EASTERN MUNICIPAL WATER DISTRICT

# Revised
# Initial Study and Mitigated Negative Declaration
# **Perris North Groundwater Monitoring Project**

**December 2021**

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# Revised Initial Study and Mitigated Negative Declaration

## Perris North Groundwater Monitoring Project

**State Clearinghouse #2020040220**

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**Eastern Municipal Water District**
December, 2021

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## 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 |
| CASGEM | California Statewide Groundwater Elevation Monitoring program |
| 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 |

| Acronym | Definition |
|---|---|
| CNDDB | California Natural Diversity Data Base |
| CNEL | Community Noise Equivalent Level |
| CNPS | California Native Plant Society |
| CO | Carbon monoxide |
| CO2 | Carbon dioxide |
| CO2e | Carbon dioxide equivalent |
| COC | Contaminants 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 |

| 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 | Tetrachloroethylene |
| PFCs | perfluorinated compounds |
| Pga | Peak Ground Acceleration |
| PM | Particulate Matter |
| PPV | Peak Particle Velocity |
| PRPA | Paleontological Resources Preservation Act |
| RCFCWCD | Riverside County Flood Control and Water Conservation District |
| 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 |

| Acronym | Definition |
|---|---|
| SCE | Southern California Edison |
| 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 |

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# 1. INTRODUCTION

## 1.1 Project Background

Eastern Municipal Water District (EMWD) is proposing to install monitoring wells in the Perris North Groundwater Sub-basin. In 2019 and 2020, EMWD evaluated the potential environmental impacts from constructing and operating a series of 10 monitoring wells in the sub-basin. A Mitigated Negative Declaration (MND) was adopted by the EMWD Board of Directors (Board) on June 17, 2020 (SCH#2020040220). Following Board approval, and additional investigation, the location and number of proposed monitoring wells was changed. As such, EMWD has prepared this Revised IS/MND for the Perris North Groundwater Monitoring Project.

In the proposed Project evaluated in the June 2020 MND, each of the 10 monitoring well sites was planned to have a single well constructed in one borehole. The proposed Project evaluated in this Revised IS/MND consists of 16 well "clusters," each of which would consist of up to four monitoring wells (with individual boreholes for each monitoring well). Thus, up to 64 total wells would be constructed in 16 clusters.

## 1.2 Purpose of this Document

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 sub-basin.

## 1.3 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
- 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

- 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)
- Safe Drinking Water Act, Sole Source Aquifer Protection
- Wild and Scenic Rivers Act Executive Order 13122 – Invasive Species
- Environmental Alternative Analysis

## 1.4 CEQA Process

In accordance with CEQA Guidelines §15073, this IS/MND will be circulated for a 30-day public review period December 10, 2021 – January 10, 2022) 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. The Notice of Intent was also published in the Press-Enterprise on December 10, 2021. A copy of the IS/MND is available for review at: https://www.emwd.org/public-notices.

Written comments were to be submitted to EMWD by 5:00 PM on January 10, 2022 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 and MMRP will be considered for adoption by the EMWD Board of Directors in compliance with CEQA at a future publicly noticed hearing, which are held on the 1st and 3rd Wednesday of each month at EMWD's headquarters.

## 1.5 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 Revised 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. Twenty-one monitoring well cluster sites have been identified at various locations in the two cities, though only 16 well clusters are expected to be constructed. Seventeen of the potential sites are located within the City of Moreno Valley, and four potential sites are located in the City of Perris. Exact well locations are being determined. As such this IS/MND is evaluating a series of parcels ("project parcels") where these clusters of wells would be located. As shown in **Figure 2-1**, the project vicinity is generally bounded on the west by Interstate 215 and to the north by Sunnymead Ranch Parkway. It is generally bounded to the south by Rider Street, and to the east by Nason 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 (MARB) and in the northern area of the City of Perris (City of Moreno Valley, 2019; City of Perris, 2018).

## 2.2 Project Overview

Up to 16 monitoring well clusters would be constructed/operated under the proposed Project. To provide locational flexibility of the well clusters, 21 locations are being evaluated. The additional sites are presented as "Optional" sites. The sites would be located in the Perris North Sub-basin, which would allow for long term monitoring of groundwater quality and elevations. 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 local resource to the region. The monitoring wells installed by the proposed Project would improve EMWD's understanding of the type, concentrations, and lateral and vertical extents of the COCs. The proposed Project would also help create informed management decisions related to the Perris North Sub-basin.

COCs include tetrachloroethylene (PCE) or Volatile Organic Compounds (VOC), nitrate, perchlorate, total dissolved solids (TDS), fluoride, and manganese (co-mingled VOC-Nitrate Plume). Potential contamination areas 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 Board and State Department of Toxic Substances Control databases. As shown in **Figure 2-3**, there are two estimated comingled areas of concern, one generally north of MARB and one generally east of MARB. 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 perchlorate, estimated to have similar extents (see **Figure 2-3**).

**Overview of Monitoring Well Parcels**

The proposed Project would involve construction of up to 16 clusters of monitoring wells, at up to 21 potential locations (see **Figure 2-4**) to establish baseline monitoring data for the co-mingled areas of concern including groundwater levels and quality, monitor changes in groundwater levels and quality over time, and to track groundwater movement resulting from basin management decisions for the Perris North Groundwater Management Zone. 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, separate, projects in the Perris North Groundwater Program for VOCs, perchlorate, and nitrate and other constituents of concern as may arise.

The purpose of the monitoring well network is to:

- Demonstrate comingled areas of concern reduction over the Perris North Groundwater Program lifetime.
- Confirm efficacy of removal and basis for contaminant removal estimates.
- Demonstrate reduction of contaminant concentrations throughout the areas of concern.

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

- Location within the co-mingled areas of concern, within the simulated capture zone, and upgradient/downgradient/side-gradient 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 to park adjacent. Minimum of 24-feet from buildings.

- 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).
- Adequate space for drilling rigs, with sufficient setback from nearby structures to maintain a 24-foot “fall zone” buffer around the well during construction.

Proposed Monitoring Well Sites

Monitoring Well Clusters MW-01 through MW-16, along with Optional Site A, would be located within the City of Moreno Valley, while Monitoring Well Clusters Optional Sites B through E would be located within the City of Perris. The various locations for the proposed well clusters are described on the following pages. The exact locations of the well cluster within the parcels are subject to change based on landowner, EMWD, and technical requirements. As such, the entire parcels under consideration are shown in Figures 2-5 through 2-25, rather than specific well locations within a given parcel. Only one well cluster (consisting of up to four individual casings) would be constructed per site. The full parcels have been evaluated in this Initial Study.

To aid with understanding the impacts of well construction on a given site, Figure 2-5 shows an example of the footprint of a well cluster within a parcel. This figure is provided only as an example, and is not depicting the final location of the well cluster within the parcel. Well construction details, including construction footprint, are described in Section 2.4.2.

## Figure 2-1: Project Vicinity

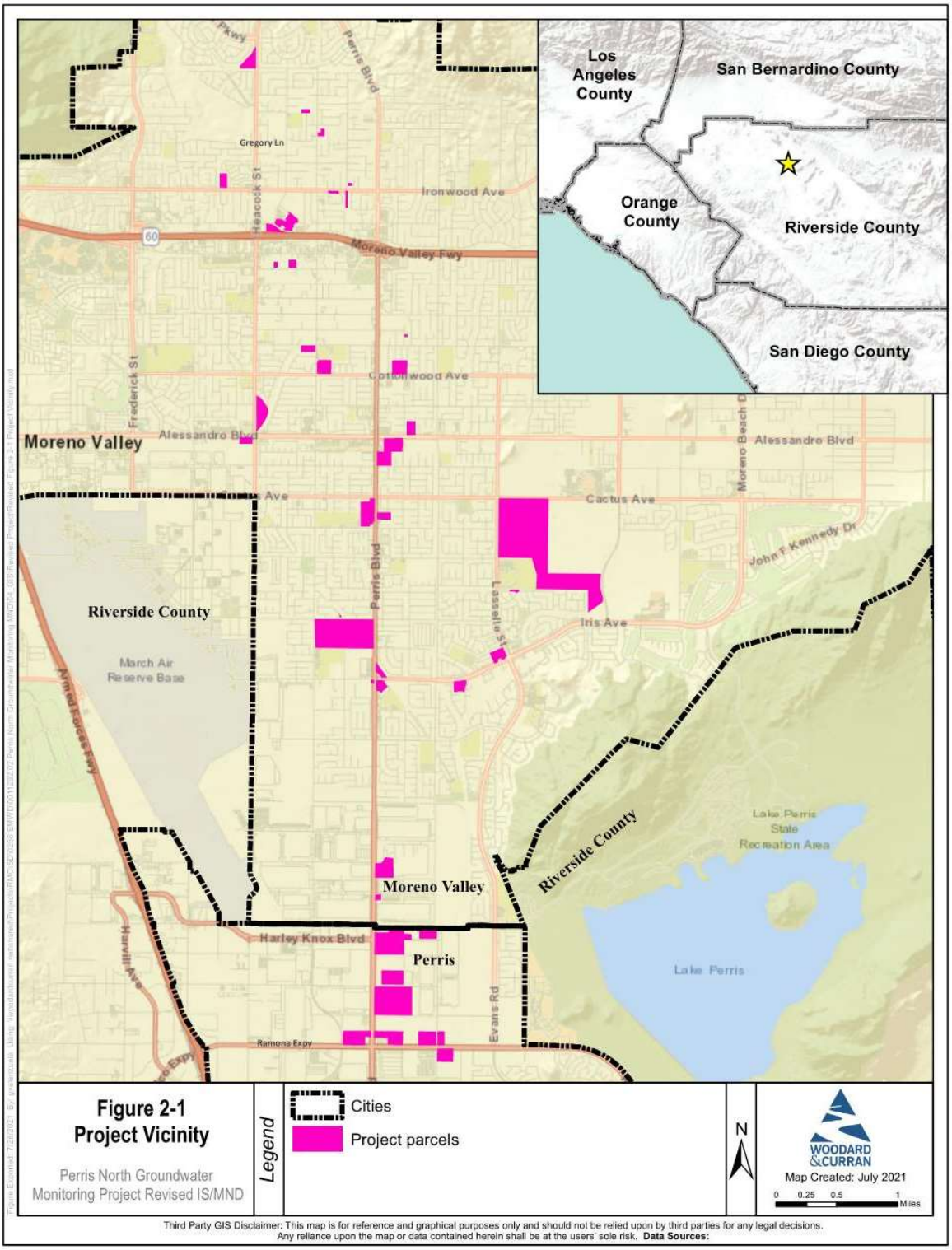
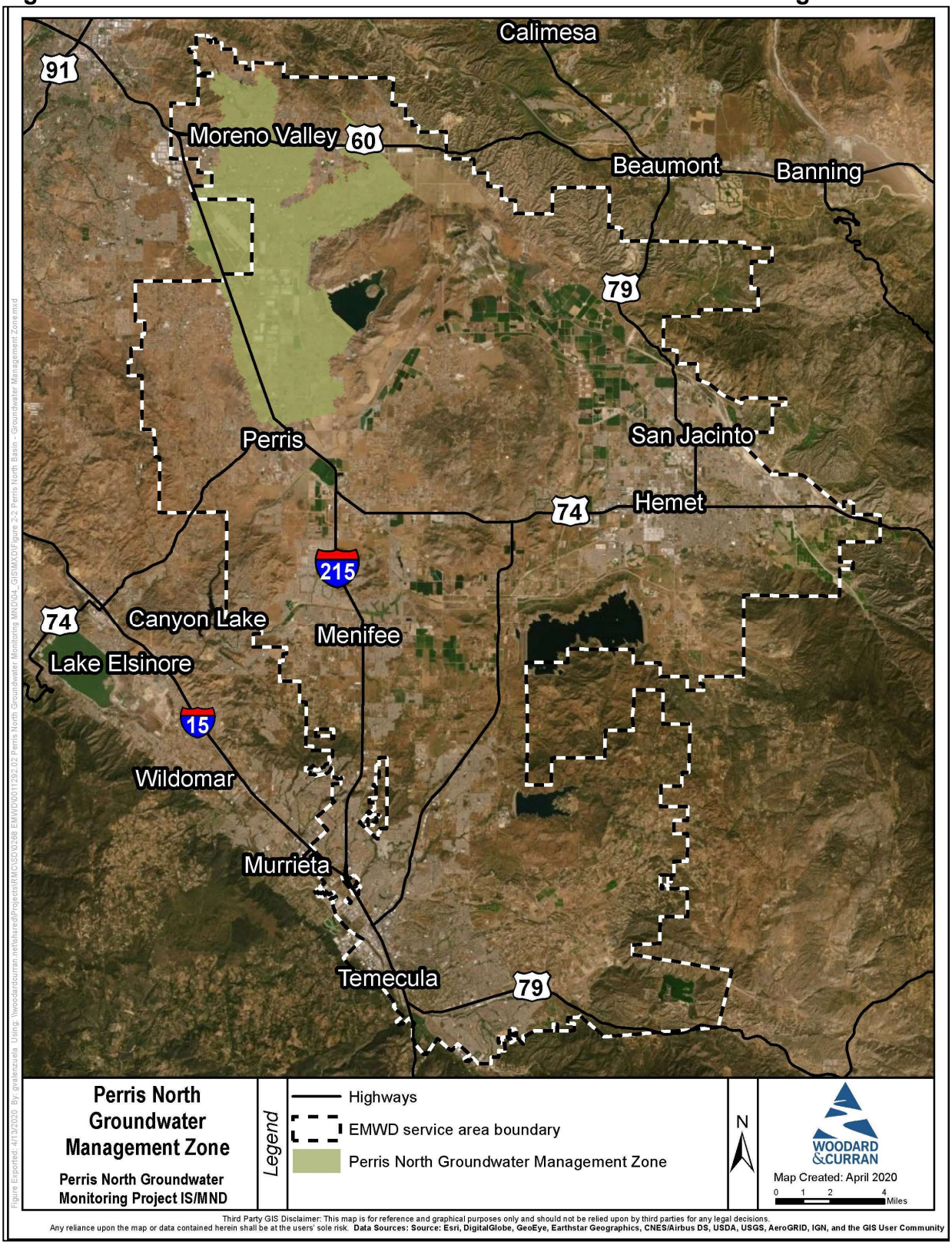
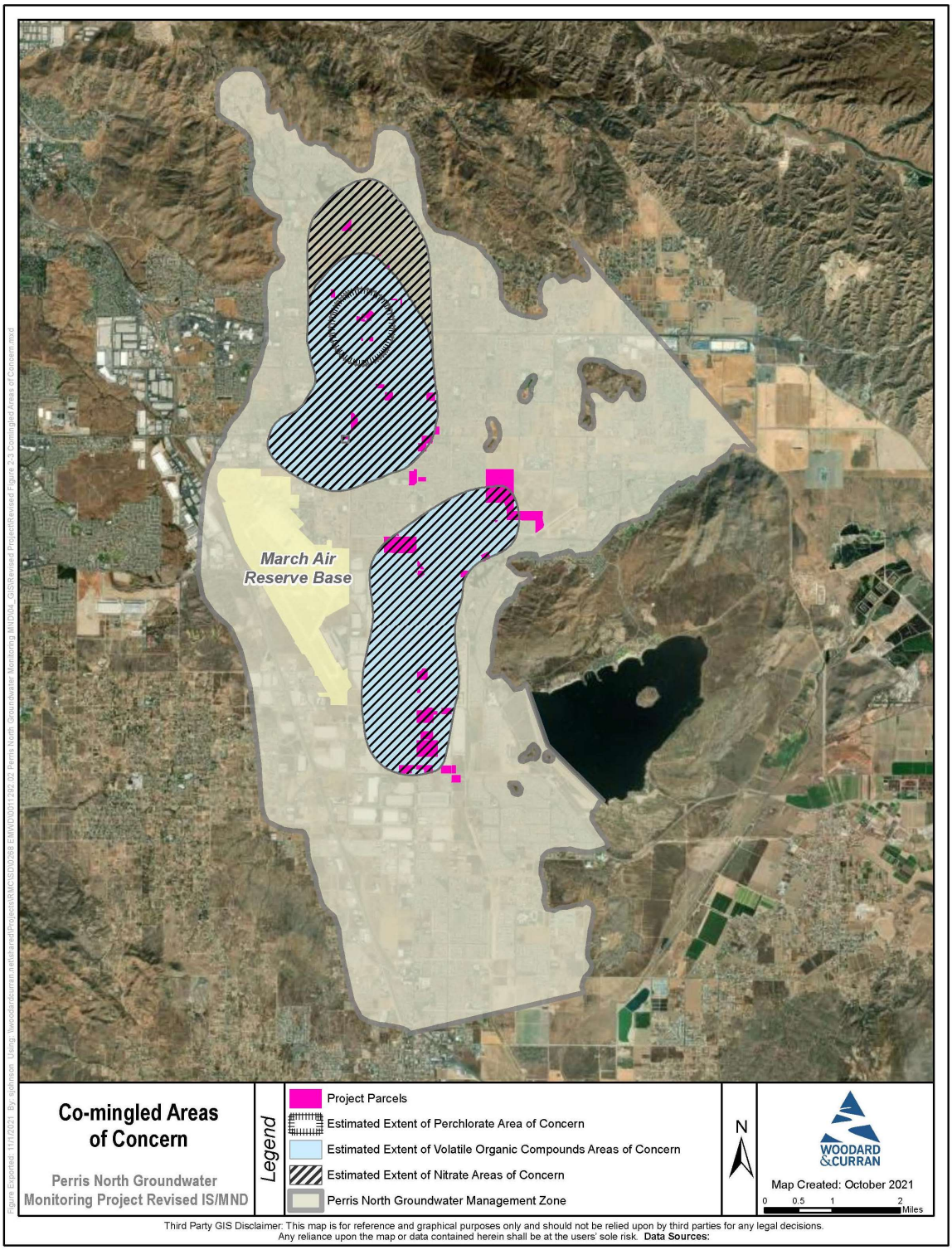


