rosalyn Prickett
Senior Water Resources Planner
Woodard & Curran
9665 Chesapeake Drive, Suite 320
San Diego, California 92123

Subject: Paleontological Resource Assessment for the Perris North Basin Groundwater Contamination Monitoring Project, cities of Moreno Valley and Perris, Riverside County, California

Dear Ms. Prickett,

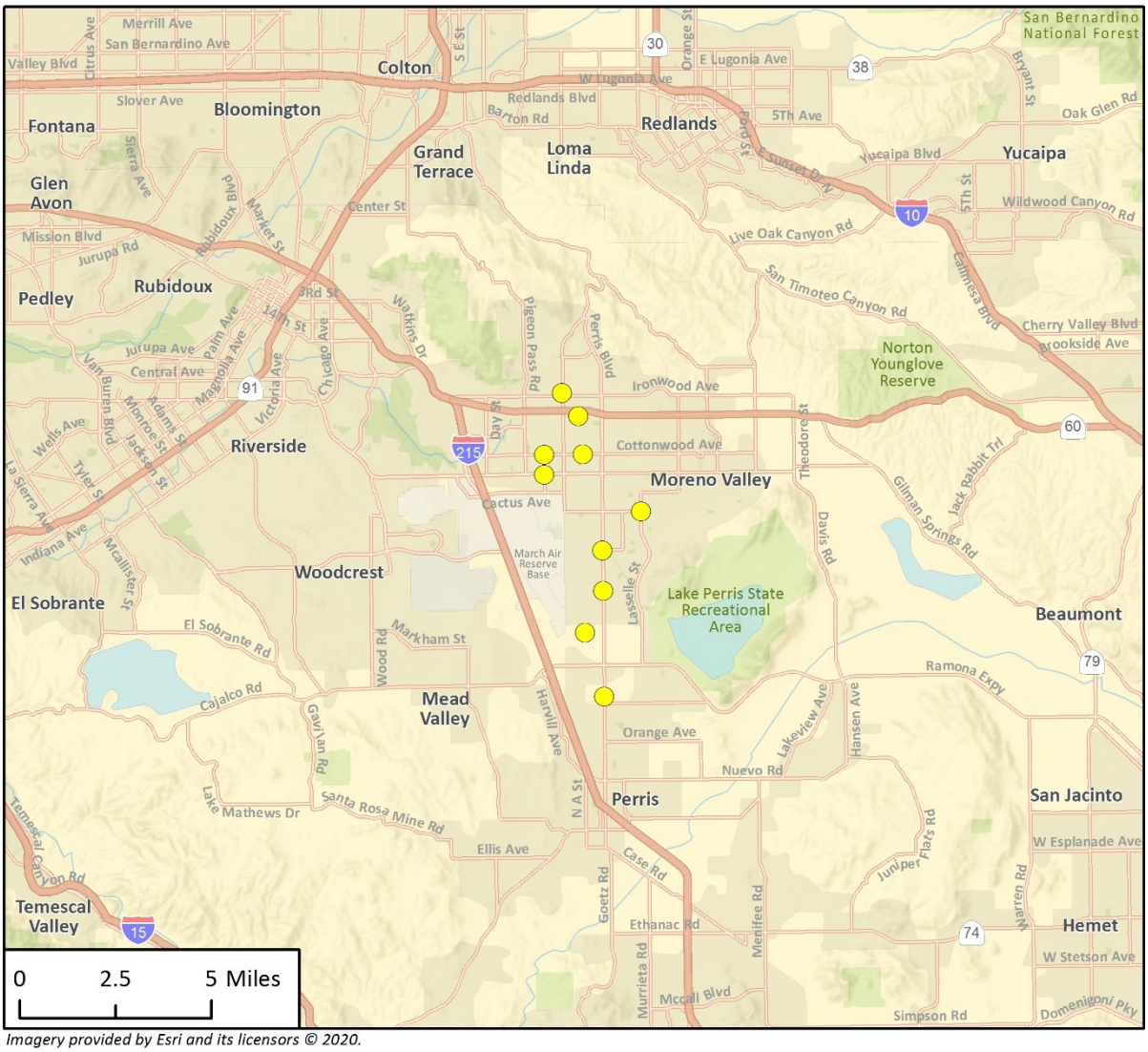
Rincon Consultants, Inc. conducted a paleontological resource assessment for the proposed Perris North Basin Groundwater Contamination Monitoring Project (project) located in the cities of Moreno Valley and Perris, Riverside County, California. This study was prepared under contract to Woodard & Curran for use by the Eastern Municipal Water District (EMWD) in support of the Initial Study/Mitigated Negative Declaration (IS/MND) being prepared pursuant to the California Environmental Quality Act (CEQA). The goals of this assessment are to identify the geologic units that may be impacted by development of the project, determine the paleontological sensitivity of geologic units underlying the project site, assess the potential for impacts to paleontological resources from development of the project, and recommend mitigation measures to reduce impacts to scientifically significant paleontological resources, pursuant to CEQA.

This paleontological resource assessment consisted of a fossil locality record search at the Natural History Museum of Los Angeles County (NHMLAC), a review of existing geologic maps and paleontological locality data, and a review of primary literature regarding fossiliferous geologic units within the project site and vicinity. Following the literature review and records search, this report assessed the paleontological sensitivity of the geologic units underlying the project site, determined the potential for impacts to significant paleontological resources, and proposed mitigation measures to reduce impacts to less than significant.

Project Location

The project site is within the cities of Moreno Valley and Perris in western Riverside County, California (Figure 1 and Figure 2). More specifically, it is in Township 2 South, Range 3 West, Section 31; Township 2 South, Range 4 West, Section 36; Township 3 South, Range 3 West, Sections 6, 7, 16, 19-21, and 29-32; Township 3 South, Range 4 West, Sections 1, 11-14, and 36; Township 4 South, Range 3 West, Sections 6-8, 17, and 18; and Township 4 South, Range 4 West, Section 1 of the United States Geological Survey (USGS) *Riverside East, Sunnymead*, and *Perris* California 7.5-minute topographic quadrangles.

Figure 1 Regional Vicinity



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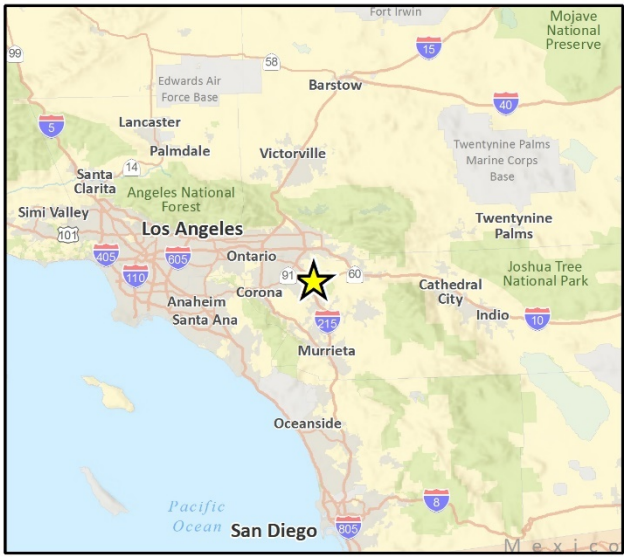

Figure 2 Project Site Vicinity



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The project site is in a developed area characterized by a mix of agricultural, residential, commercial, and light industrial uses.

Project Description

The proposed project involves construction and operation of up to 10 monitoring wells in the Perris North Groundwater Management Zone. EMWD manages the Perris North Groundwater Management Zone for water supply and quality, and it is an important resource to the region. Currently, groundwater in the Perris North Groundwater Management Zone is contaminated. The monitoring wells installed by the proposed project will improve EMWD's understanding of the level and extent of contamination. The proposed project will also help to inform management decisions related to the Perris North Groundwater Management Zone.

Description of Monitoring Wells

Ten monitoring wells are proposed within the project area. For each well, an 18-inch borehole would be drilled, and 6-inch casing would be installed, along with a sampling pump located inside the well. For wells within roadway rights-of-way or sidewalks, well heads would be flush-mounted to the road or sidewalk. Wells located within parcel lots would either have well heads flush-mounted to the sidewalk or pavement, or would include a standpipe surrounded by bollards. Standpipes would be aboveground completions extending two to three feet above grade, with traffic bollards installed around each for the protection of the well head. Wells would be drilled to a maximum depth of 200 to 800 feet deep, depending on where in the project area they are located. During operation of the wells a 40-foot by 40-foot area would be required to provide access for temporary monitoring equipment for semi-annual data collection visits.

Well Construction

Monitoring well construction would involve asphalt removal in roadway rights-of-way or site clearing and grading on vacant parcels, well drilling and installation, and restoration of the site to pre-construction conditions. Construction of each well would require three weeks from mobilization to demobilization. Well drilling would require 24-hour drilling, including weekends, for a duration of up to two weeks per well. Wells would be constructed to avoid existing underground utilities.

Construction of the monitoring wells would temporarily disturb an area of 100 feet by 100 feet at each site, to allow for equipment and construction activities. Assuming a maximum depth of 800 feet, and an 18-inch borehole, approximately 55 cubic yards of drill cuttings would be exported from each well site. Additional material would be exported from each well site during grading and wellhead construction. The total material export associated with each well would average 100 cubic yards (i.e., 1,000 cubic yards of export total for all ten of the proposed project's wells). Cuttings from drilling activities would be disposed of in the nearest landfill.

Regulatory Setting

Fossils are remains of ancient, commonly extinct organisms, and as such are nonrenewable resources. The fossil record is a document of the evolutionary history of life on earth, and fossils can be used to understand evolutionary pattern and process, rates of evolutionary change, past environmental conditions, and the relationships among modern species (i.e., systematics). The fossil record is a

valuable scientific and educational resource, and individual fossils are afforded protection under federal, state, and local environmental laws, where applicable.

This study has been completed in accordance with the requirements of CEQA and also includes compliance with federal and state regulations in the case a federal nexus is established during the course of project execution. Compliance with both federal and state regulations allows the lead agency (e.g., EMWD) to apply the results of this technical study should a federal nexus be established at a later time. Federal and state regulations applicable to potential paleontological resources in the project site are summarized below.

Federal Regulations

A variety of federal statutes address paleontological resources specifically. They are applicable to all projects occurring on federal lands and may be applicable to specific projects if the project involves a federal agency license, permit, approval, or funding.

The National Environmental Policy Act (United States Code, Section 4321 et seq.; 40 Code of Federal Regulations, Section 1502.25), as amended, directs federal agencies to "preserve important historic, cultural, and natural aspects of our national heritage (Section 101(b) (4))." The current interpretation of this language includes scientifically important paleontological resources among those resources potentially requiring preservation.

The Paleontological Resources Preservation Act (PRPA) is part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D). The PRPA directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on federal land, and develop plans for inventorying, monitoring, and deriving the scientific and educational use of such resources. The PRPA prohibits the removal of paleontological resources from federal land without a permit, establishes penalties for violations, and establishes a program to increase public awareness about such resources. While specific to activity occurring on federal lands, some federal agencies may require adherence to the directives outlined in the PRPA for projects on non-federal lands if federal funding is involved, or the project includes federal oversight.

State Regulations

California Environmental Quality Act

Paleontological resources are protected under CEQA, which states in part a project will "normally" have a significant effect on the environment if it, among other things, will disrupt or adversely affect a paleontological site except as part of a scientific study. Specifically, in Section VII(f) of Appendix G of the State CEQA Guidelines, the Environmental Checklist Form, the question is posed thus: "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature." To determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, CEQA mandates mitigation of adverse impacts, to the extent practicable, to paleontological resources.

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has defined a "significant paleontological resource" in the context of environmental review as follows:

> Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are typically to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010).

The loss of paleontological resources meeting the criteria outlined above (i.e., a significant paleontological resource) would be a significant impact under CEQA, and the CEQA lead agency is responsible for ensuring that impacts to paleontological resources are mitigated, where practicable, in compliance with CEQA and other applicable statutes.

California Public Resources Code

Section 5097.5 of the Public Resources Code states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Here "public lands" means those owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with Public Resources Code Section 5097.5 for their own activities, including construction and maintenance, and for permit actions (e.g., encroachment permits) undertaken by others.

City of Moreno Valley

The City of Moreno Valley General Plan Goals, Objectives, Policies, and Programs Chapter (City of Moreno Valley 2006) contains one policy pertaining to paleontological resources. The policy is as follows:

- Policy 7-6: In areas where archaeological or paleontological resources are known or reasonably expected to exist, based upon the citywide survey conducted by the University of California, Riverside Archaeological Research Unit, incorporate the recommendations and determinations of that report to reduce potential impacts to levels of insignificance.

City of Perris

The Conservation Element of the City of Perris General Plan (City of Perris 2005) contains one goal, one policy, and one implementation measure pertaining to paleontological resources, which are as follows:

- Goal IV – Cultural Resources: Protection of historical, archaeological, and paleontological sites.
- Policy IV.A: Comply with state and federal regulations and ensure preservation of the significant historical, archaeological, and paleontological resources.
- Implementation Measure IV.A.4: In Area 1 and Area 2 shown on the Paleontological Sensitivity Map [i.e., Exhibit CN-7: Paleontological Sensitivity within the Conservation Element of City of Perris General Plan], paleontological monitoring of all projects requiring subsurface excavations

> will be required once any excavation begins. In Areas 4 and 5, paleontologic[al] monitoring will be required once subsurface excavations reach five feet in depth, with monitoring levels reduced if appropriate, at the discretion of a certified Project Paleontologist.