**Figure 2-2: Perris North Sub-Basin / Perris North Groundwater Management Zone**



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



## Figure 2-4: Project Overview

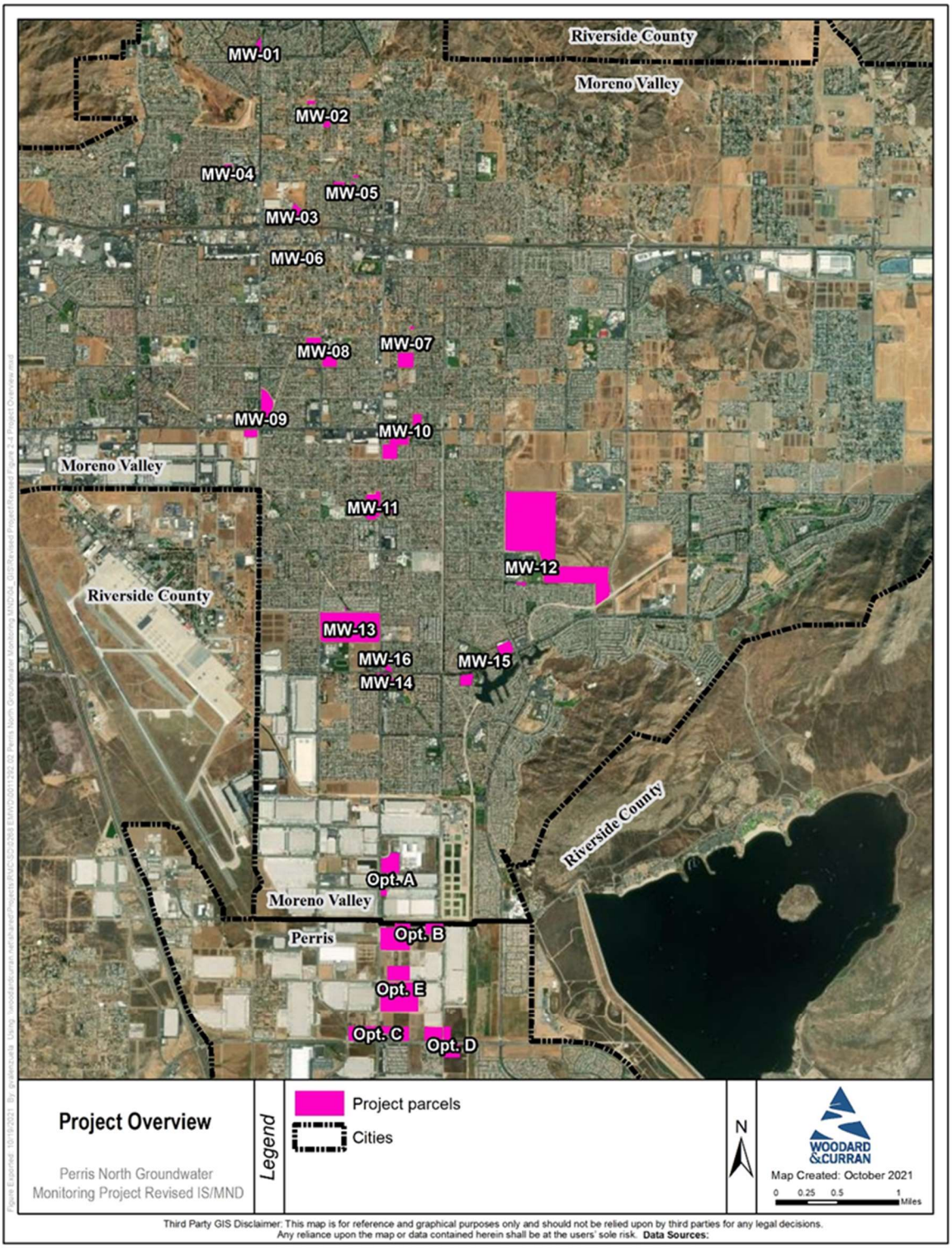
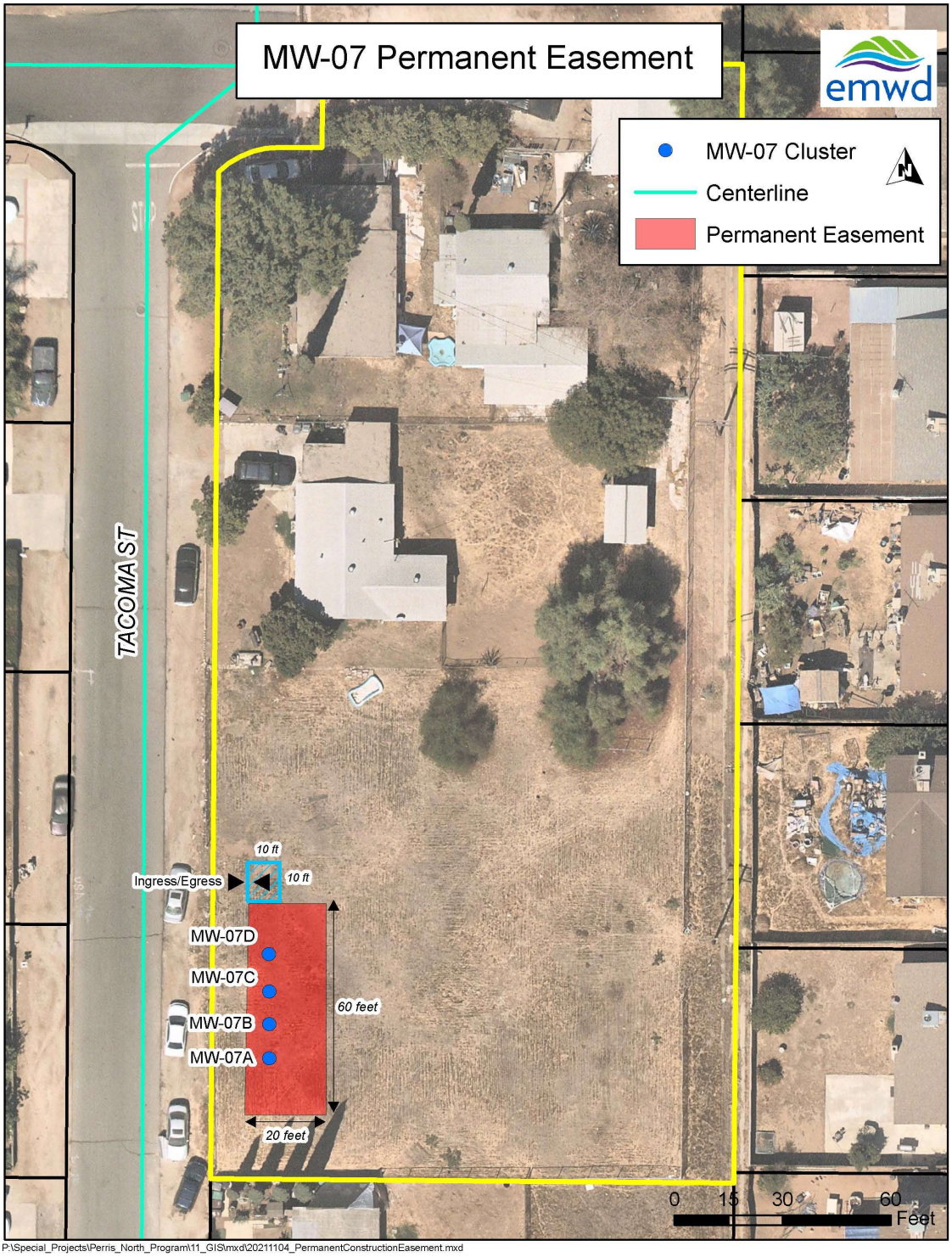


**Figure 2-5: Example of a Well Cluster Footprint**



**MW-1 parcel:** Located at Gateway Park on the west side of Heacock Street and to the northwest of the intersection of Heacock Street and Manzanita Avenue. The site is a public park, and is bounded to the north and south by single family residences, whose backyards abut the parcel. The majority of the houses north of property have low cement or masonry walls, topped by metal fencing that provides a view into the park from the houses. Houses to the south of the parcel are generally visually blocked from the park by standard height wooden fences. On the parcel is a play structure, picnic areas (tables, shade structures), and a bathroom. The site is sloped downward from the east to the west, and primarily maintained lawn, with pine trees near the houses on the north edge of the parcel, and additional trees clustered near Heacock Street. Figure 2-6 shows the parcel and adjacent areas. The final well cluster location may be anywhere within the parcel.

MW-1: View looking west from Heacock St.

**Figure 2-6: MW-01 Parcel**

**MW-2 parcel:** Two parcels are being considered for MW-2, which are hereby designated as MW Site-2a and MW Site-2b.

**MW Site-2a parcel** is located at the northern end of Daybreak Trail, where the road dead ends at an empty lot (MW Site-2a). The site itself is a generally level rectangular parcel, bordered by residential homes on the south and east, and undeveloped parcels with occasional outbuildings to the north and west. The site is maintained via mowing, and is elevated between three and five feet above the road surface of Daybreak Trail. Adjacent homes have chain link fences separating the residential properties from MW Site-2a.

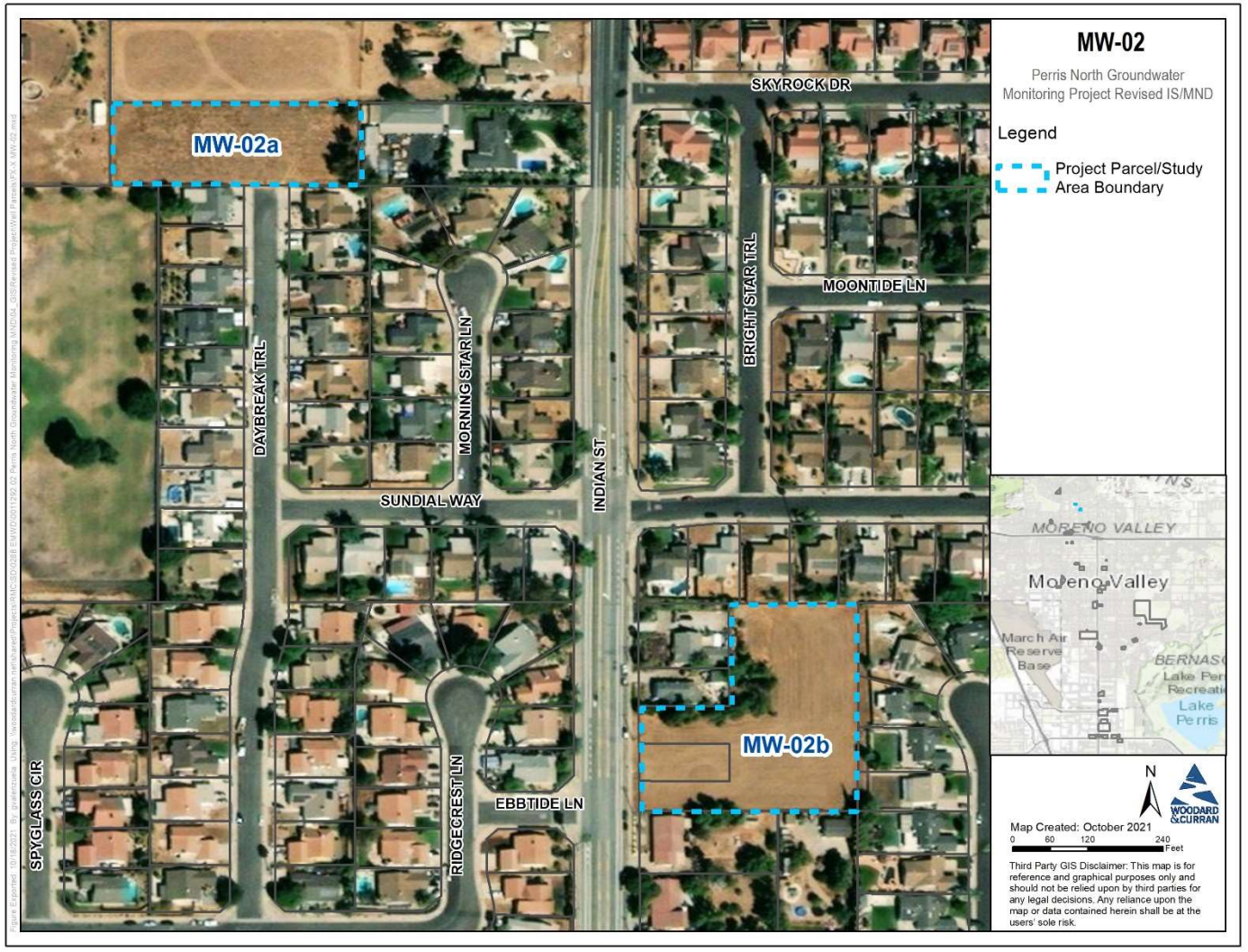
**MW Site-2b parcel** is located on the eastern side of Indian Street at Ebbtide Lane, and is an "L" shaped parcel with single-family residences on all sides except where it borders Indian Street. The site slopes upwards gradually from Indian Street to the east and north, with a large berm along the eastern edge of the site leading up to residences. The residences along the eastern boundary have standard-height (6-foot tall) cinderblock or wooden fences blocking them from the parcel. The properties to the south and north of the site have chain link fences. Vegetation on the site is minimal and maintained by mowing, with some trees near the houses.

The two project parcels are shown in Figure 2-7 to demonstrate potential locations, and final location of the well cluster may be anywhere within the two parcels.

MW Site-2a: North end of Daybreak Trail

MW Site-2b: Indian Street and Ebbtide Lane

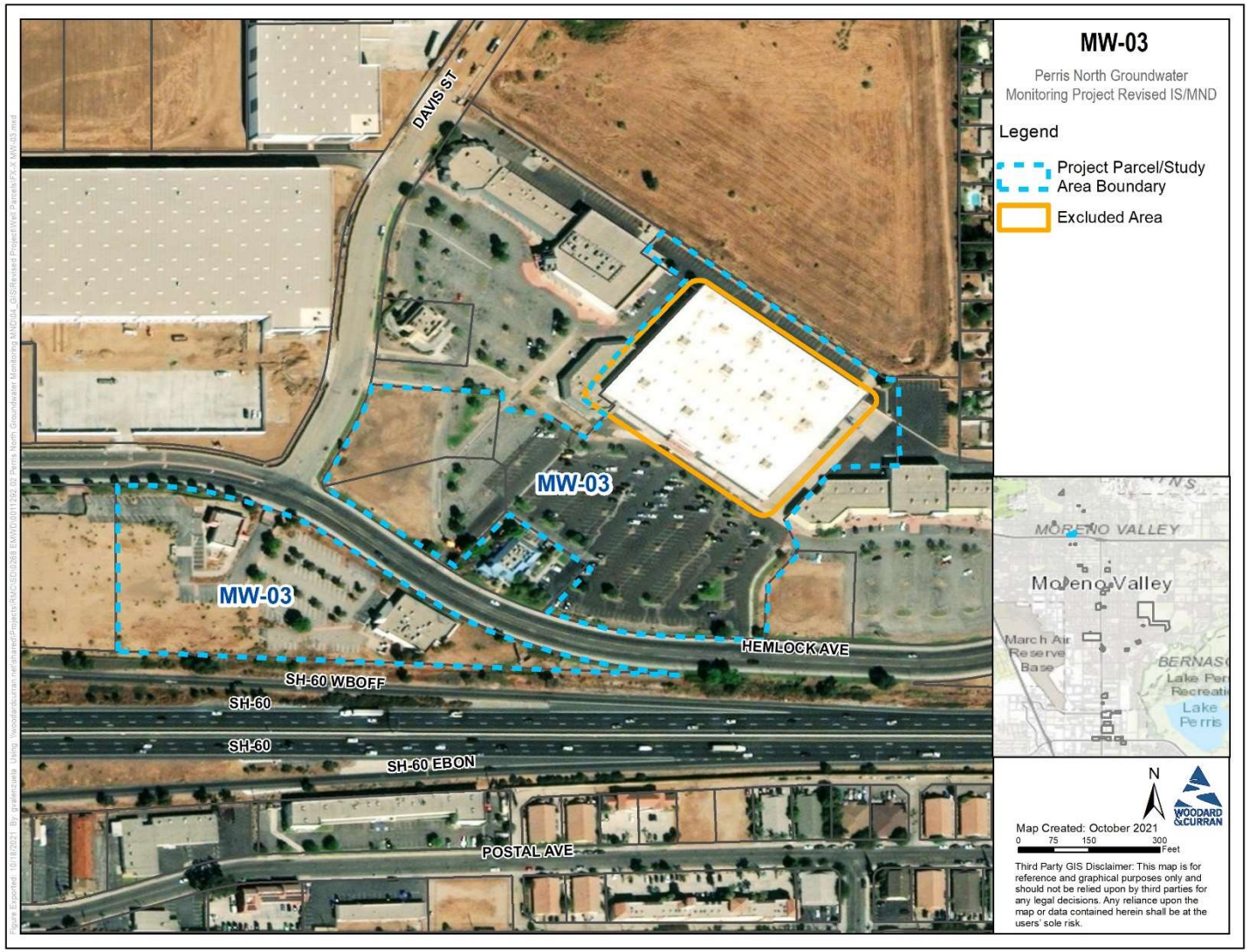
**Figure 2-7: MW-02 Parcels**



**MW-3 parcel**: Located along Hemlock Avenue at Davis Street within a commercial area. MW-3 would be constructed in the parking lot on the south side of Hemlock Avenue, the parking lot on the north side of Hemlock Avenue, or the open space at the entrance to the shopping center at Hemlock Avenue and Davis Street. The parking lot areas within the site are paved and level. At the western portion of the site north of Hemlock Avenue and east of Davis Street, is a vegetated area that may serve as a stormwater detention feature. Landscaping is installed along the sidewalk and around the sign at the corner, though much of the area appears to be minimally maintained. The parcel and adjacent areas are shown in Figure 2-8, and the final location of the well cluster may be anywhere within the parcel.

MW-3: Vegetated area north of Hemlock Avenue

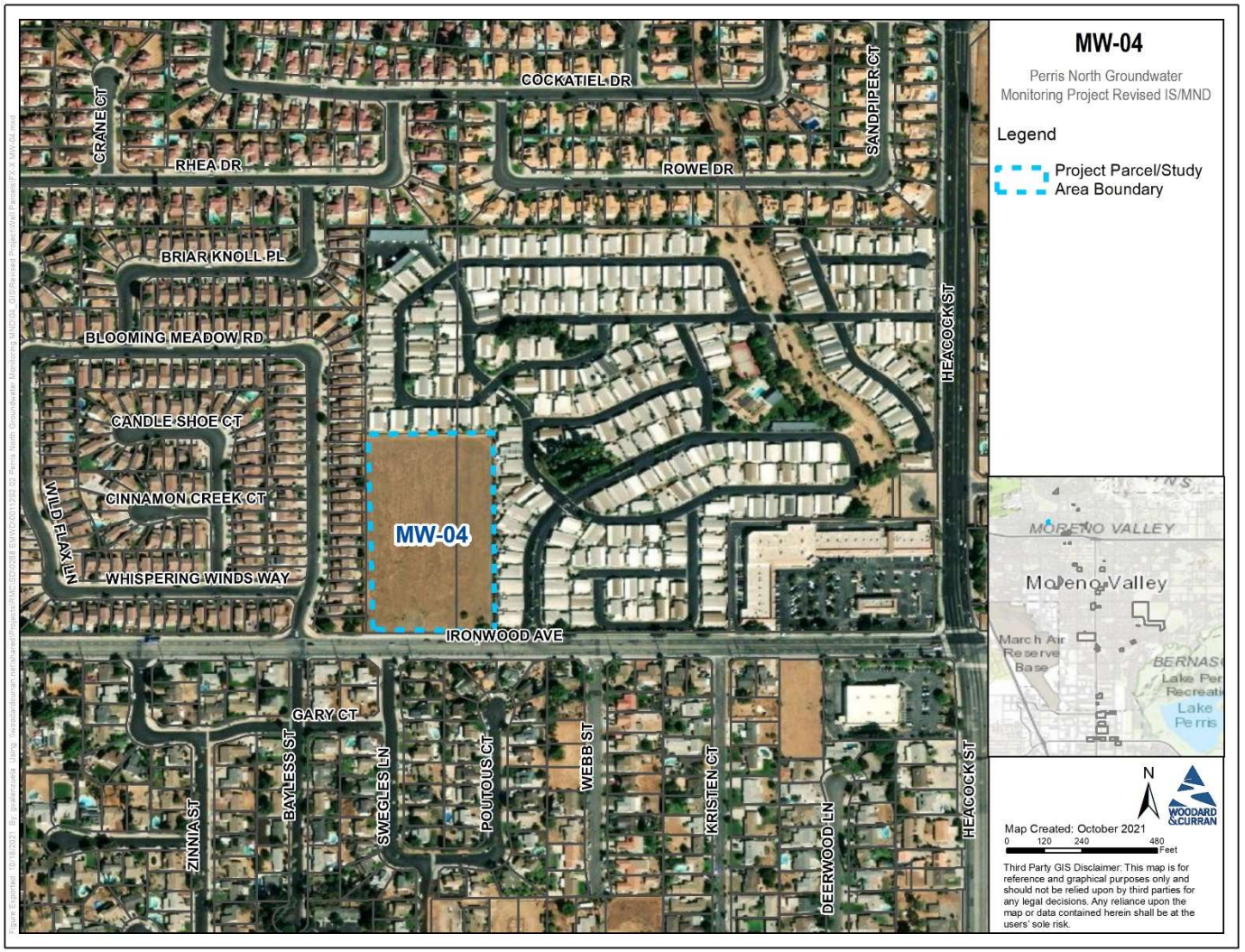
**Figure 2-8: MW-03 Parcel**



**MW-4 parcel:** Located on the northern side of Ironwood Avenue at Swegles Lane. This site is currently fenced in with a chain link fence, and bounded by residential properties to the north, east, and west. Along the western edge of the site, houses are blocked from view by standard-height wooden fences, while along the eastern edge, a mobile home park is separated from the site by a cement wall. Houses along the northern edge of the site are also separated by a cement wall. The site itself is level, with minimal vegetation that is maintained with mowing. A few trees are located in the southeastern portion of the parcel, as well as along the western border. Figure 2-9 shows the parcel, and the final well cluster may be located anywhere within the parcel.