According to Exhibit CN-7 of the Conservation Element of the City of Perris General Plan (2005), portions of the project site are situated in Area 1: High Sensitivity and Area 4: Low to High Sensitivity.

Methods

Rincon evaluated the paleontological sensitivity of the geologic units which underlie the project site using the results of the paleontological locality search and review of existing information in the scientific literature concerning known fossils in those geologic units. Rincon submitted a request to the NHMLAC for a list of known fossil localities from the project site and immediate vicinity (i.e., localities recorded on the USGS *Riverside East*, *Sunnymead*, and *Perris* California 7.5-minute topographic quadrangles), reviewed geologic maps, and reviewed primary literature.

Rincon assigned paleontological sensitivities to the geologic units in the project site. The potential for impacts to significant paleontological resources is based on the potential for ground disturbance to directly impact paleontologically sensitive geologic units. The SVP (2010) has defined paleontological sensitivity and developed a system for assessing paleontological sensitivity, as discussed below.

Paleontological Sensitivity

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiometric dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered highly significant.

The SVP (2010) describes sedimentary rock units as having high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units in which significant fossils have been determined by previous studies to be present or likely to be present. While these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted these guidelines, which are given here verbatim:

I. **High Potential (Sensitivity).** Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas

which contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

II. **Low Potential (Sensitivity).** Sedimentary rock units that are potentially fossiliferous, but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

III. **Undetermined Potential (Sensitivity).** Specific areas underlain by sedimentary rock units for which little information is available have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

IV. **No Potential.** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Geologic Setting

The project site is located within the central Perris Block within the northern portion of the Peninsular Ranges Province, one of eleven major geomorphic provinces in California (California Geological Survey 2002). A geomorphic province is a region of unique topography and geology that is readily distinguished from other regions based on its landforms and diastrophic history (Norris and Webb 1990). The Perris Block is a roughly rectangular area of relatively low relief that has remained relatively stable and undeformed during the Neogene (Norris and Webb 1990; Morton and Miller 2006). It is bound by the Cucamonga Fault Zone to the north, the San Jacinto Mountains to the east, the Elsinore Fault Zone to the southwest, and the Chino Basin to the west. According to Morton and Miller (2006) the Perris Block is underlain by lithologically diverse prebatholithic metasedimentary rocks intruded by Cretaceous plutons of the Peninsular Ranges Batholith, which are subsequently overlain by thin to relatively thick, discontinuous sections of nonmarine Quaternary sediments. Quaternary deposits within the Perris Block consist of Pleistocene and Holocene alluvial fan deposits emanating from the nearby San Gabriel Mountains to the north and fluvial deposits from the Santa Ana River, which bisects the Perris Block and flows southward (Norris and Webb 1990; Morton and Miller 2006).

According to published geologic mapping by Dibblee and Minch (2003a, 2003b), the project site is underlain by younger Quaternary (Holocene) surficial deposits (i.e., alluvium), including stream channel deposits (Qg) and valley area deposits (Qa). Holocene alluvium consists of unconsolidated and undissected alluvial gravel and sand of stream channels and alluvial sand, gravel, and clay of valley areas, which are covered with thick soil (Dibblee and Minch 2003a, 2003b). Holocene alluvial deposits in the project site are too young to preserve paleontological resources; however, at shallow or unknown depths, the Holocene sediments may grade downward into deposits of older Quaternary (Pleistocene) alluvium (Qoa) that could preserve fossil remains. Mapped northeast and southeast of the project site, Pleistocene alluvium consists of weakly indurated alluvial fan deposits, composed of tan to light reddish-

brown sand and minor gravel derived from local terrains of plutonic rocks, and is dissected by modern stream channels (Dibblee and Minch 2003a, 2003b). Additionally, Dibblee and Minch (2003a, 2003b) map Cretaceous plutonic rocks of the Peninsular Ranges, including younger Cretaceous-age dike rocks (gr), east of the project site, and these plutonic deposits may underlie the Quaternary (i.e., Holocene and Pleistocene) sediments within the project site at shallow or unknown depths. Cretaceous plutonic rocks of the Peninsular Ranges consist of medium-grained holocrystalline plutonic rocks, composed mostly of quartz diorite to granodiorite, formed either from the cooling of molten rock deep below the surface under high heat and high pressure or from cooling magma injected into older rocks, including granitic dikes, which are composed of quartz and feldspar injected into tonalitic rocks of the Peninsular Ranges (Dibblee and Minch 2003a, 2003b).