MW-4: View from southeast corner of parcel

**Figure 2-9: MW-04 Parcel**



**MW-5 parcel:** Three locations are being considered, designated here as MW Site-5a, MW Site-5b, and MW Site-5c.

**MW Site-5a parcel** is located along the south side of Ironwood Avenue across from Welby Place and between Weller Place and Kilgore Street. It is a generally flat, undeveloped site primarily surfaced by dirt and gravel. Construction equipment was noted at the site visit on June 23, 2021, and it is possible that the site may undergo development in the near future. This site is located adjacent to single-family residences, separated from it by standard-height wooden fences.

**MW Site-5b parcel** is located on the south side of Ironwood Avenue directly across from Hubbard Street. It is a deep rectangular lot, and separate from neighboring residential properties by 6-foot tall masonry walls. The site slopes upwards on both the east and west sides, and appears to be a mix of unmaintained vegetation and gravel. There are two large trees in the middle of the site.

**MW Site-5c parcel** is located on the eastern side of Hubbard Street one lot north of Ironwood Avenue. It is bounded by single-family residential homes to the north, east, and south, and separated by chain link fence from homes to the south and north. The homes to the east are separate by a wooden fence that blocks the eyeline. The site is level and primarily unvegetated dirt.

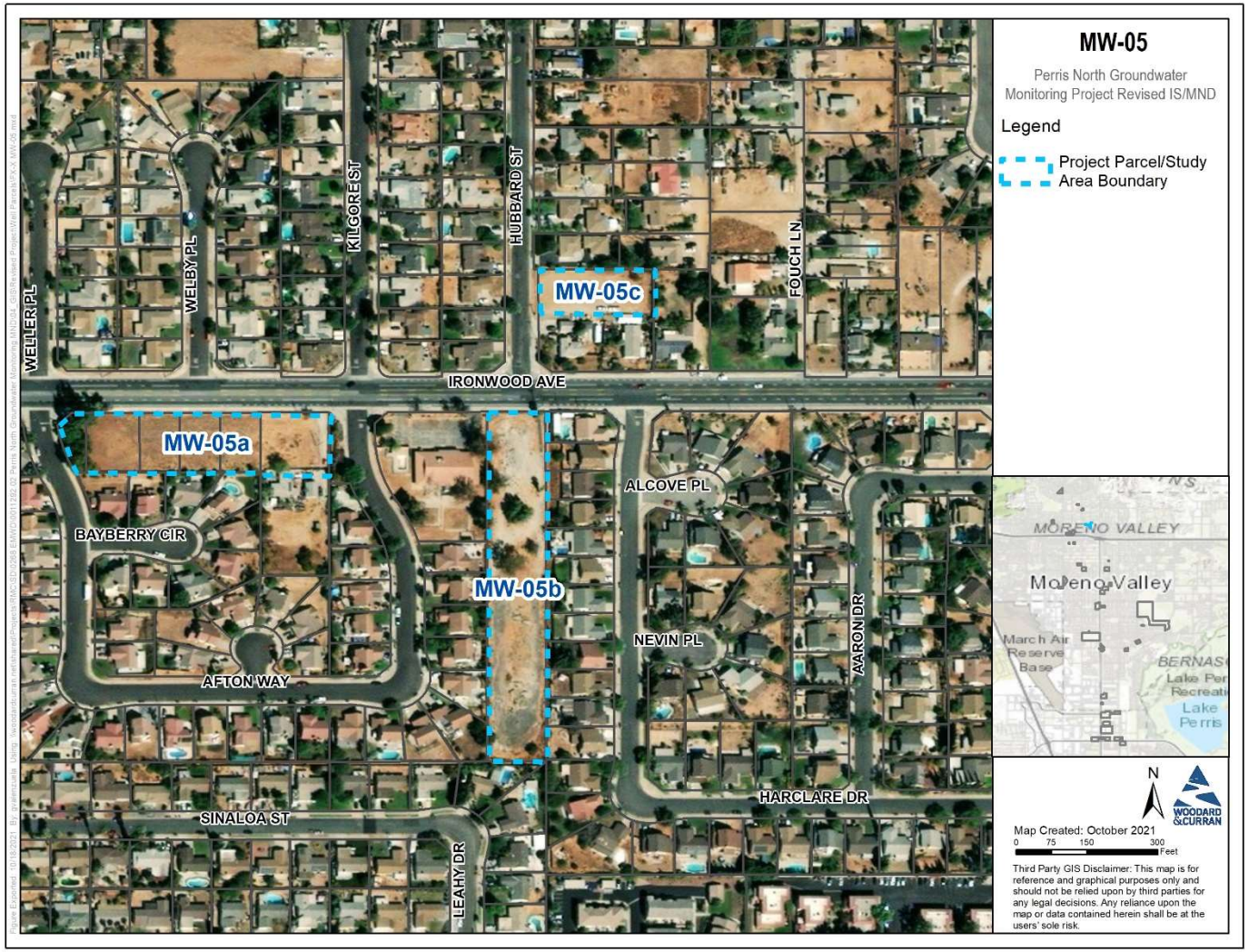
Three parcels are shown in Figure 2-10 to demonstrate potential locations, and the final location of the well cluster may be anywhere within the parcels.

MW Site-5a: View west from Kilgore Street

MW Site-5b: View south from Ironwood Avenue

MW Site-5c: View east from Hubbard Street

**Figure 2-10: MW-05 Parcels**



**MW-6 parcel:** Two parcels are being considered for MW-6, which are hereby designated as MW Site-6a and MW Site-6b, both of which are located along the northern side of Webster Avenue.

**MW Site-6a parcel** is the westernmost of the two sites, and is a generally flat parcel with minimal vegetation or maintenance. Two trees are located on the site, which is enclosed on two sides (south and east) by a chain link fence, and open to neighboring residential properties to the north and west.

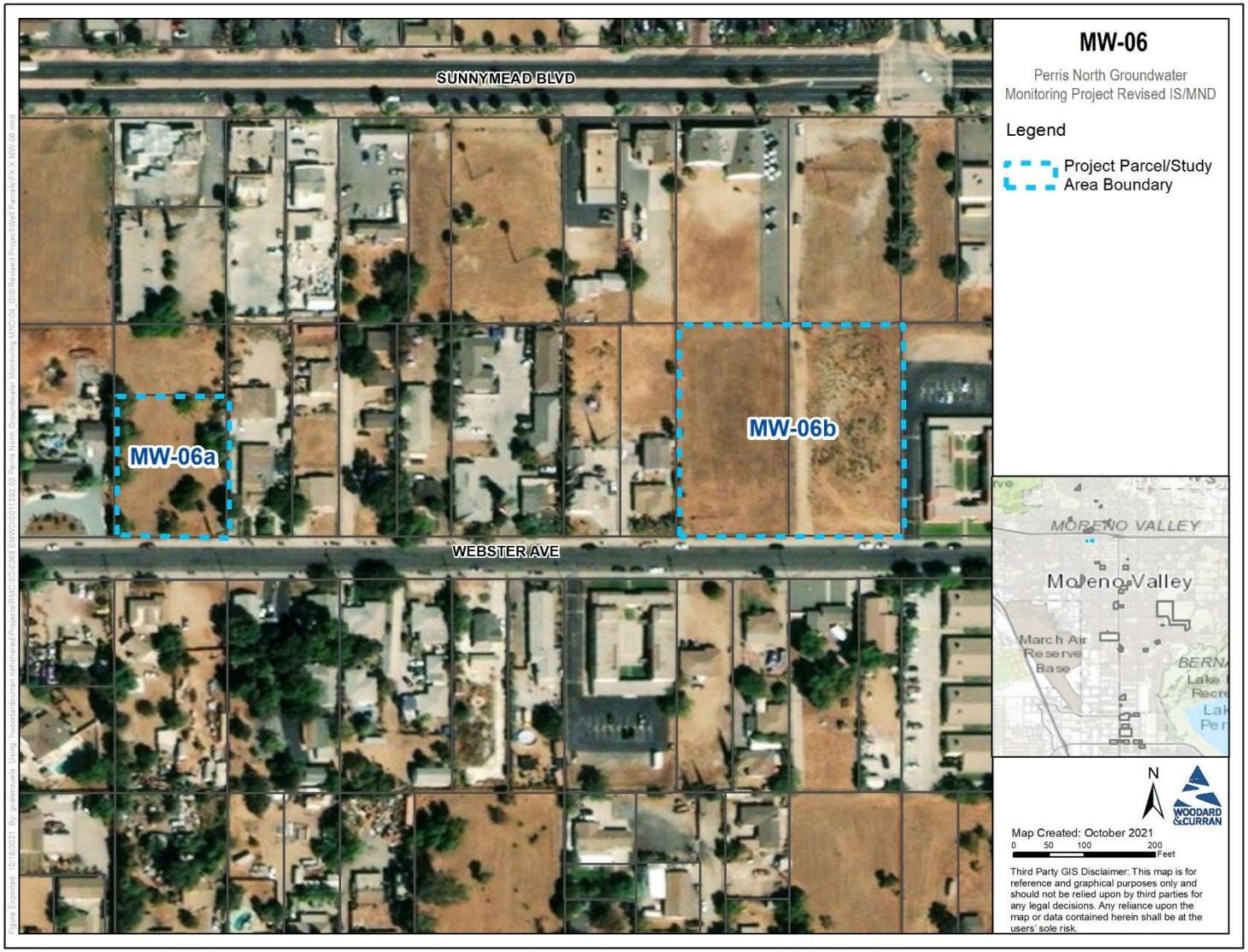
**MW Site-6b parcel** is located east of MW Site-6a, and is adjacent to a multi-family residential apartment building to the east, and a single-family home to the west. It is a level site with mowed vegetation, and is fenced in with chain-link fence to the east, north, and west sides. MW Site-6b is composed of two adjacent lots, with a chain link fence and an unpaved access road dividing them north to south. The eastern lot is bounded on all sides by a chain link fence.

The two parcels are shown in Figure 2-11, and the final well cluster location may be anywhere within the parcels.

MW Site-6b: View looking north from Webster Ave.

MW Site-6b: View looking northwest from Webster Ave

**Figure 2-11: MW-06 Parcels**



**MW-7 parcels**: Two sites are being considered for MW-7, the northern site designated as MW Site-7a, and the southern site as MW-7b.

**MW Site-7a parcel** is located along Tacoma Drive north of Dracea Avenue. It is a level rectangular lot surrounded by residential homes, and contains mowed vegetation. The property is generally bounded by chain link fence, with the exception of the northern portion of the property which is not enclosed.

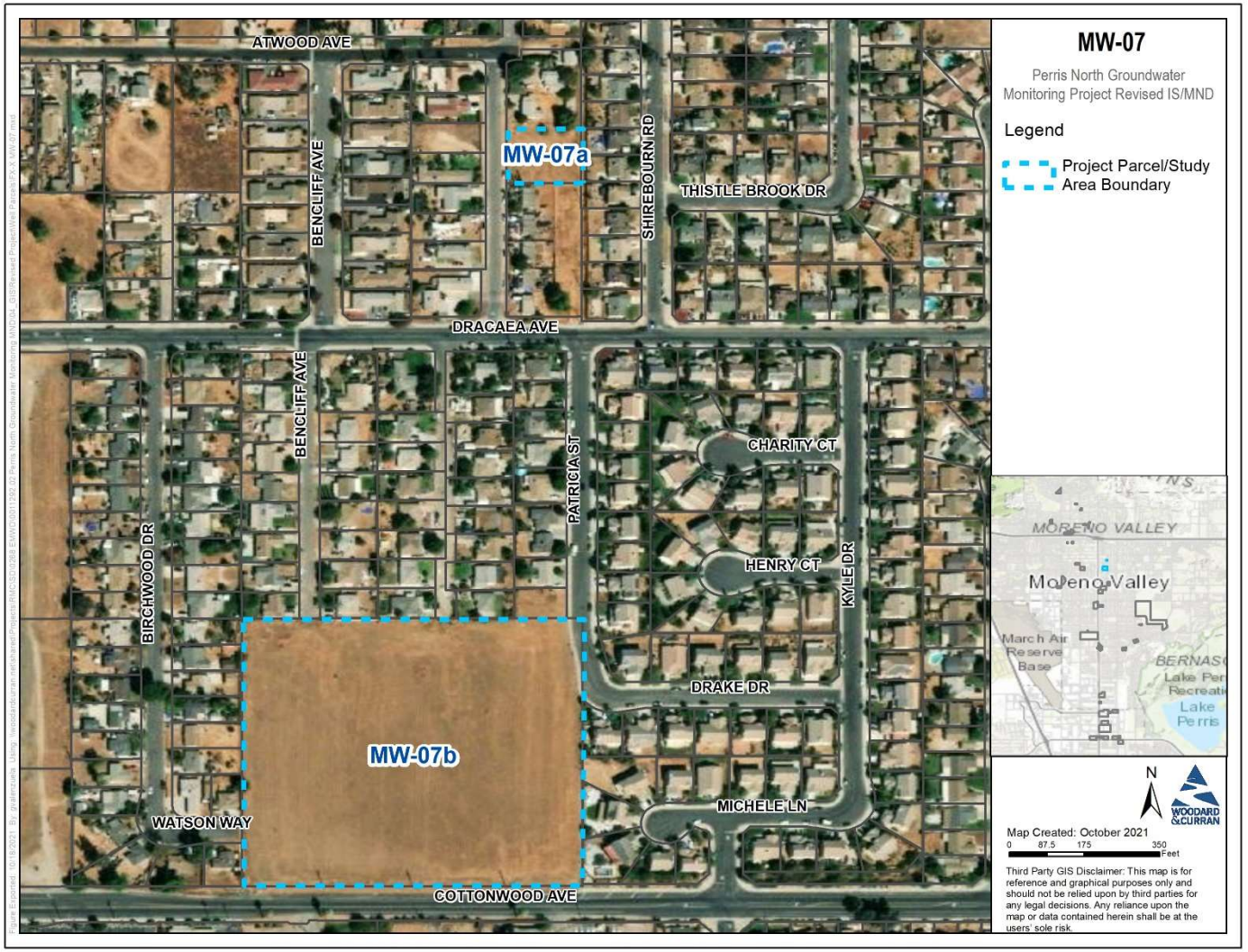
**MW Site-7b parcel** is a large open space along the northern side of Cottonwood Avenue between Birchwood Drive and Patricia Street. Residential properties are located on the north, east, and western sides of the site, It is generally level, and a mixture of dirt and unmaintained or minimally maintained vegetation. Neighboring properties are separated from the site by chain link fences, wooden fences, and concrete masonry walls.

These two parcels are shown in Figure 2-12, and the final location of the well cluster may be anywhere within the parcels.

MW Site-7a: View looking east from Tacoma Drive

MW Site-7b: View looking west from Patricia Street

**Figure 2-12: MW-07 Parcels**



**MW-8 Parcels:** Two sites are being considered by MW-8, hereby designated as MW Site-8a and MW Site-8b.

**MW Site-8a parcel** is located at the southwest corner of Dracaea Avenue and Indian Street, across from Moreno Valley Community Adult School, March Mountain High School, and Moreno Valley Adult Education. The site is level and contains mowed vegetation, with single-family residences to the south and west, separated by a mixture of 6-foot tall wooden fences and chain-link fences. There are remnants of a large cement pad on the northern part of the site, near the storm drain on Dracaea Avenue.

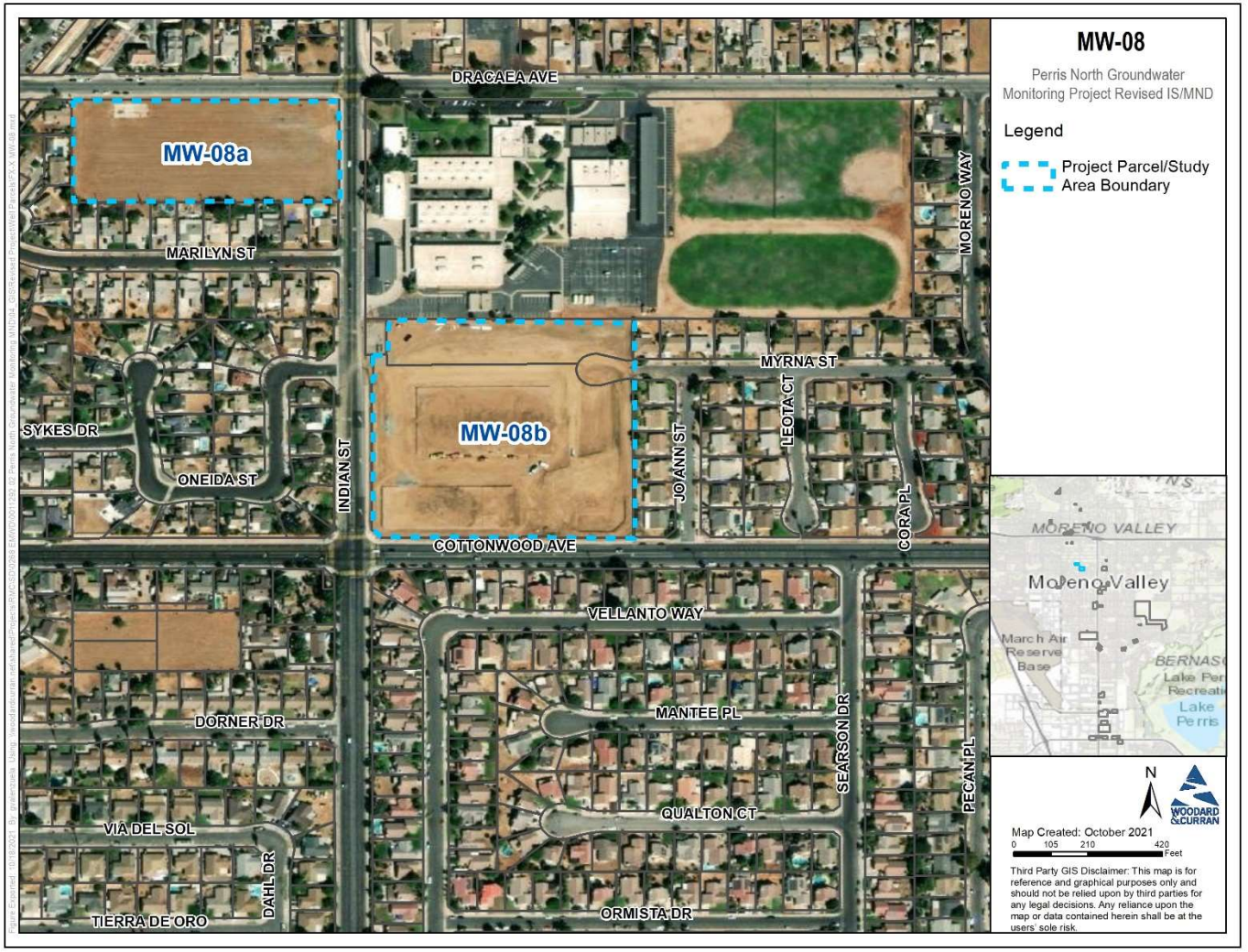
**MW Site-8b parcel** is located at the intersection of Indian Street and Cottonwood Avenue. The site is a large parcel on the northeast corner of the intersection, and single-family residential properties on the remaining three corners. The lot is currently under construction for residential land use. Nearby residences have fences along property lines adjacent to the intersections. Homes to the northwest and southeast have backyards that face 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 adjacent to the northern edge of the site.