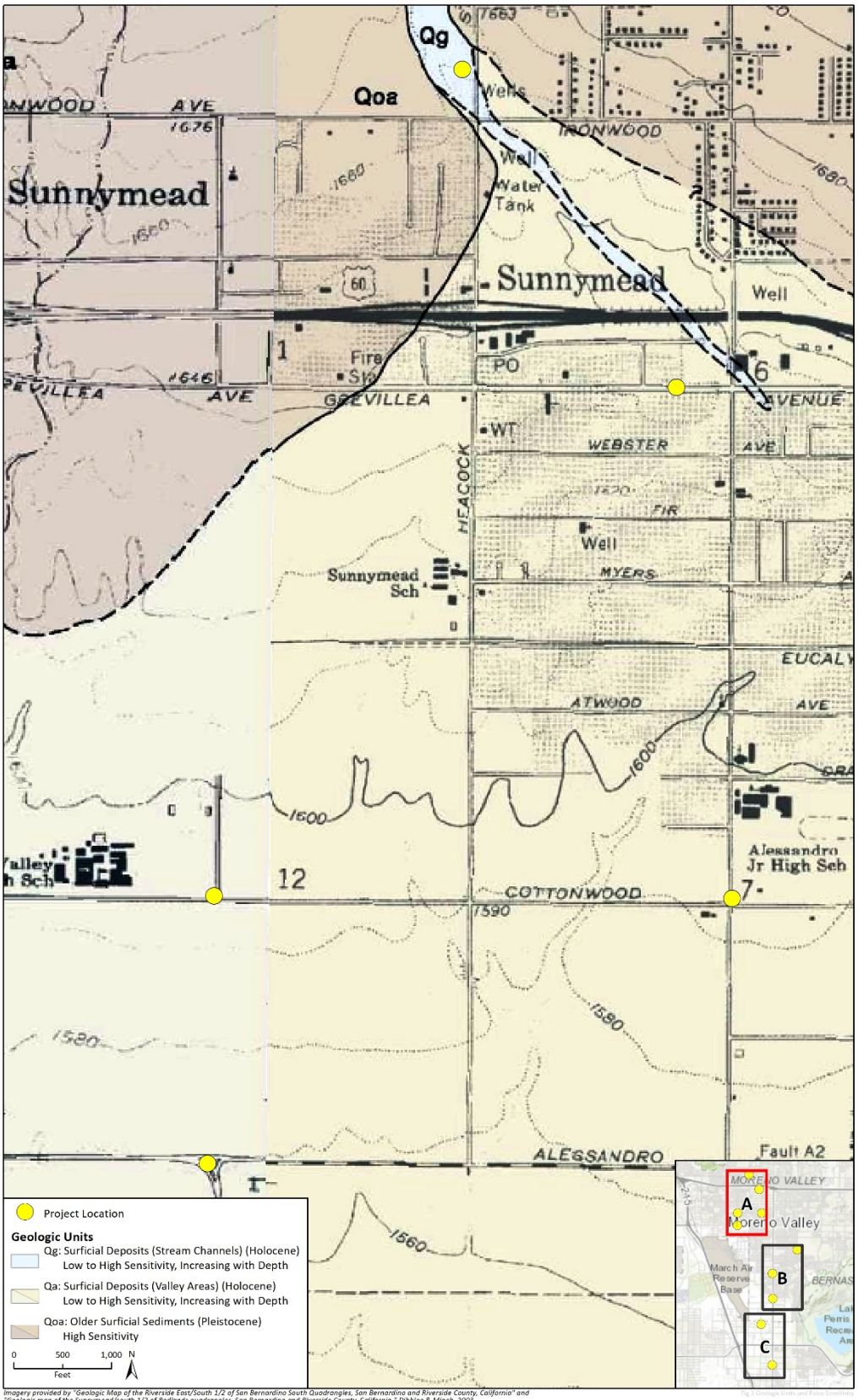
Pleistocene alluvial deposits have a well-documented record of abundant and diverse vertebrate fauna recorded throughout California. Vertebrate fossil taxa recorded in Riverside County include horse, tapir, bison, camelid, deer, mastodon, mammoth, ground sloth, canine, rabbit, and rodent. Pleistocene fossil localities recorded throughout southern California in general yielded fossil whale, sea lion, horse, tapir, ground sloth, bison, peccary, camel, deer, pronghorn, mammoth, short-faced bear, saber-toothed cat, mountain lion, wolf, fox, skunk, rabbit, bat, shrew, mole, pocket gopher, deer mouse, kangaroo rat, pack rat, bird, tortoise, turtle, snake, frog, toad, salamander, bony fish, shark, and ray, as well as invertebrates, such as insect and snail (Agenbroad 2003; Bell et al. 2004; Jefferson 1985, 1989, 1991; Maguire and Holroyd 2016; Merriam 1911; Paleobiology Database 2020; Reynolds et al. 1991; Savage 1951; Savage et al. 1954; Scott and Cox 2008; Springer et al. 2009; Tomiya et al. 2011; Wilkerson et al. 2011; Winters 1954; University of California Museum of Paleontology 2020). Figures 3 through 5, Geologic Units and Paleontological Sensitivity of the Project Site – Parts A through C (respectively), depict the surficial geologic units in the project site and its immediate vicinity, as well as the paleontological sensitivity within the bounds of the project site.

Results

Locality Search

A search of the paleontological locality records at the NHMLAC resulted in no previously recorded fossil localities in the project site; however, several vertebrate localities are situated within the project's vicinity. Vertebrate fossil locality LACM 4540 yielded a horse (*Equus* sp.) from Pleistocene alluvial deposits and was documented east of the project site within gravel pits in the San Jacinto Valley (McLeod 2020); depth of recovery was unreported. Another vertebrate locality, LACM 5168, yielded a horse (*Equus* sp.) from Pleistocene alluvial deposits and was documented south of the proposed project site on the north side of the Railroad Canyon Reservoir (McLeod 2020); depth of the recovery was unreported. Further south-southwest of the project area near Lake Elsinore, vertebrate fossil localities LACM (CIT) 572 and LACM 6059 yielded a horse (*Equus* sp.) and camel (*Camelops hesternus*) from Pleistocene alluvial deposits (McLeod 2020); depth of recovery was unreported.

Figure 3 Geologic Units and Paleontological Sensitivity of the Project Site – Part A



Imagery provided by "Geologic Map of the Riverside East/South 1/2 of San Bernardino South Quadrangles, San Bernardino and Riverside County, California" and "Geologic map of the Sunnymead/south 1/2 of Redlands quadrangles, San Bernardino and Riverside County, California," Dibblee & Minch, 2003.

Figure 4 Geologic Units and Paleontological Sensitivity of the Project Site – Part B

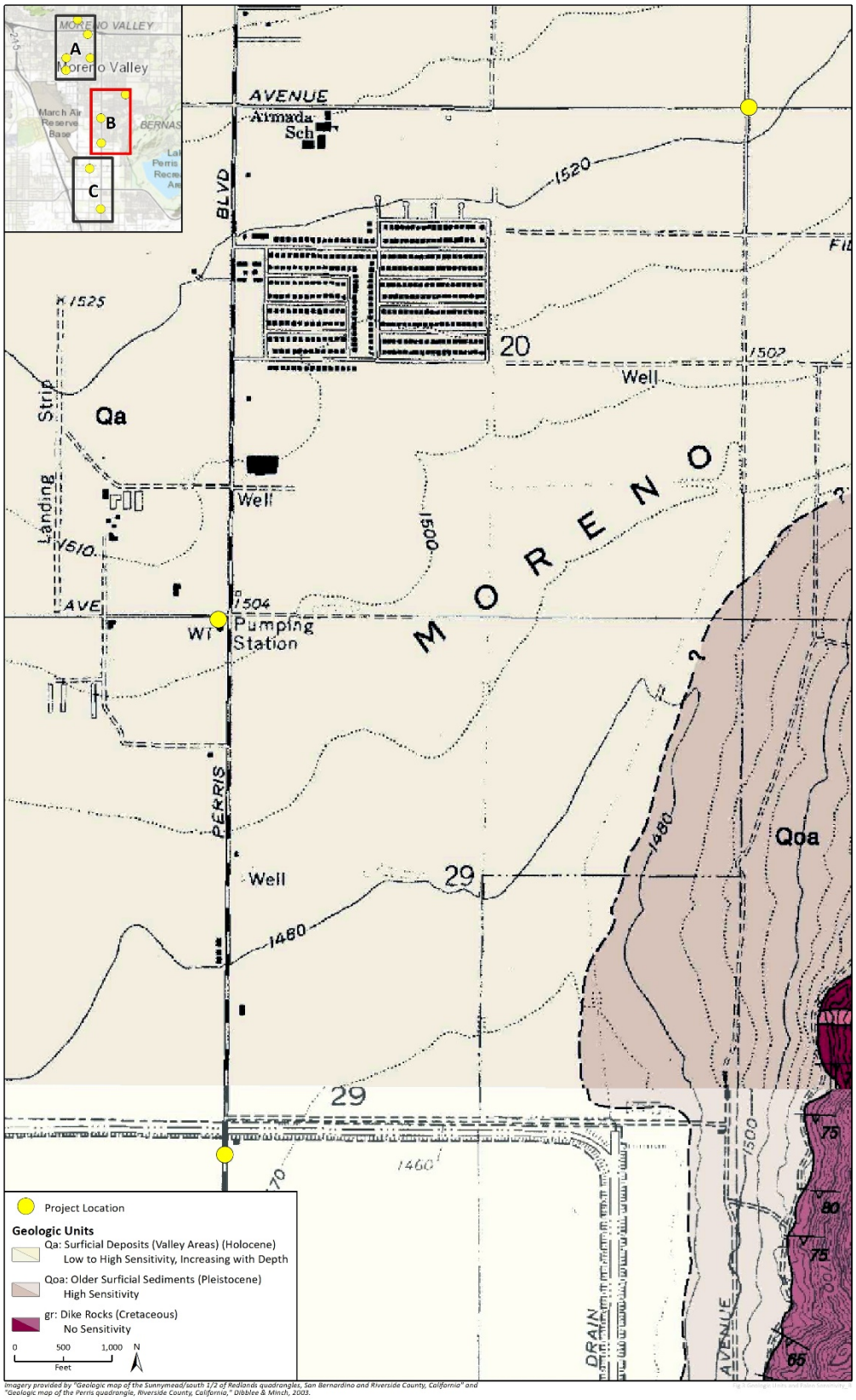
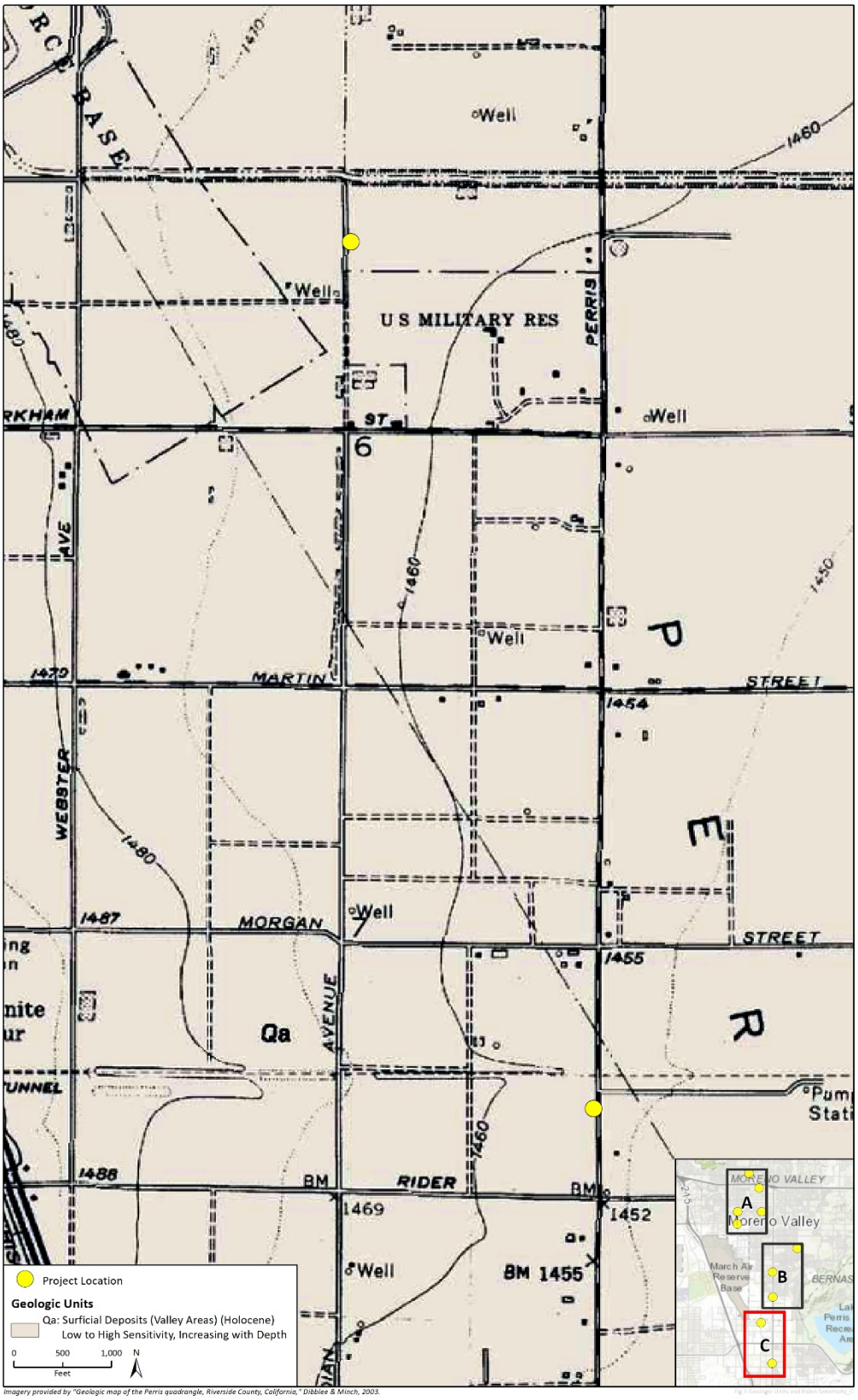


Figure 5 Geologic Units and Paleontological Sensitivity of the Project Site – Part C



Records maintained by the Western Science Center (WSC) indicate several fossil localities nearby the project site. WSC localities 192, 193, and 194 rendered fossil ground sloth (*Megalonyx jeffersonii*), lamine camel (*Hemiauchenia* sp.), and horse (*Equus* sp.) approximately four miles northeast of the project site (LSA 2014; Radford 2019). Fossils from these localities were recovered from 11 to 13 feet below ground surface within Pleistocene alluvial fan deposits (LSA 2014; Radford 2019).

Paleontological Sensitivity

In accordance with SVP (2010) guidelines, Rincon determined the paleontological sensitivity of the project site based on a geologic map review, literature review, and museum locality search. Holocene alluvium (i.e., stream channel deposits [Qg] and valley deposits [Qa]) mapped at the surface of the project site has a low paleontological sensitivity because Holocene sedimentary deposits, particularly those younger than 5,000 years old, are generally too young to contain fossilized material. Cretaceous plutonic rocks of the Peninsular Ranges and dike rocks [gr], which are mapped east of the project site, have no paleontological sensitivity since the physical parameters of their formation are not conducive to fossil preservation. Holocene sediments are underlain by Pleistocene alluvium at a depth as shallow as 11 feet below ground surface based on the presence of Pleistocene vertebrate fossils recovered at depths of 11 to 13 feet within the vicinity of the project site (LSA 2014; Radford 2019). Pleistocene alluvium has a high paleontological sensitivity based on its potential to yield scientifically significant paleontological resources.