The two parcels are shown in Figure 2-13 and the final location of the well cluster may be anywhere within the parcels.

MW Site-8a: View looking east from Dracaea Avenue

MW Site-8b: View site from Indian Street, currently under construction

**Figure 2-13: MW-08 Parcels**



**MW-9 Parcels:** Two parcels are being considered for MW-9, designated as MW Site-9a and MW Site-9b.

**MW Site-9a parcel** is located along Heacock Street immediately north of Alessandro Boulevard. The site includes the parking lot and open spaces surrounding the commercial structure that houses the Moreno Valley Courthouse. Stormwater channels run along the north, east, and south sides of this site, and are separated from it by an approximate 4-foot masonry wall. Homes and businesses on the far side of the stormwater channel from the site are separated by a 6-foot high cement masonry wall. The unpaved portions of the site are generally level, disced dirt or mowed vegetation, with limited trees. There are large palm trees in the parking lot portion of the site. Commercial land uses are located across Heacock along the southern end of the site, and on the far side of the stormwater channel near Alessandro Boulevard. Residences are located around the rest of the site.

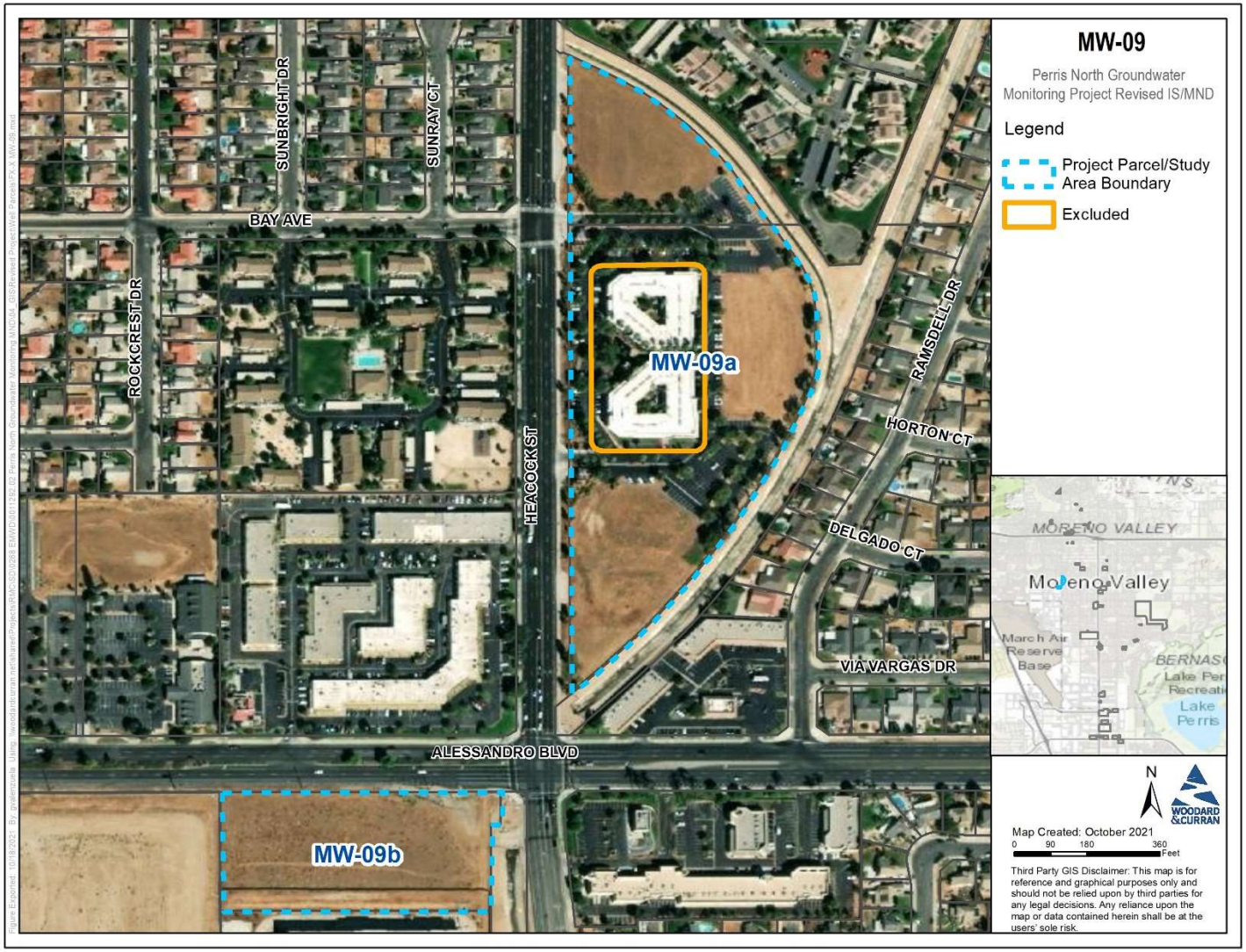
**MW Site-9b parcel** is located at the southwest corner of the intersection of Alessandro Boulevard and Heacock Street. It is a level field of dirt and mowed vegetation. To the south is a large warehouse-type structure adjacent to the site, with additional large warehouses located west of the site. The site is surrounded by chain link fencing.

Two parcels are shown in Figure 2-14 and the final location of the well cluster may be anywhere within the parcels.

MW Site-9a: View looking southeast towards Alessandro Blvd.

MW Site-9b: View looking west from Heacock Street

**Figure 2-14: MW-09 Parcels**



**MW-10 parcels:** Two sites are being considered for MW-10, with MW Site-10a located just east of Flaming Arrow Drive and Alessandro Boulevard, and MW Site-10b spanning a large lot from Alessandro Boulevard to Perris Boulevard.

**MW Site-10a parcel** is a large, level field of mowed vegetation, with some informal dirt footpaths crisscrossing the site. To the east, north, and west are single family residences. Those homes to the west and north of the site are separated from it by 6-foot high masonry walls or wooden fences. Homes to the east of the site face the field and are separated by an unpaved road. Across Alessandro Boulevard from MW Site-10a are multi-family homes.

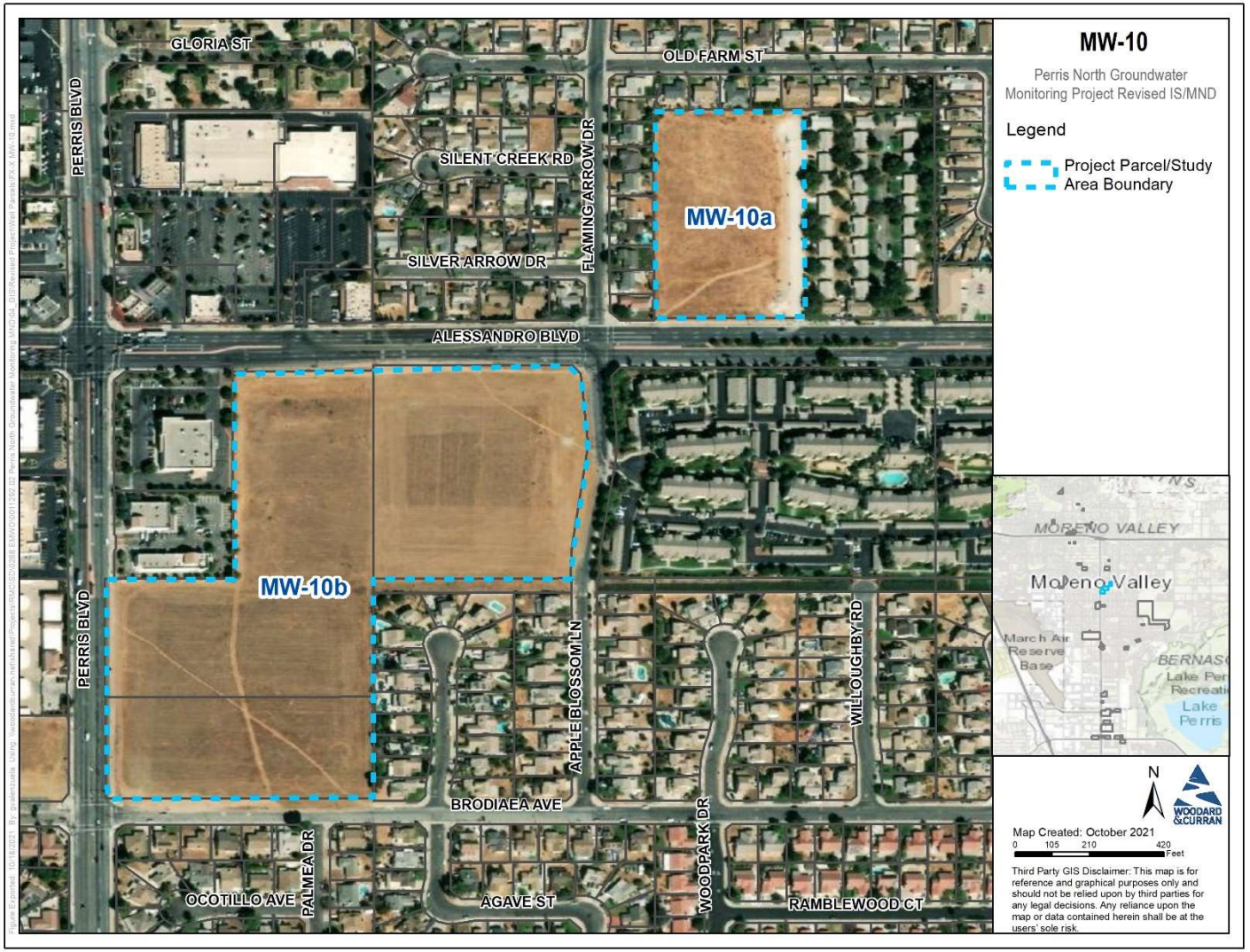
**MW Site-10b parcel** is composed of two large parcels along Alessandro Boulevard and Perris Boulevard. They are generally level open fields with mowed vegetation. To the northwest of the site is a commercial center, which is separated from the site by a cement wall and chain link fencing. Residential homes along the south and eastern boundaries of the site are multi-story and separated from the site by 6-foot high wooden fences and cement or masonry walls.

Two parcels are shown in Figure 2-15and the final location of the well cluster may be anywhere within the parcels.

MW Site-10a: View looking northeast from Alessandro Blvd.

MW Site-10b: View looking southwest from Appleblossom Lane

**Figure 2-15: MW-10 Parcels**



**MW-11 parcels:** Two parcels are being considered for MW-11, MW Site-11a on the eastern side of Perris Boulevard between Delphinium Avenue and Cactus Avenue, and MW Site-11b, immediately opposite MW Site-11a on Perris Boulevard.

**MW Site-11a parcel** is a level undeveloped lot of mowed vegetation and dirt. Adjacent to the southern edge of the site is Childtime Learning Center, a preschool.

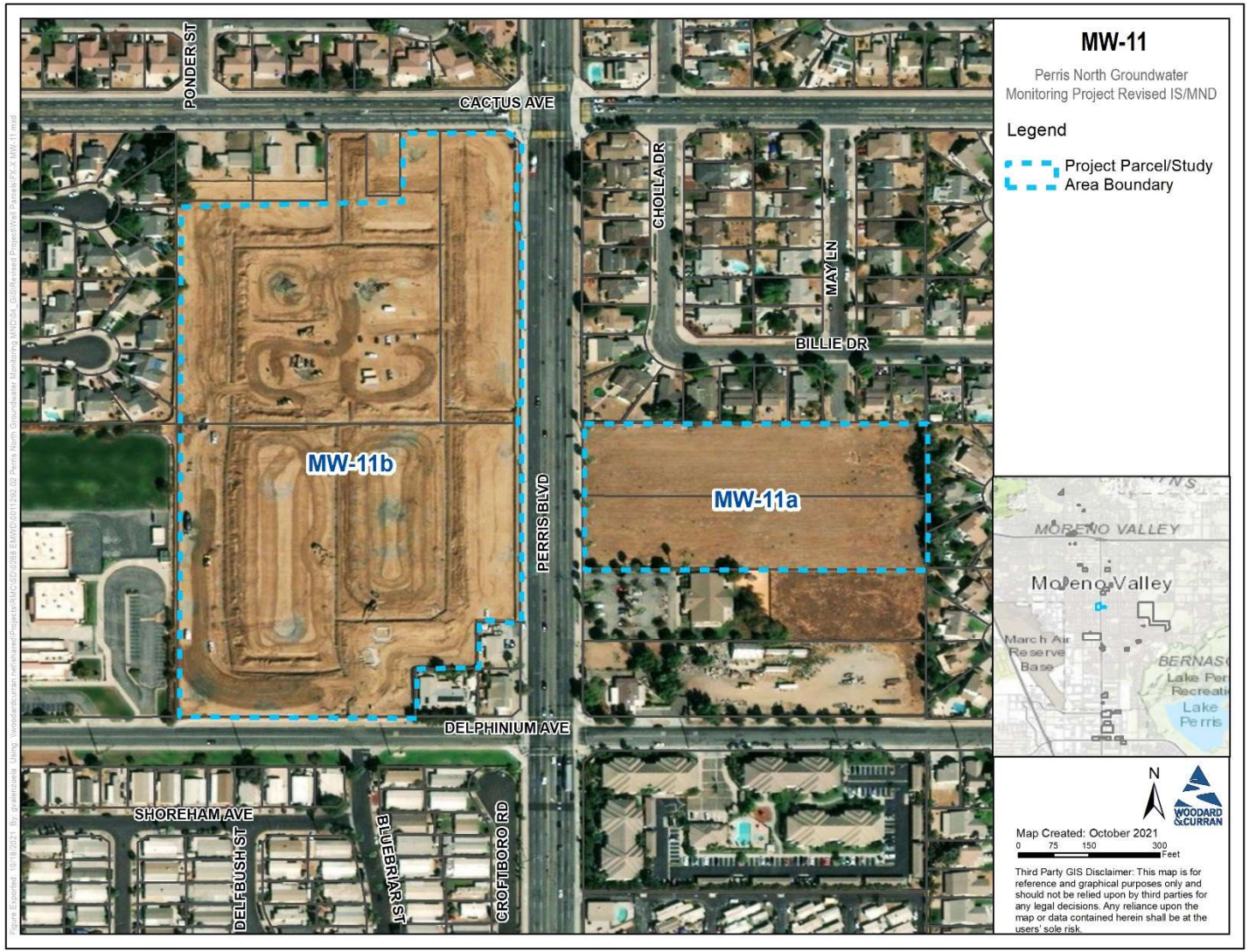
**MW Site-11b parcel** is a partially completed housing development, with active construction. Adjacent to the western side of the site along Delphinium Avenue is Chaparral Hills Elementary School, with Badger Springs Middle School on the far side of Chaparral Hills Elementary School from the site.

The two parcels are shown in Figure 2-16 and the final location of the well cluster may be anywhere within the parcels.

MW Site-11a: View looking east from Perris Blvd.

MW Site-11b: Southwest corner of parcel, looking north

**Figure 2-16: MW-11 Parcels**



**MW-12 parcels**: Two sites are being considered for MW-12, designated MW Site-12a and MW Site-12b.

**MW Site-12a parcel** is a large undeveloped series of lots that spans an area from Cactus Avenue and Lasselle Street south to John F. Kennedy Drive, borders Vista Del Lago High School, and runs east along a stormwater channel near Casa Encantador Road to Nason Street, where it turns south until it hits the stormwater channel. The site is largely mowed and unmaintained vegetation, and surrounded by chain link fencing. A housing development of single family homes is located south of the site, and single family homes are located across Lasselle Street from the western edge of the site.