Findings and Recommendations

Ground-disturbing activities in previously undisturbed portions of the project site underlain by geologic units with a high paleontological sensitivity (i.e., Pleistocene alluvial deposits) may result in significant impacts to paleontological resources under Appendix G of State CEQA Guidelines. Impacts would be significant if construction activities resulted in destruction, damage, or loss of scientifically important paleontological resources and associated stratigraphic and paleontological data. The activities include establishing temporary work areas 100 feet wide by 100 feet long at the surface and drilling and installing 10 groundwater monitoring wells between 200 and 800 feet below the ground surface. Minor ground-disturbances within temporary work areas are unlikely to impact previously undisturbed sediments since these work areas contain previously disturbed sediments at the surface. Additionally, vertical drilling of boreholes less than three feet in diameter is not conducive to paleontological monitoring since the drilling activities typically pulverize the soil and sediment cuttings and remove the stratigraphic context of any fossils or microfossils that may be present within the borehole walls or the cuttings. Disturbance to intact Pleistocene sediments from well drilling would be limited due the small (i.e., 18-inch) diameter of the borehole and impacts to paleontological resources due to well drilling would be negligible. Although ground-disturbing activities are likely to impact geologic units of high paleontological sensitivity at depth, particularly at depths 11 feet below ground surface or greater (LSA 2014; Radford 2019), the potential for encountering significant fossil resources during project-related ground disturbance is low and impacts to paleontological resources are not anticipated.

Further paleontological resources management is not recommended at this time; however, the following measure is recommended in the case of unanticipated fossil discoveries. This measure would apply to all phases of project construction and would provide that any unanticipated fossils present on site are preserved and that potential impacts to paleontological resources would be less than significant by providing for the recovery, identification and curation of previously unrecovered fossils.

- In the event an unanticipated fossil discovery is made during the course of project development, then in accordance with SVP (2010) guidelines, it is the responsibility of any worker who observes fossils within the project site to stop work in the immediate vicinity of the find and notify a qualified professional paleontologist who shall be retained to evaluate the discovery, determine its significance and if additional mitigation or treatment is warranted. Work in the area of the discovery will resume once the find is properly documented and authorization is given to resume construction work. Any significant paleontological resources found during construction monitoring will be prepared, identified, analyzed, and permanently curated in an approved regional museum repository.

If you have any questions regarding this Paleontological Resource Assessment, please contact us.

Sincerely,
Rincon Consultants, Inc.

Mathew Carson, MS
Paleontologist and Project Manager

Jessica DeBusk, BS, MBA
Principal Investigator/Program Manager

Jennifer Haddow, PhD
Principal Environmental Scientist

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APPENDIX E: NOISE MEASUREMENTS

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- Freq Weight : A
- Time Weight : SLOW
- Level Range : 40-100
- Max dB : 101.8 - 2020/01/28 23:09:22
- Level Range : 40-100
- SEL : 119.3
- Leq : 70.0
-

No.s	Date Time	(dB)
1	2020/01/28 13:26:51	62.4
2	2020/01/28 13:29:51	74.5
3	2020/01/28 13:32:51	82.8
4	2020/01/28 13:35:51	65.3
5	2020/01/28 13:38:51	75.6
6	2020/01/28 13:41:51	66.6
7	2020/01/28 13:44:51	67.6
8	2020/01/28 13:47:51	75.4
9	2020/01/28 13:50:51	66.2
10	2020/01/28 13:53:51	72.8
11	2020/01/28 13:56:51	71.9
12	2020/01/28 13:59:51	63.4
13	2020/01/28 14:02:51	73.9
14	2020/01/28 14:05:51	63.6
15	2020/01/28 14:08:51	66.9
16	2020/01/28 14:11:51	90.0
17	2020/01/28 14:14:51	61.6
18	2020/01/28 14:17:51	68.4
19	2020/01/28 14:20:51	73.5
20	2020/01/28 14:23:51	63.7
21	2020/01/28 14:26:51	72.1
22	2020/01/28 14:29:51	71.6
23	2020/01/28 14:32:51	54.9
24	2020/01/28 14:35:51	66.8
25	2020/01/28 14:38:51	69.3
26	2020/01/28 14:41:51	56.6
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51	2020/01/28 15:56:51	68.5
52	2020/01/28 15:59:51	54.3
53	2020/01/28 16:02:51	51.0
54	2020/01/28 16:05:51	67.0
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353	2020/01/29 07:02:51	76.1
354	2020/01/29 07:05:51	58.4
355	2020/01/29 07:08:51	65.5
356	2020/01/29 07:11:51	65.6
357	2020/01/29 07:14:51	67.2
358	2020/01/29 07:17:51	77.6
359	2020/01/29 07:20:51	75.6
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361	2020/01/29 07:26:51	76.7
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377	2020/01/29 08:14:51	74.6
378	2020/01/29 08:17:51	75.9
379	2020/01/29 08:20:51	60.0
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391	2020/01/29	08:56:51	72.6
392	2020/01/29	08:59:51	73.2
393	2020/01/29	09:02:51	66.6
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404	2020/01/29	09:35:51	61.0
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476	2020/01/29	13:11:51	66.9
477	2020/01/29	13:14:51	71.4
478	2020/01/29	13:17:51	53.7
479	2020/01/29	13:20:51	72.8
480	2020/01/29	13:23:51	71.9