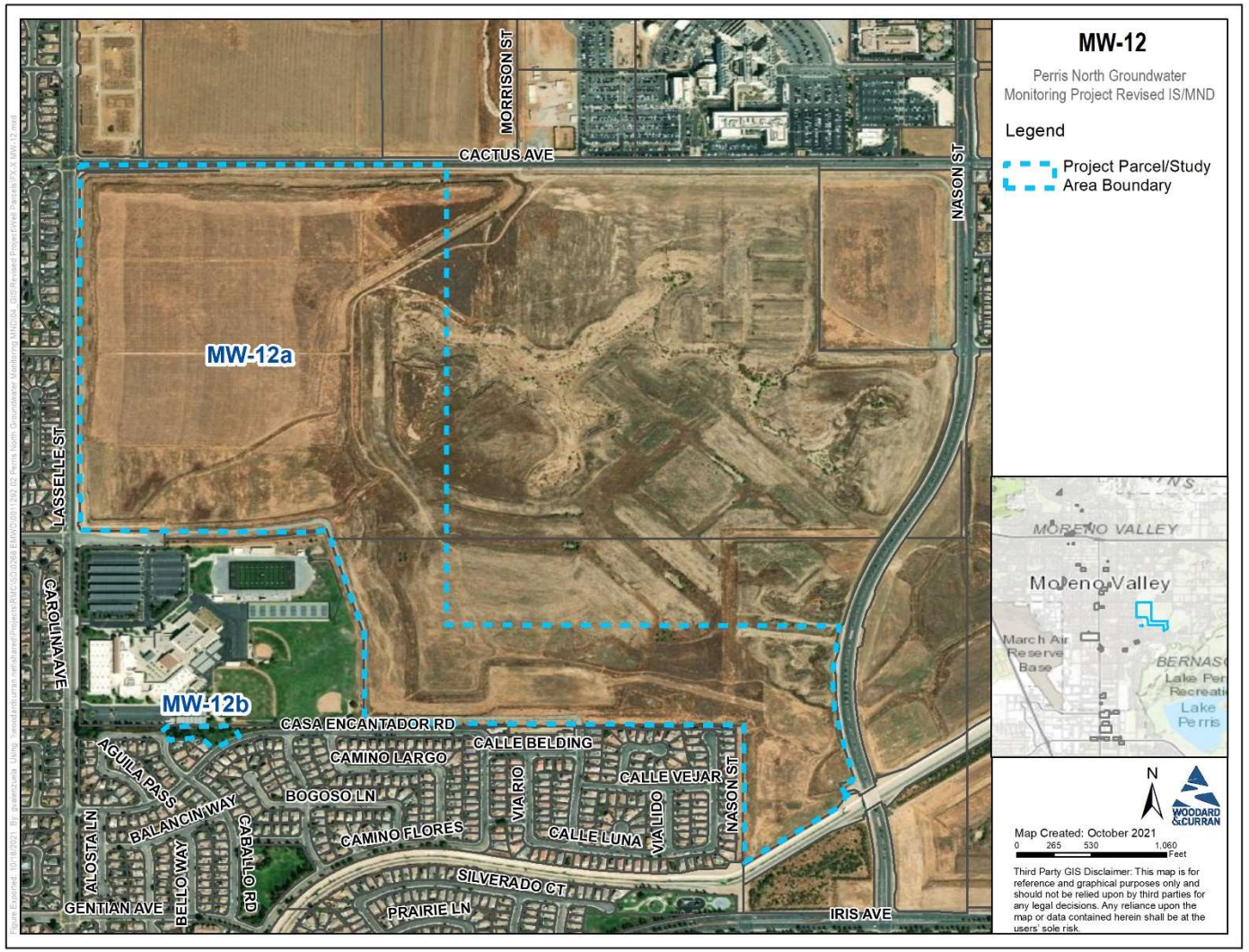
**MW Site-12b parcel** is located within a small park in a housing development, along Casa Encantador Road, east of Caballo Road. It is a maintained lawn area with some smaller trees, and adjacent to homes on the west and south. The northern edge of the site backs into a stormwater channel and is across from Vista Del Lago High School.

The two parcels are shown in Figure 2-17 and the final location of the well cluster may be anywhere within the parcels.

MW Site-12a: Looking east from Cactus Avenue, Vista Del Lago High School on the right.

MW Site-12b: Green space along Casa Encantador Road

**Figure 2-17: MW-12 Parcels**



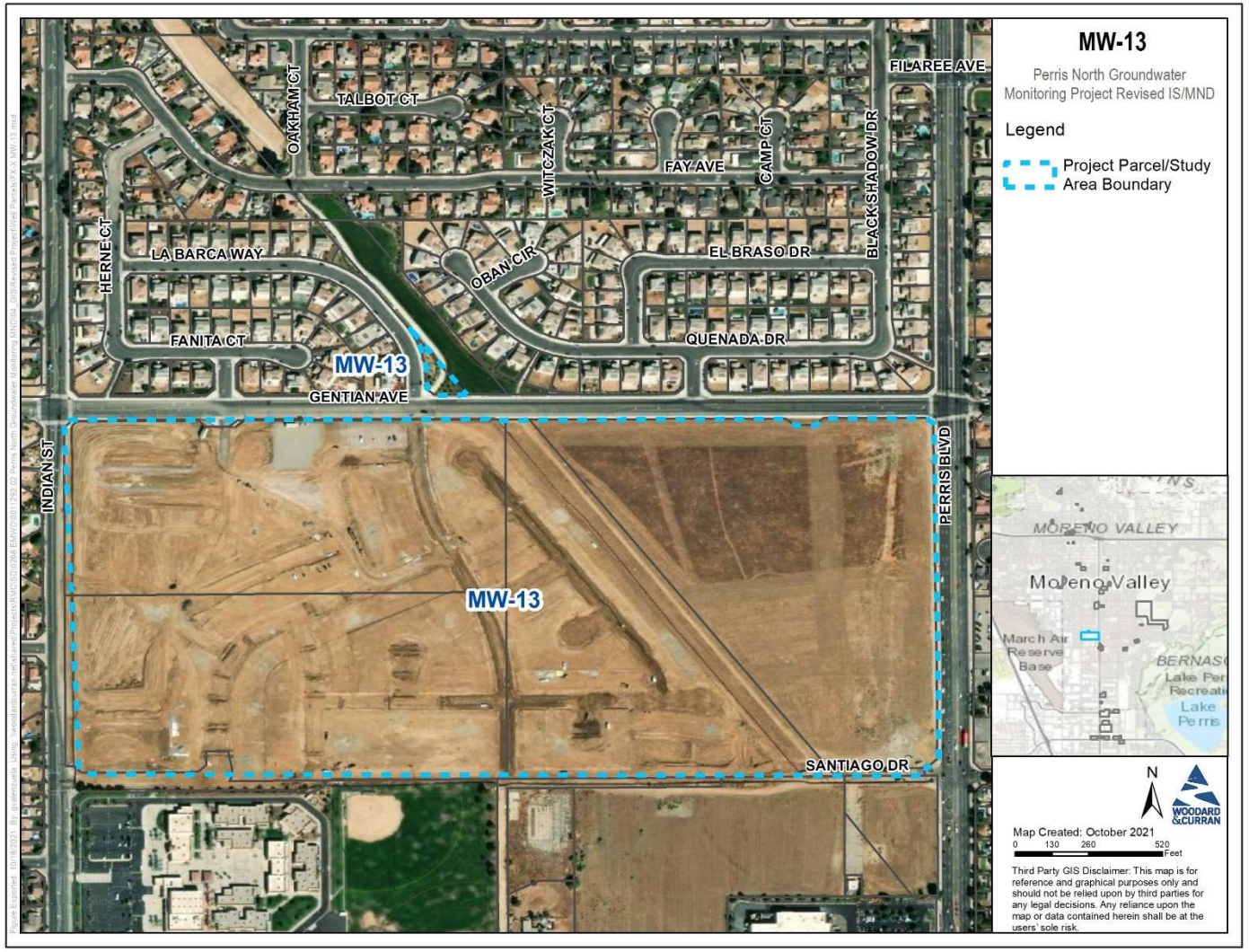
**MW-13 parcel**: Located between Perris Boulevard, Santiago Drive, and Gentian Avenue, the western half of MW-13 is currently under construction for a housing development from Indian Street on the west to the stormwater channel that bifurcates the site. East of the stormwater channel, the site remains undeveloped and is a disced, empty field. Across Gentian Avenue is a residential housing development. The portion of MW-13 within this area is a landscaped greenbelt that borders the stormwater channel and has sidewalks for residents.

The parcel and adjacent areas are shown in Figure 2-18. The final location of the well cluster may be anywhere within the parcel.

MW-13: Looking west along the south side of Gentian Ave.

MW-13: Looking west, north of Gentian Ave.

**Figure 2-18: MW-13 Parcel**



**MW-14 parcels:** Two sites are being considered for MW-14, designated MW Site-14a and MW Site-14b.

**MW Site-14a parcel** is located on the southeast corner of the intersection of Iris Avenue and Perris Boulevard. The site is a commercial shopping center. Stormwater detention features are located along the north and western edges of the site. Commercial land uses are located across Iris Avenue from the site.

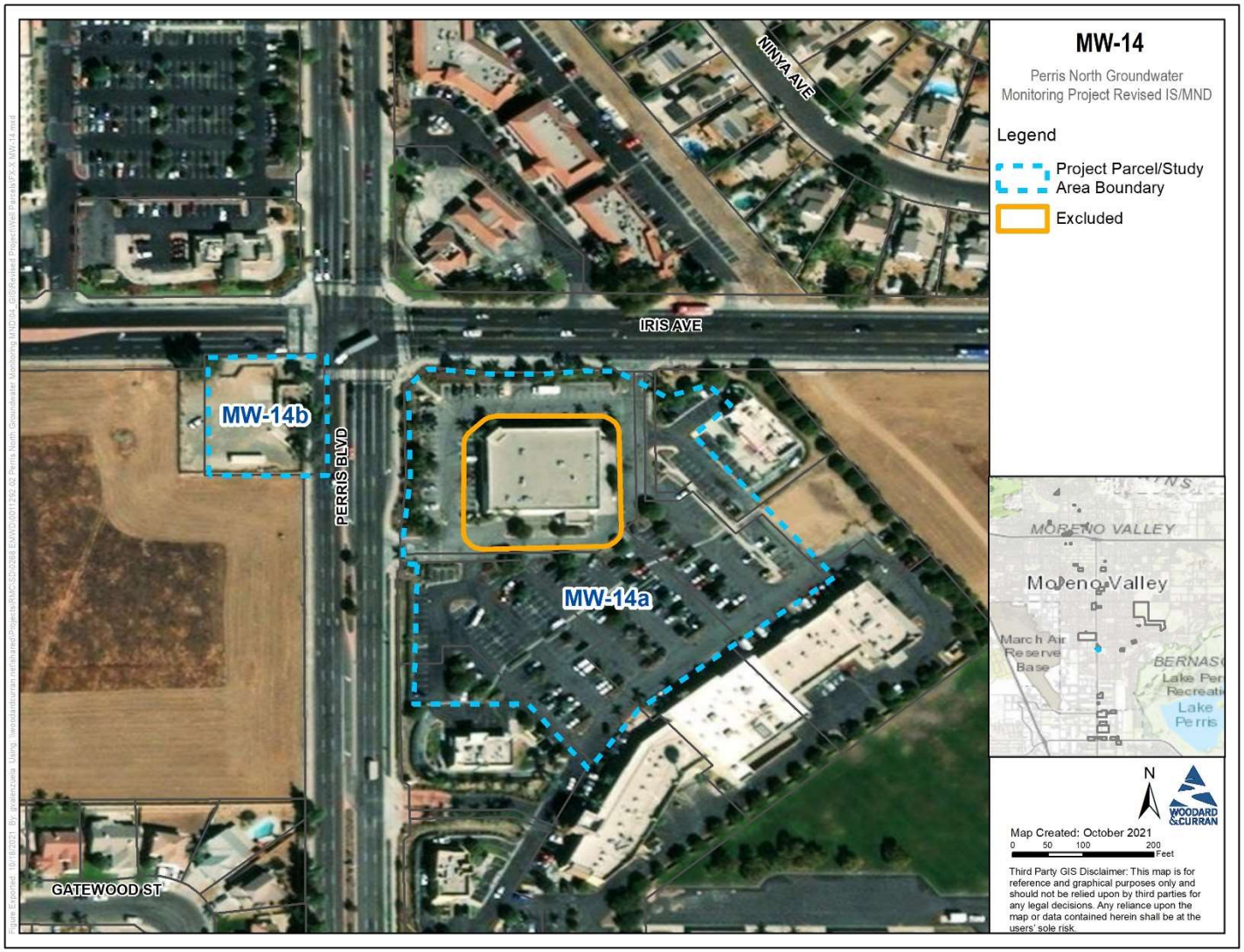
**MW Site-14b parcel** is located on an EMWD-owned property at the southwest corner of Iris Avenue and Perris Boulevard. The site is fully fenced, unpaved, with a dirt/gravel surface. It currently houses the Moreno I Booster Station and the Iris Valve facility. The Iris Valve facility is located in a 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.

The two parcels are shown in Figure 2-19 and the final location of the well cluster may be anywhere within the parcels.

MW Site-14a: Commercial center, looking south from Iris Ave.

MW Site-14b: EMWD-owned parcel looking south from Iris Ave.

**Figure 2-19: MW-14 Parcels**



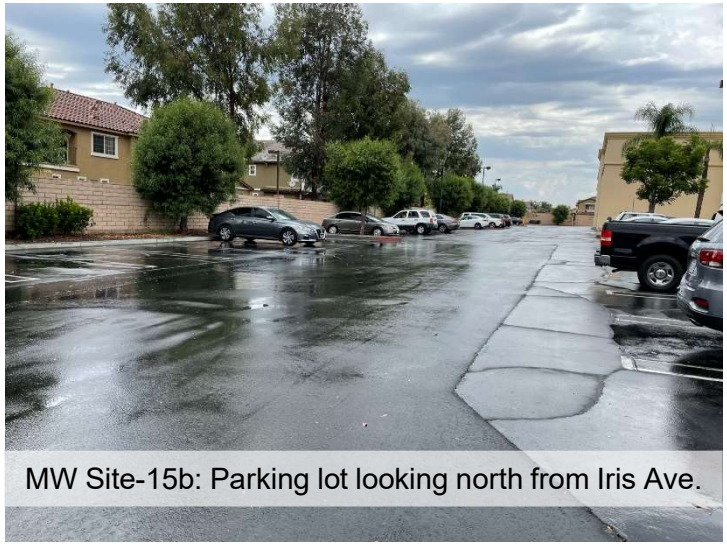
**MW-15 parcels**: Two sites are being considered for MW-15, designated MW Site-15a and MW Site-15b.

**MW Site-15a parcel** is located at Pedrorena Park, at Rancho Del Lago and Iris Avenue. Pedrorena Park is primarily lawn, with picnic areas, tennis and basketball courts located in the eastern portion of the site, and open lawn with back stops for baseball or softball on the western portion of the site. The existing surrounding setting at Pedrorena Park is primarily residential. The site is bordered by Iris Avenue and the back side of residences shielded by a 5-to-6-foot block wall to the north; the back sides of one- and two- story residences shielded by a hedge and -5-to 6- foot block wall to the west and south; and Rancho Del Lago Road and a community center to the east.

**MW Site-15b parcel** is located at the northwest corner of Iris Avenue and Lasselle Street, in the parking lot of a commercial shopping center. Residences adjacent to the shopping center are separated by a 6-foot high cinderblock or cement masonry wall. Across Lasselle Street is a commercial shopping center, while single family residences are located across iris Avenue from the site.

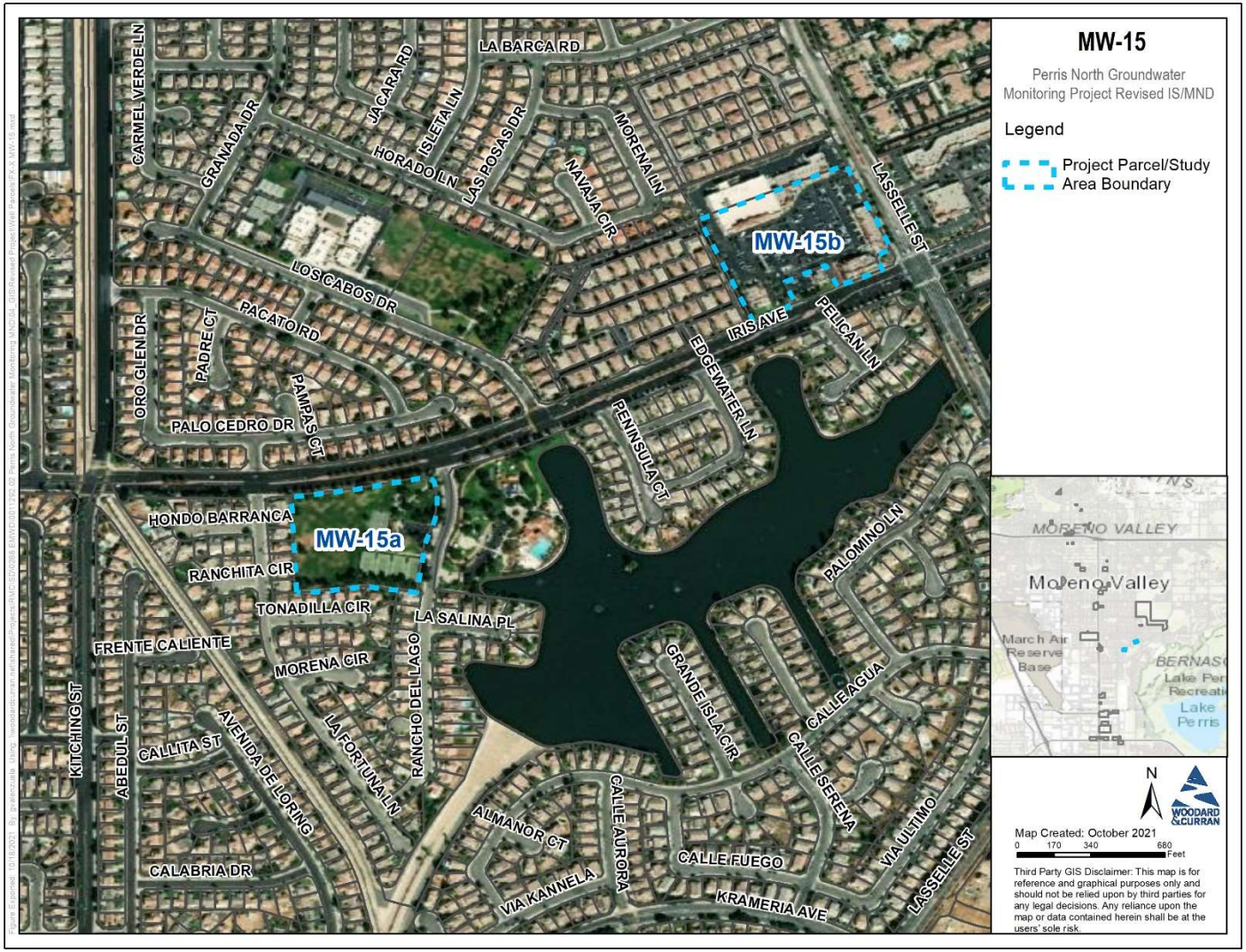
The two parcels are shown in Figure 2-20 and the final location of the well cluster may be anywhere within the parcels.

MW Site-15a: Pedrorena Park, looking west from Rancho Del Lago Rd.



MW Site-15b: Parking lot looking north from Iris Ave.

**Figure 2-20: MW-15 Parcels**

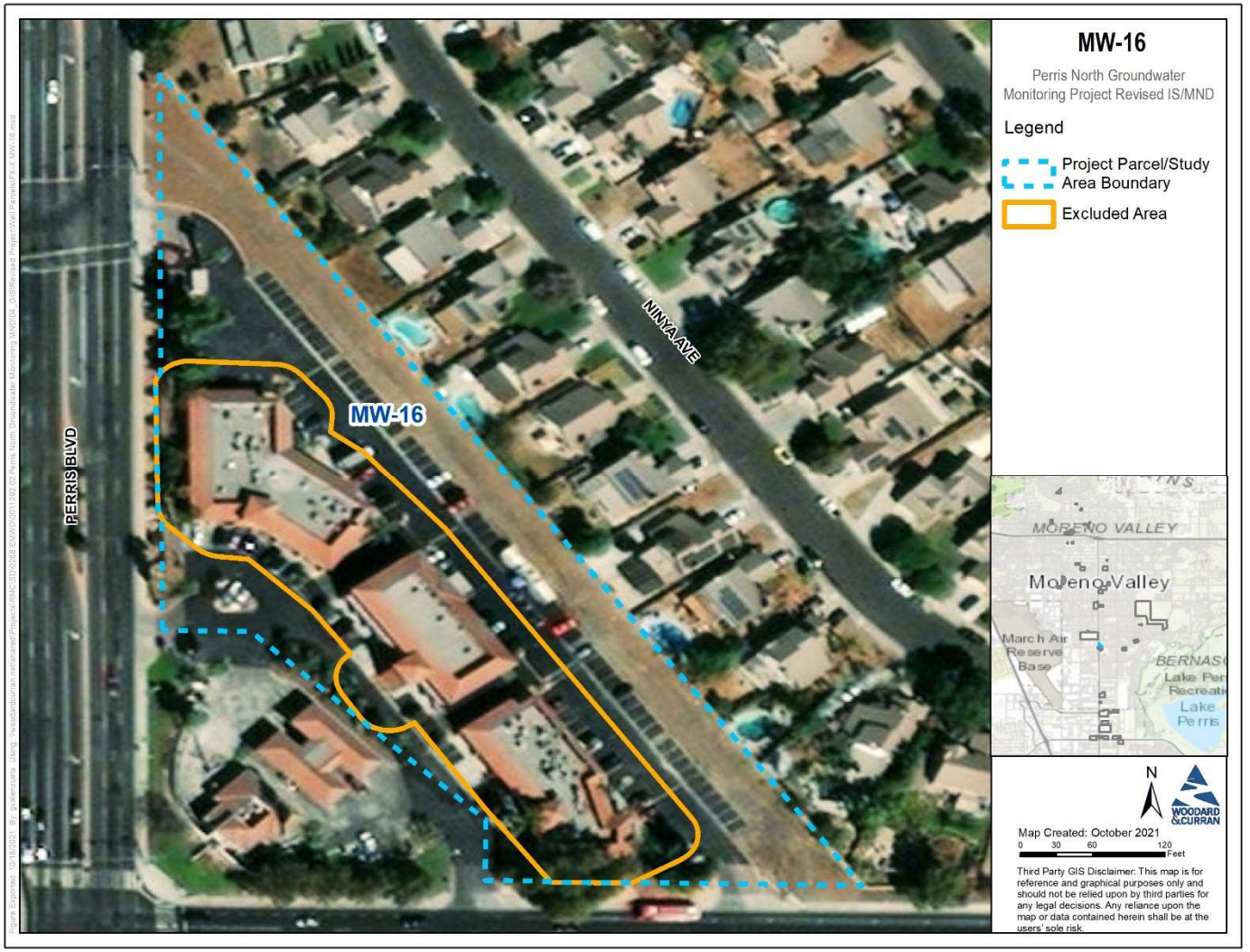


**MW-16 parcel**: MW-16 is located on a commercial site at the northeastern corner of the intersection of Iris Avenue and Perris Boulevard. Businesses are located in the middle of the site in a commercial building. The site runs along the back of single-family residences. A small multipurpose pedestrian/ bike path runs along the northeast boundary of the site, near the stormwater channel. Homes are separated from the site by a 6-foot high cinderblock wall. Two well clusters would be constructed at this site, designated MW 16a and MW 16b. However, because they will be located on the same parcel, and this MND is evaluating the entire parcel, they are evaluated jointly and referred to throughout this analysis as MW-16.

Figure 2-21 shows the entire parcel and the final location of the well clusters may be anywhere within the parcel.

MW-16: Facing west from the easternmost portion of the parcel

**Figure 2-21: MW-16 Parcel**



**Optional Site A parcels:** Two parcels are being considered for Optional Site A, which are both located in a commercial and light industrial area.

**Optional Site A-1 parcel** is located along North Perris Boulevard between Globe Street and Nandina Avenue. The site is adjacent to large commercial warehouse or light industrial land use. The western edge of the site along Perris Boulevard is a stormwater detention feature, while the rest of the site is generally level mowed or minimally-maintained vegetation or parking lots. Trees are present in the stormwater detention area of the site.

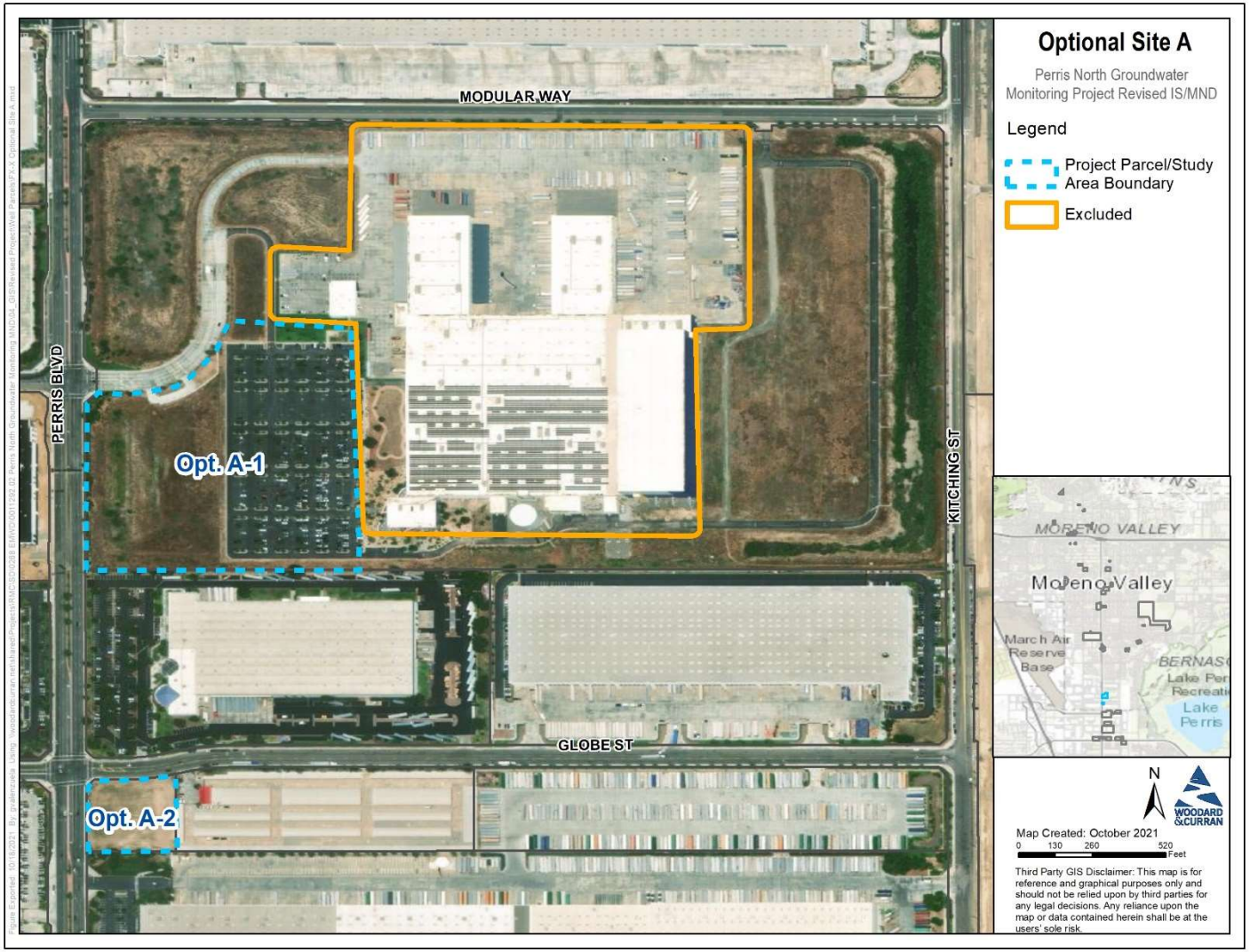
**Optional Site A-2 parcel** is located at the southeastern corner of North Perris Boulevard and Globe Street, and is a level, undeveloped parcel of mostly unvegetated dirt, surrounded by light industrial land uses. It is adjacent to a self-storage facility and commercial warehouse.

The two parcels are shown in Figure 2-22 and the final location of the well cluster may be anywhere within the parcels.

Optional Site A-1: View southwest towards Globe Street

Optional Site A-2: Looking southwest towards Perris Blvd.

## Figure 2-22: Optional Site A Parcels



**Optional Site B parcels:** Located between Nance Street and Oleander Avenue, Optional Site B includes two potential sites.

**Optional Site B-1 parcel** is generally bounded by Perris Boulevard to the west, the stormwater channel at Oleander Avenue to the north, Johnson Avenue to the east, and Nance Street to the south. The site is undeveloped, level, and primarily mowed vegetation.

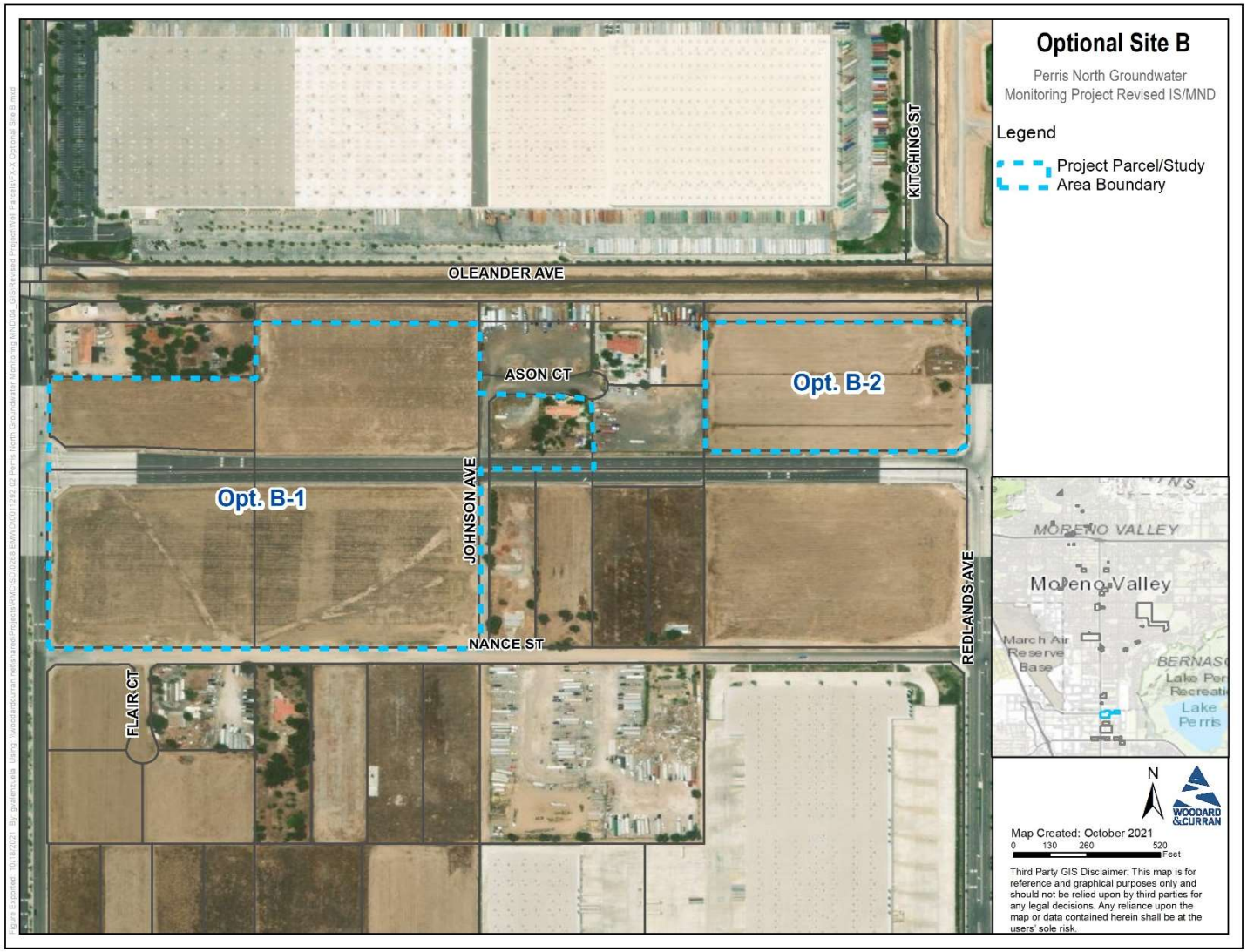
**Optional Site B-2 parcel** is located at Redlands Avenue and the stormwater channel at Oleander Avenue, and is primarily a level field of dirt and unmaintained or mowed vegetation. Between Optional Site B-1 and Optional Site B-2 is a storage area for tractor-trailers and a handful of residences. A bike path runs along the northern portion of the sites between Optional Site B-2 and the stormwater channel.

Two parcels are shown in Figure 2-23 and the final location of the well cluster may be anywhere within the parcels.

Optional Site B-1: View from Nance Street northwest towards Johnson Ave.

Optional Site B-2: View southwest from Redlands Ave.

**Figure 2-23: Optional Site B Parcels**



**Optional Site C parcel**: Two sites are being considered for Optional Site C.

**Optional Site C-1 parcel** is located on the northwest corner of Ramona Expressway and Perris Boulevard, extending west to Indian Avenue, and excluding the gas station immediately on the corner of Ramona Expressway and Perris Boulevard. The site is level, and a mixture of dirt and minimally maintained vegetation. To the north along Perris Boulevard is commercial land use, with some residential land use along the northwestern area of the site.

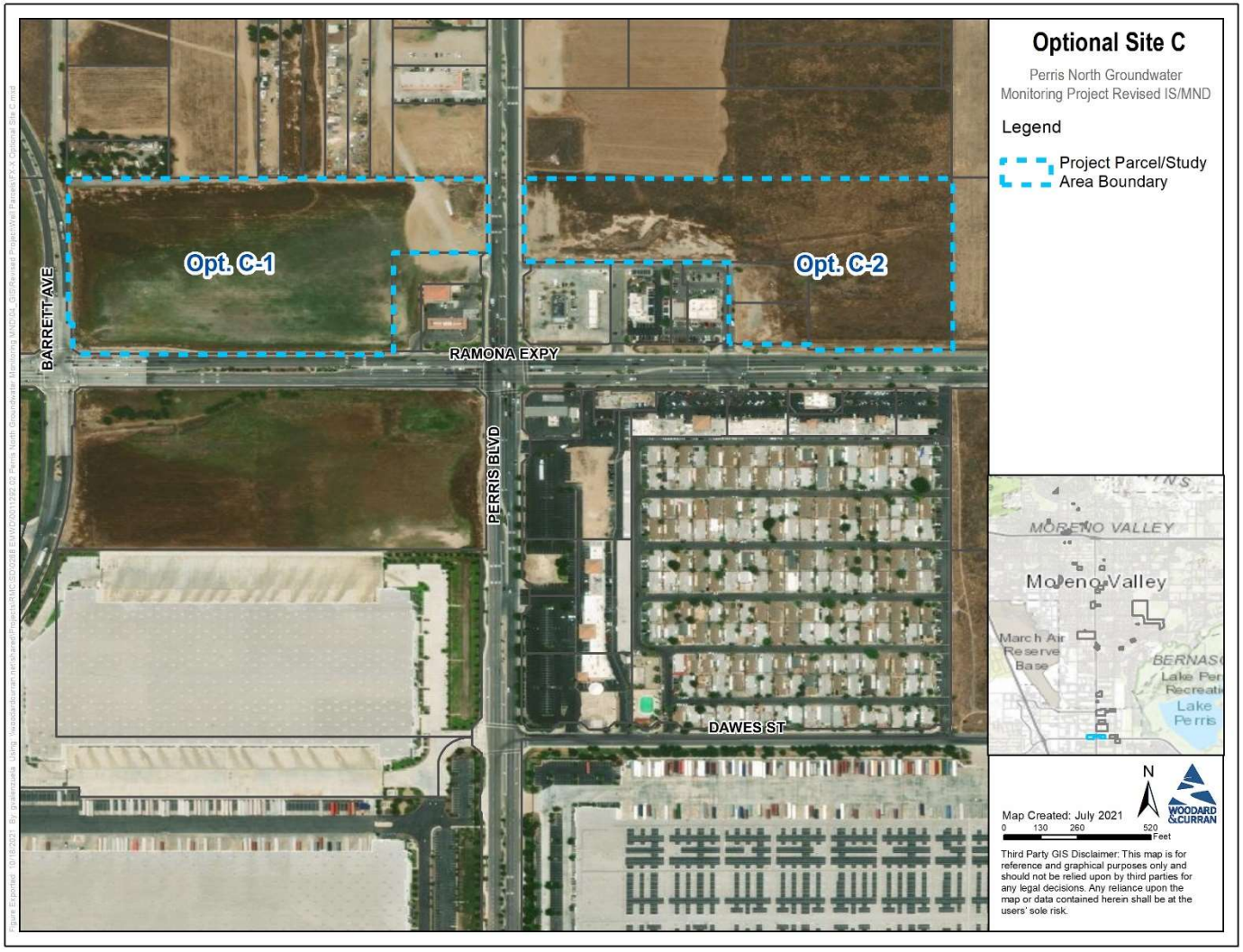
**Optional Site C-2 parcel** is located on the east side of Perris Boulevard and north of Ramona Expressway. To the southwest of the site is a commercial area including gas stations and restaurants. The site is generally level, mowed vegetation, with limited trees. A stormwater channel is present along the northern side of Ramona Expressway.

Two parcels are shown in Figure 2-24 and the final location of the well cluster may be anywhere within the parcels.

Optional Site C-1: View to the west from Perris Blvd.

Optional Site C-2: Looking northwest towards Perris Blvd from Ramona Expressway

**Figure 2-24: Optional Site C Parcels**



**Optional Site D parcels:** Three parcels are being considered for Optional Site D, designated Optional site D-1, Optional Site D-2, and Optional Site D-3. All three sites are large, undeveloped fields of primarily mowed vegetation. Commercial or light industrial land use is located to the north of the site.