- Freq Weight : A
- Time Weight : SLOW
- Level Range : 40-100
- Max dB : 76.6 - 2020/01/29 21:41:01
- Level Range : 40-100
- SEL : 97.2
- Leq : 47.9
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6	2020/01/29 17:41:33	53.5
7	2020/01/29 17:44:33	50.7
8	2020/01/29 17:47:33	57.6
9	2020/01/29 17:50:33	57.6
10	2020/01/29 17:53:33	51.3
11	2020/01/29 17:56:33	58.6
12	2020/01/29 17:59:33	54.8
13	2020/01/29 18:02:33	55.0
14	2020/01/29 18:05:33	50.8
15	2020/01/29 18:08:33	52.0
16	2020/01/29 18:11:33	52.2
17	2020/01/29 18:14:33	50.2
18	2020/01/29 18:17:33	48.8
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21	2020/01/29 18:26:33	45.4
22	2020/01/29 18:29:33	46.4
23	2020/01/29 18:32:33	48.8
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30	2020/01/29 18:53:33	46.0
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32	2020/01/29 18:59:33	46.9
33	2020/01/29 19:02:33	45.0
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35	2020/01/29 19:08:33	40.2
36	2020/01/29 19:11:33	39.4
37	2020/01/29 19:14:33	48.4
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77	2020/01/29 21:14:33	40.3
78	2020/01/29 21:17:33	38.4
79	2020/01/29 21:20:33	38.8
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308	2020/01/30 08:47:33	48.9
309	2020/01/30 08:50:33	41.4
310	2020/01/30 08:53:33	39.6
311	2020/01/30 08:56:33	38.7
312	2020/01/30 08:59:33	39.3
313	2020/01/30 09:02:33	40.5
314	2020/01/30 09:05:33	41.0
315	2020/01/30 09:08:33	40.2
316	2020/01/30 09:11:33	39.4
317	2020/01/30 09:14:33	39.7
318	2020/01/30 09:17:33	46.0
319	2020/01/30 09:20:33	49.7
320	2020/01/30 09:23:33	45.2
321	2020/01/30 09:26:33	40.9
322	2020/01/30 09:29:33	45.8
323	2020/01/30 09:32:33	41.1
324	2020/01/30 09:35:33	40.6
325	2020/01/30 09:38:33	44.7
326	2020/01/30 09:41:33	43.7
327	2020/01/30 09:44:33	41.6
328	2020/01/30 09:47:33	46.4
329	2020/01/30 09:50:33	42.3
330	2020/01/30 09:53:33	38.9
331	2020/01/30 09:56:33	41.3
332	2020/01/30 09:59:33	39.6
333	2020/01/30 10:02:33	37.2
334	2020/01/30 10:05:33	40.8
335	2020/01/30 10:08:33	39.4
336	2020/01/30 10:11:33	39.7
337	2020/01/30 10:14:33	50.6
338	2020/01/30 10:17:33	45.6
339	2020/01/30 10:20:33	37.1
340	2020/01/30 10:23:33	50.5
341	2020/01/30 10:26:33	38.3
342	2020/01/30 10:29:33	40.1
343	2020/01/30 10:32:33	42.5
344	2020/01/30 10:35:33	42.3
345	2020/01/30 10:38:33	43.3
346	2020/01/30 10:41:33	40.5
347	2020/01/30 10:44:33	59.2
348	2020/01/30 10:47:33	36.5
349	2020/01/30 10:50:33	44.6
350	2020/01/30 10:53:33	37.3
351	2020/01/30 10:56:33	39.0
352	2020/01/30 10:59:33	42.0
353	2020/01/30 11:02:33	42.9
354	2020/01/30 11:05:33	38.6
355	2020/01/30 11:08:33	42.3
356	2020/01/30 11:11:33	42.7
357	2020/01/30 11:14:33	40.8
358	2020/01/30 11:17:33	43.9
359	2020/01/30 11:20:33	41.4
360	2020/01/30 11:23:33	38.5
361	2020/01/30 11:26:33	49.4
362	2020/01/30 11:29:33	56.5
363	2020/01/30 11:32:33	43.0
364	2020/01/30 11:35:33	38.9
365	2020/01/30 11:38:33	42.5
366	2020/01/30 11:41:33	39.8
367	2020/01/30 11:44:33	38.3
368	2020/01/30 11:47:33	36.8
369	2020/01/30 11:50:33	38.1
370	2020/01/30 11:53:33	40.1
371	2020/01/30 11:56:33	39.5
372	2020/01/30 11:59:33	37.9
373	2020/01/30 12:02:33	45.2
374	2020/01/30 12:05:33	39.0
375	2020/01/30 12:08:33	35.2
376	2020/01/30 12:11:33	43.9
377	2020/01/30 12:14:33	39.8
378	2020/01/30 12:17:33	44.2
379	2020/01/30 12:20:33	37.8
380	2020/01/30 12:23:33	35.3
381	2020/01/30 12:26:33	37.1
382	2020/01/30 12:29:33	36.1

383	2020/01/30	12:32:33	36.4
384	2020/01/30	12:35:33	39.3
385	2020/01/30	12:38:33	38.6
386	2020/01/30	12:41:33	37.1
387	2020/01/30	12:44:33	36.9
388	2020/01/30	12:47:33	41.0
389	2020/01/30	12:50:33	36.3
390	2020/01/30	12:53:33	40.0
391	2020/01/30	12:56:33	38.3
392	2020/01/30	12:59:33	37.1
393	2020/01/30	13:02:33	36.3
394	2020/01/30	13:05:33	35.7
395	2020/01/30	13:08:33	42.5
396	2020/01/30	13:11:33	43.8
397	2020/01/30	13:14:33	36.3
398	2020/01/30	13:17:33	50.0
399	2020/01/30	13:20:33	49.9
400	2020/01/30	13:23:33	42.6
401	2020/01/30	13:26:33	44.2
402	2020/01/30	13:29:33	40.3
403	2020/01/30	13:32:33	38.4
404	2020/01/30	13:35:33	43.6
405	2020/01/30	13:38:33	36.0
406	2020/01/30	13:41:33	38.9
407	2020/01/30	13:44:33	39.3
408	2020/01/30	13:47:33	37.7
409	2020/01/30	13:50:33	37.5
410	2020/01/30	13:53:33	37.9
411	2020/01/30	13:56:33	37.7
412	2020/01/30	13:59:33	40.3
413	2020/01/30	14:02:33	43.9
414	2020/01/30	14:05:33	40.4
415	2020/01/30	14:08:33	48.8
416	2020/01/30	14:11:33	47.5
417	2020/01/30	14:14:33	45.9
418	2020/01/30	14:17:33	40.2
419	2020/01/30	14:20:33	36.5
420	2020/01/30	14:23:33	39.9
421	2020/01/30	14:26:33	36.8
422	2020/01/30	14:29:33	39.1
423	2020/01/30	14:32:33	37.9
424	2020/01/30	14:35:33	40.3
425	2020/01/30	14:38:33	37.9
426	2020/01/30	14:41:33	38.9
427	2020/01/30	14:44:33	35.1
428	2020/01/30	14:47:33	37.9
429	2020/01/30	14:50:33	34.4
430	2020/01/30	14:53:33	34.9
431	2020/01/30	14:56:33	37.9
432	2020/01/30	14:59:33	35.6
433	2020/01/30	15:02:33	38.0
434	2020/01/30	15:05:33	37.2
435	2020/01/30	15:08:33	37.7
436	2020/01/30	15:11:33	45.3
437	2020/01/30	15:14:33	40.6
438	2020/01/30	15:17:33	37.7
439	2020/01/30	15:20:33	42.7
440	2020/01/30	15:23:33	36.9
441	2020/01/30	15:26:33	46.1
442	2020/01/30	15:29:33	41.8
443	2020/01/30	15:32:33	47.4
444	2020/01/30	15:35:33	38.5
445	2020/01/30	15:38:33	32.4
446	2020/01/30	15:41:33	44.5
447	2020/01/30	15:44:33	34.6
448	2020/01/30	15:47:33	42.9
449	2020/01/30	15:50:33	43.3
450	2020/01/30	15:53:33	44.6
451	2020/01/30	15:56:33	45.0
452	2020/01/30	15:59:33	33.3
453	2020/01/30	16:02:33	34.5
454	2020/01/30	16:05:33	41.7
455	2020/01/30	16:08:33	35.3
456	2020/01/30	16:11:33	38.3
457	2020/01/30	16:14:33	36.7
458	2020/01/30	16:17:33	39.3
459	2020/01/30	16:20:33	37.5
460	2020/01/30	16:23:33	37.3
461	2020/01/30	16:26:33	47.6
462	2020/01/30	16:29:33	42.7
463	2020/01/30	16:32:33	42.7
464	2020/01/30	16:35:33	41.3
465	2020/01/30	16:38:33	42.3
466	2020/01/30	16:41:33	41.2
467	2020/01/30	16:44:33	41.3
468	2020/01/30	16:47:33	42.9
469	2020/01/30	16:50:33	46.0
470	2020/01/30	16:53:33	43.7
471	2020/01/30	16:56:33	43.4
472	2020/01/30	16:59:33	42.0
473	2020/01/30	17:02:33	46.3
474	2020/01/30	17:05:33	51.0
475	2020/01/30	17:08:33	43.4
476	2020/01/30	17:11:33	39.6
477	2020/01/30	17:14:33	56.9
478	2020/01/30	17:17:33	45.9
479	2020/01/30	17:20:33	43.9
480	2020/01/30	17:23:33	43.0