**Optional Site D-1:** Located at the northwestern corner of the intersection of Ramona Expressway and Redlands Avenue.

**Optional Site D-2:** Located at the northeastern corner of the intersection of Ramona Expressway and Redlands Avenue.

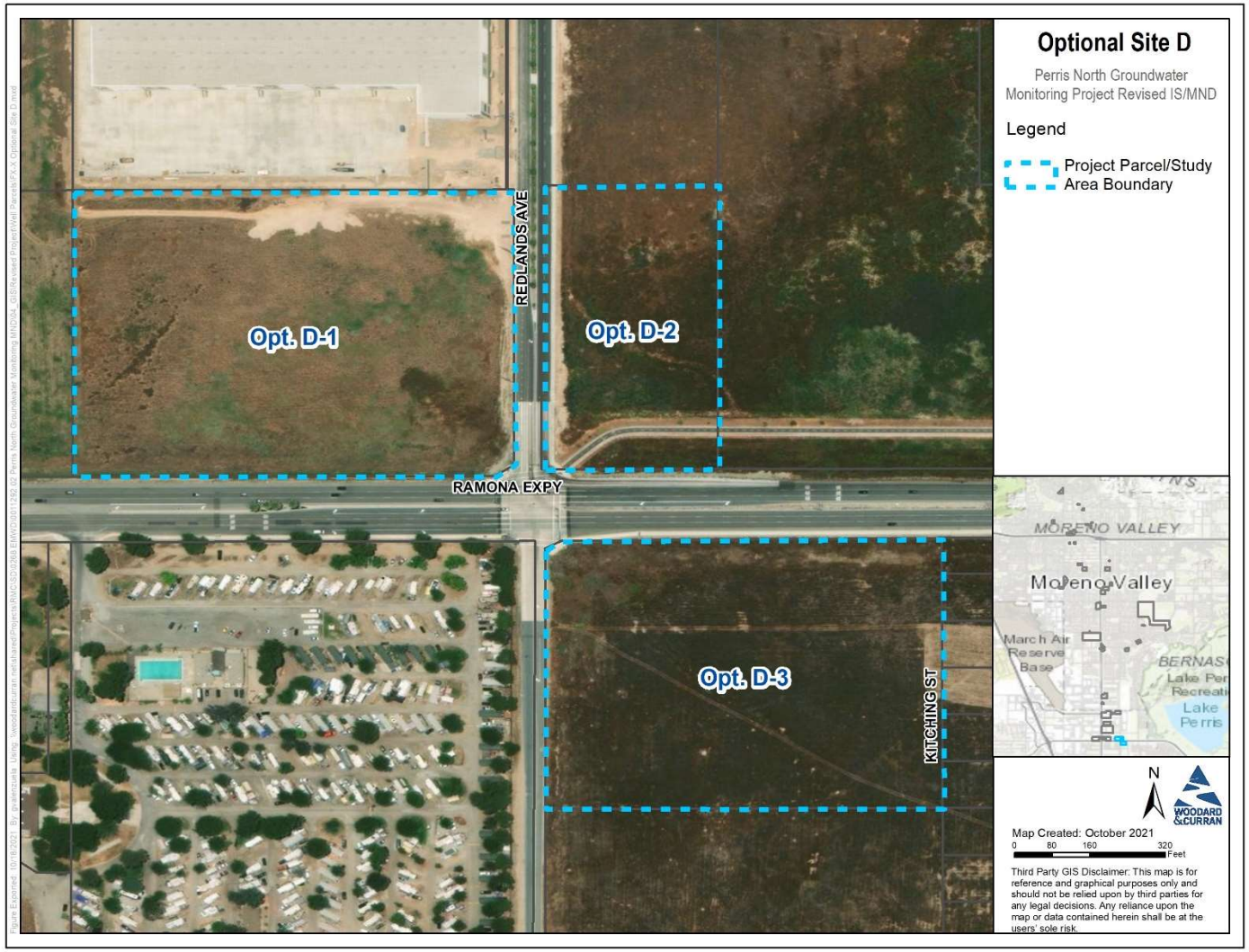
**Optional Site D-3:** Located at the southeastern corner of the intersection of Ramona Expressway and Redlands Avenue. An RV park is located at the southwest corner of the intersection, across Redlands Avenue from Optional Site D-3. The RV park is surrounded by a cinderblock wall. Figure 2-25 shows the parcels and adjacent areas. The final location of the well cluster may be anywhere within the parcels.

Optional Site D-1: View of western parcel, looking north from Ramona Expressway.

Optional Site D-2: View of northeast parcel, looking south from Redlands Ave.

Optional Site D-3: View of southeast parcel, looking north from Redlands Ave.

**Figure 2-25: Optional Site D Parcels**



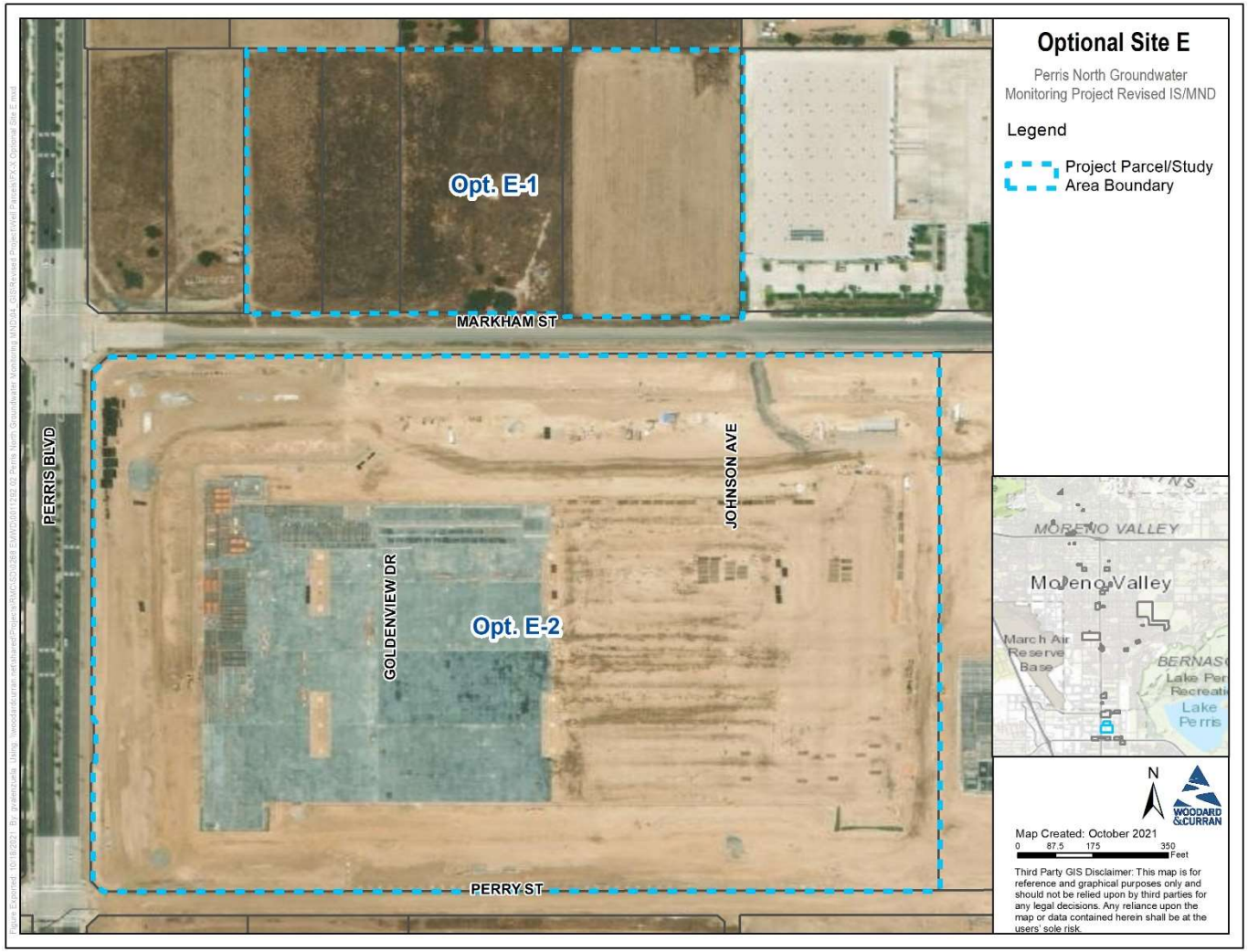
**Optional Site E parcel:** Located along Markham Street between North Perris Boulevard and Redlands Avenue. The northern portion of the site is north of Markham Street, and consists of undeveloped open parcels of primarily dirt and mowed vegetation. A small fence runs north to south on the site separating two parcels within the site. The southern portion of the site is south of Markham Street and houses a retailer warehouse facility. It is landscaped and has a stormwater channel running parallel to Markham Street between the street and the warehouse. The channel is separated from the street by a metal fence, and the warehouse by a cement wall.

The parcel is shown in Figure 2-26 and the final location of the well cluster may be anywhere within the parcel.

Optional Site E-1: North side of Markham Street, facing west.

Optional Site E-2: South side of Markham Street, facing west.

**Figure 2-26: Optional Site E Parcel**



## 2.3 Environmental Setting and Existing Conditions

### Land Uses and Sensitive Receptors

There are no state-designated scenic highways in the proposed Project vicinity. The nearest eligible County-designated scenic highway is State Route 74, approximately 4 miles south of the proposed Project site. Ramona Expressway, located within the South Area of Concern, is a County-eligible scenic highway, but is not designated as a scenic highway (Riverside County, 2017). The nearest eligible state-designated scenic highway is State Route 243, approximately 20 miles east of the project site (Caltrans, 2019).

The MARB/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, as well as general commercial purposes. The runways at the base are located along the western edge of the base, approximately 1.5 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 six miles south of the proposed Project site.

Sensitive receptors within the project vicinity include single-family residences, multi-family residences, schools, churches, day care centers, and hospitals. In some cases, residences and/or schools are located adjacent to the monitoring well parcels, as noted in the well parcel descriptions above. The following schools are located within one-quarter mile of a proposed Project well parcel: Butterfield Elementary School, Chaparral Hills Elementary School, Creekside Elementary School, Hendrick Ranch Elementary School, Midland Elementary School, Red Maple Elementary School, Sunnymead Elementary School, Victoriano Elementary School, Badger Springs Middle School, March Middle School, Vista Del Lago High School, Moreno Valley Community Adult School, and Bayside Community Day School. The Riverside County Regional Medical Center and Moreno Valley Community Hospital are located within one mile of a proposed Project well parcel.

### Public Services

Electrical service within the City of Moreno Valley and City of Perris is provided by Southern California Edison and Moreno Valley Utility. Natural gas service within the City of Moreno Valley and City of Perris is provided by the Southern California Gas Company. Water and wastewater services within the City of Moreno Valley and City of Perris is provided by EMWD. Solid waste services within the City of Moreno Valley are provided by the Waste Management of Inland Empire. Solid waste services within the City of Perris is provided by CR&R Environmental Services.

The Riverside County Transportation Commission owns a rail line located west of the City of Moreno Valley parallel to I-215 (roughly 1.25 miles west of the proposed 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, 20, 31 and 41 (Riverside Transit Agency, 2021). Bikeways also exist in the project vicinity. Existing bikeways adjacent to proposed Project well parcels are a Class 1 multi-use path along Manzanita Avenue, Class 2 bike lanes along Manzanita Avenue, Indian Street, Heacock Street, Alessandro Boulevard, Cactus Avenue, Iris Avenue, and Lasselle Street and Class 3 bike routes along Box Springs Road, Cottonwood Avenue, Indian Street, and Cactus Avenue. 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 North Perris Boulevard and Ramona Expressway within the vicinity of the proposed Project well parcels.

**Environmental Jurisdictions**

The proposed Project is located within the South Coast Air Quality Management District (SCAQMD), within the South Coast Air Basin (SCAB). The cities and proposed Project parcels 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 are in the project vicinity along Kitching Street, Heacock Street, Camino Flores, East Oleander Avenue, and Ramona Expressway. 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 Street.

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 the West San Jacinto Groundwater Sustainability Agency (GSA) Plan Area. The San Jacinto Groundwater Basin has been designated a High Priority Basin under the State of California's Sustainable Groundwater Management Act (SGMA) 2014 CASGEM Basin Prioritization and SGMA 2015 Basin Prioritization, and subsequently in the recently completed 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 reduce decreasing groundwater levels and protect existing

groundwater uses and are being rolled out first in critically overdrafted basins followed by 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. EMWD's Board of Directors serve as the West San Jacinto GSA. The West San Jacinto GSA adopted a Groundwater Sustainability Plan (GSP) for the San Jacinto Groundwater Basin on September 15, 2021, which includes the proposed Project area, and will be submitting the GSP to the Department of Water Resources (DWR) before the January 31, 2022 deadline.

The proposed Project area 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 groundwater 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

Sixteen clusters of monitoring wells are proposed within the proposed Project area with an additional five optional locations included for flexibility, as shown in **Figure 2-4**. For each well site, up to four boreholes of up to 12-inch diameter each would be drilled, and up to four individual 4-inch diameter casings per well site would be installed, along with a sampling pump located inside the well. Well clusters 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 515 feet based on the preliminary assessment, but may be deeper based on conditions encountered during completion of field activities, 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 quarterly data collection visits as described in *Section 2.4.6*.

### 2.4.2 Well Construction

Monitoring well construction would involve site clearing and grading on vacant parcels, well drilling and installation, and restoration of the site to pre-construction conditions. Up to 16 sites would be constructed, each of which would have a cluster of up to four 12-inch diameter boreholes, and up to four individual 4-inch maximum casings in each borehole. Wells would be constructed using sonic drilling or mud rotary drilling, with sonic drilling

being the preferred method. Sonic drilling uses vibration energy to advance a steel casing to the borehole depth. The action is applied vertically, and the drill string rotates for even distribution of the energy and impact at the bit face. The monitoring well is constructed inside the steel casing that is first driven to total depth and retracted in sections as the well is constructed. Advantages of sonic drilling include a continuous core to total depth, which allows a geologist to log (describe) the subsurface in detail, the absence of mud that must be cleared out of the borehole during and after well construction, and 24-hour continuous drilling is not required. Additionally, set up time for sonic drilling is less than that for mud rotary drilling, allowing for a faster construction schedule. Direct mud rotary is typically used for deeper and larger wells and involves the use of an engineered, viscous "mud" that circulates throughout the borehole to a container or pit at ground surface. The mud lifts the drill cuttings to the surface, and the mud keeps the borehole open so it does not collapse while the monitoring well is constructed in the open borehole.

In the case of the proposed Project, sonic drilling is the preferred construction method as it requires a smaller construction footprint, generates less overall investigated derived waste, and its vibratory component is no more intrusive than mud rotary drilling. However, if needed (e.g., due to depth limitations of sonic drilling), mud rotary drilling techniques would be used.

Well drilling via the sonic or direct mud rotary drilling method would be conducted during daytime hours only and 24-hour drilling operations are not required. For well drilling, mobilization through demobilization, including but not limited to the well construction and development, is anticipated to take up to 8 weeks for each cluster of wells (up to 4 wells at each site). Wells would be constructed to avoid existing underground and overhead utilities. **Table 2-1** summarizes the construction duration for each of the well clusters, based on maximum potential well depth. For the purposes of this analysis, all boreholes within each well cluster were assumed to have the maximum depth for the cluster.

**Table 2-1: Maximum Well Depth and Construction Timeline**

| Monitoring Well (cluster of four 12-inch wells) | Maximum Depth (ft) | Total Construction Duration (weeks) | Drilling Duration (weeks) | Volume of Drill Cuttings (cubic yards) | Total Volume of Material* (cubic yards) | Haul Trips** |
|---|---|---|---|---|---|---|
| MW-1 | 515 | 8 | 4 | 60 | 110 | 7 |
| MW-2 | 500 | 8 | 4 | 59 | 109 | 7 |
| MW-3 | 400 | 8 | 4 | 47 | 97 | 7 |
| MW-4 | 300 | 8 | 4 | 35 | 85 | 6 |
| MW-5 | 400 | 8 | 4 | 47 | 97 | 7 |
| MW-6 | 345 | 8 | 4 | 40 | 90 | 6 |
| MW-7 | 320 | 8 | 4 | 37 | 87 | 6 |
| MW-8 | 320 | 8 | 4 | 37 | 87 | 6 |
| MW-9 | 320 | 8 | 4 | 37 | 87 | 6 |
| MW-10 | 320 | 8 | 4 | 37 | 87 | 6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| MW-11 | 60 | 8 | 4 | 7 | 57 | 4 |
| MW-12 | 320 | 8 | 4 | 37 | 87 | 6 |
| MW-13 | 400 | 8 | 4 | 47 | 97 | 7 |
| MW-14 | 360 | 8 | 4 | 42 | 92 | 6 |
| MW-15 | 220 | 8 | 4 | 26 | 76 | 5 |
| MW-16 | 360 | 8 | 4 | 42 | 92 | 6 |
| Optional Site A | 140 | 8 | 4 | 16 | 66 | 5 |
| Optional Site B | 320 | 8 | 4 | 37 | 87 | 6 |
| Optional Site C | 320 | 8 | 4 | 37 | 87 | 6 |
| Optional Site D | 320 | 8 | 4 | 37 | 87 | 6 |
| Optional Site E | 320 | 8 | 4 | 37 | 87 | 6 |

*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 at the site. In total, the proposed Project would disturb approximately 3.67 acres of surface area for construction of all 16 well clusters. **Table 2-1** shows the volume of drill cuttings to be exported from each well site, assuming 12-inch boreholes and maximum potential depth of each well. Additional material would be exported from each well site during grading. The total material export associated with each well cluster would range from 57 to 110 cubic yards. Although 21 individual sites are analyzed in this IS/MND, only 16 well clusters would ultimately be constructed. The 16 deepest well clusters (i.e., the most impactful in terms of materials export and hauling trips) would have an average of 43 cubic yards of total material export (see **Table 2-1**), and an additional approximately 50 cubic yards for grading at each well cluster. In total, the proposed Project would generate approximately 1,481 cubic yards for all 16 of the proposed well clusters (again, using the 16 most impactful well clusters). 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*). 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 cluster is estimated to require 10 workers during construction. Due to COVID-19 concerns, it is assumed that workers would not carpool to the site, resulting in 20 one-way trips per day for worker transportation to each well. Most materials are expected to be stored on-site, but in the event that separate staging areas are used, construction could 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 101 haul truck trips would be required across all 16 well clusters with an average of 6 total haul trips per well cluster (see **Table 2-1**).

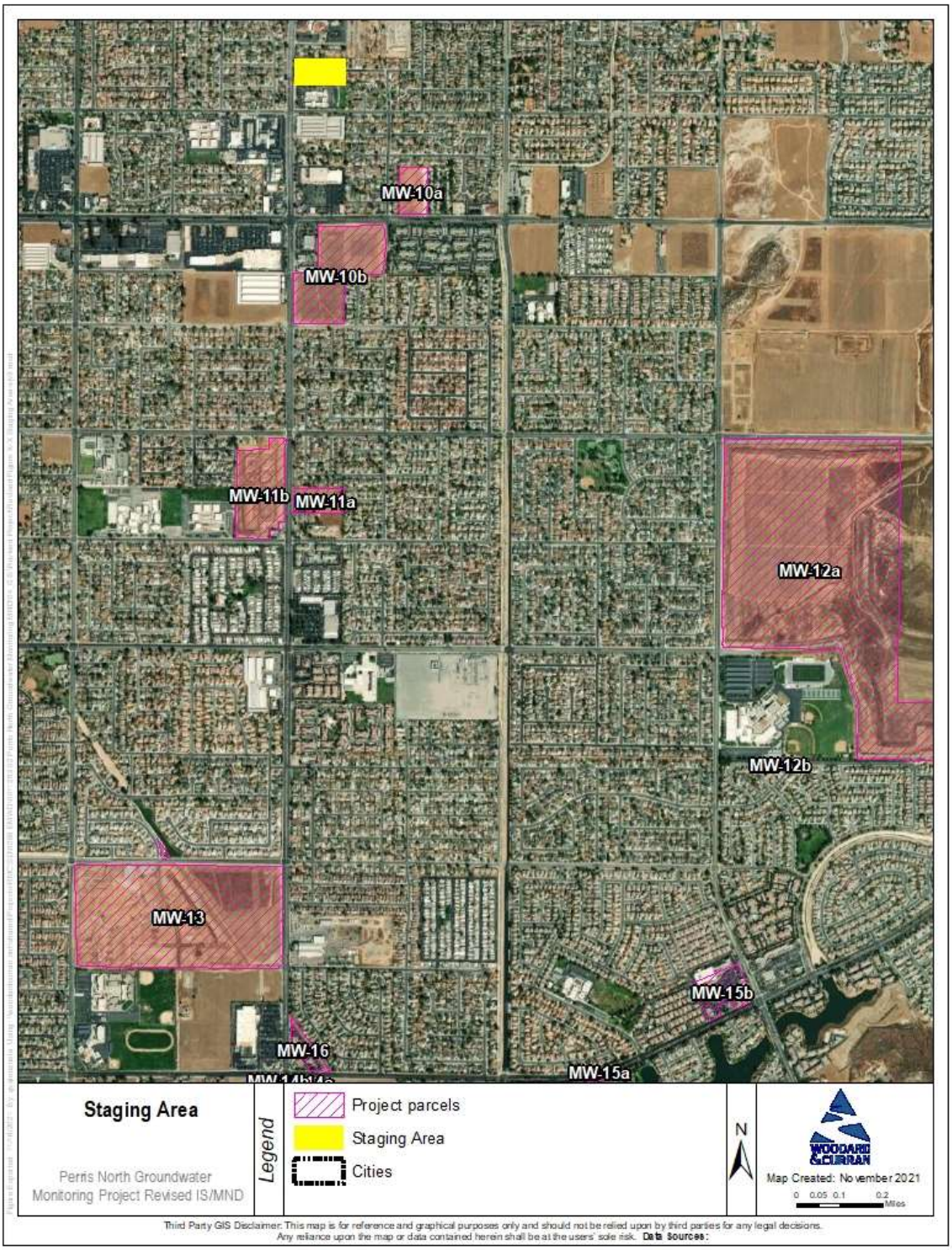
### 2.4.4 Construction Schedule

In total, construction of the proposed Project is estimated to take 15 months, with anticipated commencement in November 2022 and completion in February 2024. Although well construction would be staggered, up to two well clusters could 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 site, EMWD properties would be used for equipment storage and staging. Anticipated staging areas include the EMWD-owned proposed monitoring well site (MW Site-14b), 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 Wells Project. One site is being considered for EMWD's new treatment plant and is considered as a possible staging area. This site is along Perris Boulevard between Bay Avenue and St. Christopher Lane in the city of Moreno Valley. No more than six trips per day to and from each staging area would occur during construction. Anticipated staging areas are shown in **Figure 2-27**.