Project	Cactus Avenue Corridor CEQA
Project Number	0011292.01
Agency	Eastern Municipal Water District
By	Jennifer Kidson
Date	November 21, 2019
Audited by	Haley Johnson
Date	November 22, 2019
Task Description	Model noise from well drilling activities at night using RCNM.

Summary of Results
Calculated Noise Level (dBA) at
Various Distances to Receptor, with
Various Levels of Shielding, and with
Various Construction Equipment Fleets

		Distances between Extraction Well Construction Site and Receptor			
		25 feet	50 feet	100 feet	200 feet
Well Drill Rig Operating Alone	0 dBA Shielding	96	90	84	78
	5 dBA Shielding	91	85	79	73
	10 dBA Shielding	86	80	74	68
	15 dBA Shielding	81	75	69	63
	25 dBA Shielding	71	65	59	53
Well Drill Rig Operating Simultaneously with Pickup and Backhoe	0 dBA Shielding	96.2	90.2	84.1	78.1
	5 dBA Shielding	91.2	85.2	79.1	73.1
	10 dBA Shielding	86.2	80.2	74.1	68.1
	15 dBA Shielding	81.2	75.2	69.1	63.1
	25 dBA Shielding	71.2	65.2	59.1	53.1

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-0shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	0
Backhoe	No	40		77.6	25	0
Pickup Truck	No	40		75	25	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	96	96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	81	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	96	96.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	0
Backhoe	No	40		77.6	50	0
Pickup Truck	No	40		75	50	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		90	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		75	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	90	90.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Well Drill Rig	No	100		90	100	0
Backhoe	No	40		77.6	100	0
Pickup Truck	No	40		75	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		84	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		69	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	84	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Well Drill Rig	No	100		90	200	0

Backhoe	No	40	77.6	200	0	
Pickup Truck	No	40	75	200	0	

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	78	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	63	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78	78.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-5shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	5
Backhoe	No	40		77.6	25	5
Pickup Truck	No	40		75	25	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	91	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	78.6	74.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	76	72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	91	91.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	5
Backhoe	No	40		77.6	50	5
Pickup Truck	No	40		75	50	5

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		85	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		72.6	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		70	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	85	85.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	5
Backhoe	No	40		77.6	100	5
Pickup Truck	No	40		75	100	5

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		79	79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		66.5	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		64	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	79.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	5

Backhoe	No	40	77.6	200	5	
Pickup Truck	No	40	75	200	5	

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	73	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.5	56.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	58	54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-10shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	10
Backhoe	No	40		77.6	25	10
Pickup Truck	No	40		75	25	10

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	86	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	73.6	69.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	71	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	86	86.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	10
Backhoe	No	40		77.6	50	10
Pickup Truck	No	40		75	50	10

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq

Equipment		*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Well Drill Rig		80	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		67.6	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	80	80.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	10
Backhoe	No	40		77.6	100	10
Pickup Truck	No	40		75	100	10

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	74	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	61.5	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	59	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74	74.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	10
Backhoe	No	40		77.6	200	10
Pickup Truck	No	40		75	200	10

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		68	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		53	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	68	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-15shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	15
Backhoe	No	40		77.6	25	15
Pickup Truck	No	40		75	25	15

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
			Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Well Drill Rig	81	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	68.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	66	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81	81.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	15
Backhoe	No	40		77.6	50	15
Pickup Truck	No	40		75	50	15

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		75	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		62.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	75	75.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	15
Backhoe	No	40		77.6	100	15
Pickup Truck	No	40		75	100	15

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		69	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		56.5	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		54	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	69	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	15

Backhoe	No	40	77.6	200	15	
Pickup Truck	No	40	75	200	15	

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	63	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	50.5	46.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	48	44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-25shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	25
Backhoe	No	40		77.6	25	25
Pickup Truck	No	40		75	25	25

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Well Drill Rig	71	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	56	52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71	71.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	25
Backhoe	No	40		77.6	50	25
Pickup Truck	No	40		75	50	25

Results

Calculated (dBA)	Noise Limits (dBA)	Noise Limit Exceedance (dBA)

Equipment		*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Well Drill Rig		65	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		50	46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	65	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	25
Backhoe	No	40		77.6	100	25
Pickup Truck	No	40		75	100	25

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Equipment	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Well Drill Rig	59	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	46.5	42.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	44	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	25
Backhoe	No	40		77.6	200	25
Pickup Truck	No	40		75	200	25

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		53	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		40.5	36.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		38	34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	53	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-Well-0shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	96	96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	96	96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	90	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	90	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		84	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	84	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		78	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	78	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-Well-5shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	5

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		91	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	91	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	5

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		85	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	85	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Well Drill Rig	No	100		90	100	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	79	79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Well Drill Rig	No	100		90	200	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	73	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-Well-10shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	10

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		86	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	86	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	10

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		80	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	80	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	10

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		74	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	10

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		68	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	68	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-Well-15shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	15

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		81	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	81	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	15

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		75	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	75	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	15

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		69	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	69	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	15

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		63	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.