## Figure 2-27: Potential Staging Areas



### 2.4.6 Operations and Maintenance

Once operational, groundwater wells may be equipped with pressure transducers that would allow for continuous logging of groundwater level data. Manual water level and groundwater quality sampling would occur at each monitoring well location quarterly for one-week periods. During quarterly sampling events, the pressure transducers would be removed from the wells and redeployed after each quarterly event. A mobile sampling trailer equipped with a water level sounder will be utilized to tag groundwater levels in each well at every site. In the same manner, the mobile sampling trailer will be equipped with a submersible pump that will be utilized to perform groundwater quality sampling. During groundwater quality sampling, field parameters will be collected using a multi-parameter meter and the sample will be collected when the parameters stabilize, and a representative groundwater sample is retrieved. Groundwater samples would be taken off-site for laboratory analysis.

### 2.4.7 Operation and Maintenance Vehicle Trips

For each quarterly well visit, one truck with a sampling trailer and one support truck would visit each well (for a total of 2 trucks). This would result in a total of 20 one-way trips per monitoring well cluster per quarter, or a total of 1,280 vehicle trips per year. Assuming each well visit originates separately from EMWD's headquarters, a total of approximately 19,260 vehicle miles per year would be traveled to service the 16 well clusters annually.

### 2.4.8 Environmental Commitments

The following standard EMWD best management practices would be implemented for the proposed Project:

- The design of the facilities would be based on the lithologic information collected during drilling of each borehole, and the construction would be consistent with the Riverside County Department of Environmental Health requirements for drilling and installation of groundwater monitoring wells and consistent with the California Well Standards.
- Groundwater encountered during construction would be containerized and/or discharged to EMWD's sewer for treatment and reuse. Investigation derived water would also be discharged to the sanitary sewer for treatment at EMWD's wastewater treatment plant, or would be temporarily stored in containers (such as 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 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.
- During construction, the contractor would be required to comply with SCAQMD Rule 403 Fugitive Dust Control requirements.

- During construction, best management practices (BMPs) would be implemented 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.

- A 24-foot "fall zone" buffer would be established around the drill rig and well construction footprint for each well. Wells and drill rigs would be located such that no buildings (residential, commercial, industrial) would be within the fall zone.

## 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 (temporary high lines to hydrants and sewer) |
| City of Perris | Encroachment Permit for work in right-of-way (temporary high lines to hydrants and sewer) |
| Riverside County Department of Environmental Health | Well Drilling Permit |
| State Water Resources Control Board | NPDES Construction General Permit for Storm Water Discharges (total disturbance area for all wells exceeds 1 acre) |
| Regional Water Quality Control Board | NPDES permit for dewatering and test water discharges during construction |
| Riverside County Flood Control and Water Conservation District | Encroachment Permit for well drilling near stormwater facilities |

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# 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 16 monitoring well clusters each with up to four wells, for a maximum of 64 individual wells. Twenty-one potential sites have been evaluated to allow for flexibility, with seventeen potential sites in the City of Moreno Valley, and four potential sites in the City of Perris. Exact well locations on each site are to be determined. As such, this MND is evaluating a series of project parcels, within which the well clusters would be constructed. Wells would be drilled to a maximum depth of 60 feet to 515 feet below ground surface. Once operational, well data would be collected remotely on a monthly basis, and site visits made quarterly to conduct maintenance and collect samples. Data will be used to help improve 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, as well as one that runs parallel to Ramona Expressway between Perris Boulevard and Redlands Avenue.

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
    - 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 Pechanga Band of Luiseño Indians, and Rincon Band of Luiseño 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 | [ ] | Public Services |
| [ ] | Recreation | [ X ] | Transportation | [ X ] | Tribal Cultural Resources |
| [ ] | Utilities/Service Systems | [ ] | 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.

Al Javier

Digitally signed by Al Javier
Date: 2021.12.08 10:32:12 -08'00'

December 8, 2021

Signature | Date

Alfred Javier

Printed Name | For

*Page intentionally left blank.*

## 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, at the southern end 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, which is anticipated to last 15 months. 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. Proposed wells may either have well heads flush-mounted to the well pad or existing pavement, or may include a standpipe no taller than three feet above ground surrounded by traffic bollards (see Figure 3-1).

**Figure 3-1: Example of Completed Wells**

*Example of aboveground wellheads (left) and flush-mounted well heads (right).*

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 generally undeveloped lots 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 minimally noticeable to the public eye once constructed and therefore would not affect public views. The wells would either be flush-mounted to pavement or have a short standpipe no taller than 3 feet with traffic bollards (see Figure 3-1). 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 approximately eight weeks from mobilization to demobilization (49 working days per well cluster, plus approximately seven days for preparation work). Well construction would require up to four weeks of drilling, which would be limited to daytime hours. However, lights may be required for site 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 security lighting during construction 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 Security Lighting.** All nighttime security lighting shall be of the lowest illumination necessary for Project security, 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 and Monitoring Program of the California Resources Agency, to non-agricultural use? | [ ] | [ ] | [ X ] | [ ] |
| 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 and Farmland of Statewide Importance. There are parcels throughout the proposed Project area that are designated as Farmland of Local Importance, several of which are proposed monitoring well sites (discussed in further detail below under Impact (a)). 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; the only potential well sites zoned for industrial use in the City of Moreno Valley are Optional Site A-1 and A-2. 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 1.6 miles from the closest potential 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) Less Than Significant

None of the proposed well sites are classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. All proposed well sites are located on vacant parcels or developed land, where construction and operation of a monitoring well would not cause conversion of farmland to non-agricultural use. Fifteen potential well parcel sites are located on land designated as Farmland of Local Importance: MW Site-09b, MW Site-

10b, MW Site-12a, MW Site 13, MW Site-14b, and Optional Site A-1, Optional Site B-1 and B-2, Optional Site C-1 and C-2, Optional Site D-1, D-2, and D-3, and Optional Site E-1 and E-2. 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). None of the proposed Project parcel sites designated as Farmland of Local Importance are under agricultural production or zoned for agricultural use. Furthermore, the permanent well footprints would be small, approximately 100 square feet (for each cluster), and would not impact use of the remainder of the parcels. The proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, and would have a negligible impact on Farmland of Local Importance. Therefore, the impact would be less than significant.

b) Less Than Significant

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). As noted above, the City of Moreno Valley has no agricultural zoning designations and limits agricultural uses involving structures to areas zoned for industrial use. The only potential well sites zoned for industrial use in the City of Moreno Valley are Optional Site A-1 and A-2. While agricultural uses are permitted on these sites, neither one is under agricultural production, and both are surrounded by commercial and industrial uses such as warehouses and storage facilities. Additionally, the permanent well site footprint is small (approximately 100 square feet) and would not impact land use on the remainder of the site. Therefore, the proposed Project's impact on existing zoning for agricultural use or a Williamson Act contract would be less than significant.

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 on developed land 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 Subbasin 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 adversely affecting a substantial number of people? | [ ] | [ ] | [ X ] | [ ] |

*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 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 2018

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<br>• Cancer Burden > 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million)<br>• Chronic $ Acute Hazard Index $\geq$ 1.0 (project increment) | • Maximum Incremental Cancer Risk $\geq$ 10 in 1 million<br>• Cancer Burden > 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million)<br>• Chronic $ Acute Hazard Index $\geq$ 1.0 (project increment) |
| Odor | Project creates an odor nuisance pursuant to SCAQMD Rule 402 | 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 would include 16 well clusters requiring a temporary disturbance area of 10,000 square feet, or 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 16 groundwater monitoring well clusters 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) 2020.4.0, 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***

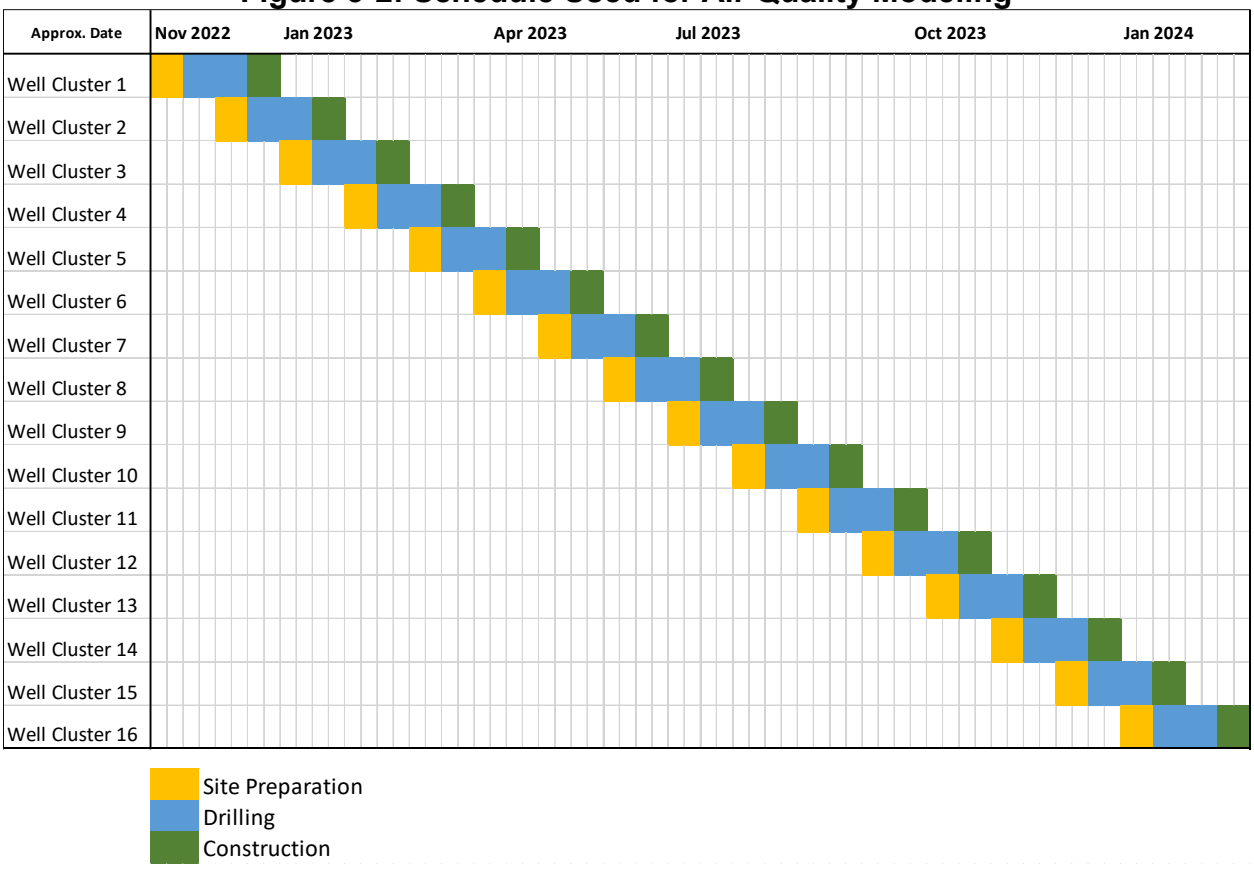
The proposed Project includes the installation of 16 well clusters, with an estimated construction period of 8 weeks per well cluster, with work occurring 7 days per week. The approximate schedule for each well is as follows:

- Weeks 1-2 – site preparation (8-hour workdays)
- Weeks 3-6 – well drilling (8-hour workdays)
- Weeks 7-8 – 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 November 2022. Engineering estimates provide an overall project schedule lasting for 15 months (until February 2024). The schedule provided below, which corresponds to the project timeline and is the fastest schedule with two crews, was used to calculate emissions.

**Figure 3-2: 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 were calculated using separate model runs. The following modeling runs were conducted:

- Total construction emissions and operational emissions: This model run included construction of all 16 well clusters, beginning in November 2022 and concluding in February 2024 in order to estimate the maximum annual emissions (Figure 3-1). This model run was also used to estimate operational emissions (both annual and maximum daily operational emissions). As shown in the schedule, either the site preparation or construction phases would be underway at one site at any given time. Because the equipment list and hours of equipment use for the site preparation and construction phases are identical, these phases were modeled as one continuous phase (beginning with site preparation for the first well, and concluding with construction for the last well). Drilling would also be underway at one site at any given time, and was modeled as one continuous phase.
- Maximum daily construction emissions: In order to capture the possibility that the construction schedule does not perfectly stagger the work at each site, another model run was conducted to estimate the maximum daily emissions that would occur if site prep/construction was underway at two sites simultaneously, or if drilling was underway at two sites simultaneously. The construction equipment for each phase was doubled in order to account for work at two sites, and the modeled schedule extended from January 2023 through July 2023 in order to capture both summer and winter emissions. A single model run was used to calculate emissions of site preparation/construction at two sites and drilling at two sites. Maximum daily emissions were then determined based on the most impactful phase and season for each modeled pollutant.

***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 non-asphalt surface” was used. It is also assumed that each well would require ground disturbance area of 10,000 square feet, although it is more likely actual disturbance would be less.

***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 3-5: 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 | 8 hrs/day |
| Utility Truck | 3 hrs/day | Drilling Rig | 8 hrs/day |
| Water Truck | 2 hrs/day | Crane | 8 hrs/day |
| Welder | 4 hrs/day | Utility Truck | 8 hrs/day |
| Compressor | 6 hrs/day | Water Truck | 6 hrs/day |
| Pump | 6 hrs/day | Welder | 8 hrs/day |
| Pick-up Trucks (x2) | 2 hrs/day | Compressor | 8 hrs/day |
| Concrete Pumper | 2 hrs/day | Pick-up Trucks (x2) | 6 hrs/day |
| Generator | 6 hrs/day | Generator | 8 hrs/day |

### *Vehicle Trips*

Vehicle trips were based on project description information as discussed in *Section 2.4.3*. It is estimated that 10 workers are needed each day at each site, and no car-pooling would occur, resulting in 20 one-way vehicle trips per site per workday. Up to three round trips for materials deliveries would occur each day (across both sites), resulting in six one-way vehicle trips.

Haul trips for disposal of materials were calculated based on maximum likely well depths and grading material for each well site. As described in **Table 2-1**, an estimated 101 round-trip haul trips would be required for the proposed Project in total.

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 1,280 vehicle trips would occur annually traveling approximately 19,260 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 default 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 of whether 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. This requirement was factored into the CalEEMod modeling runs.

**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. .

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 3-6: Maximum Daily Construction Emissions (pounds/day)**

| Emissions Source | Reactive Organic Gases (ROG) | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| Construction Equipment | 6 | 50 | 49 | <1 | 2 | 2 |
| Offsite emissions | <1 | <1 | 1.5 | <1 | <1 | <1 |
| Fugitive dust (with required fugitive dust controls) | -- | -- | -- | -- | <1 | <1 |
| **Total Maximum Daily Emissions** | **7** | **50** | **51** | **<1** | **2.4** | **2** |
| *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, which was used in the analysis for the proposed Project (a well site disturbance footprint is 0.2 acre). As shown in **Table 3-9**, project construction emissions do not exceed the one-acre LST which applies to receptors at a distance of 25 meters (82 feet) from the proposed Project site boundary and represents the most conservative LST distance.

**Table 3-7: Maximum Daily Emissions Compared to LSTs (pounds/day)**

| | ROG | $NO_x$ | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| Proposed Project | 7 | 50 | 51 | <1 | 2.4 | 2 |
| *Proposed Project LST (one-acre LST)* | -- | *118* | *602* | -- | *4* | *3* |
| **Threshold exceeded?** | **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 3-8: Annual Project Construction Emissions Compared to De Minimis Thresholds (tons/year)**

| Emissions Source | Ozone (VOC/ROG) | CO | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| Construction Emissions | <1 | 7 | <1 | <1 |
| *De Minimis Threshold* | *10* | *100* | *100* | *70* |
| **Threshold Exceeded?** | **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 3-9: Maximum Daily Project Operational Emissions Compared to SCAQMD Thresholds**

| Emissions Source | ($NO_x$) | (VOC) | CO | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| Operational Emissions (pounds/day) | <1 | <1 | <1 | <1 | <1 | <1 |
| *SCAQMD Mass Daily Threshold (pounds/day)* | *55* | *55* | *550* | *150* | *150* | *55* |
| **Threshold Exceeded?** | **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 a proposed Project well parcel: Butterfield Elementary School, Chaparral Hills Elementary School, Creekside Elementary School, Hendrick Ranch Elementary School, Midland Elementary School, Red Maple Elementary School, Sunnymead Elementary School, Victoriano Elementary School, Badger Springs Middle School, March Middle School, Vista Del Lago High School, Moreno Valley Community Adult School, and Bayside Community Day School. The Riverside County Regional Medical Center and Moreno Valley Community Hospital are located within one mile of a proposed Project well parcel.

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, hydrological interruption, or other means? | [ ] | [ ] | [ ] | [ X ] |
| 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 November 2021 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 the US Department of Agriculture (USDA) *Soil Survey for the Western Riverside Area, Perris, CA* and *Sunnymead, CA* US Geological Survey (USGS) 7.5-minute topographic quadrangles; literature detailing the habitat requirements of subject species; and aerial photographs. 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 for Planning and Consultation (IPaC) system were reviewed to determine if any special status wildlife, 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 documented 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**).

Field reconnaissance surveys of the proposed Project sites were performed from November 2 through November 4, 2021 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. The construction of each monitoring well would require disturbance of an approximately 10,000 square foot area and the operation of each well is estimated require an approximately 1,600 square foot area for temporary monitoring equipment. The study area was surveyed on foot and visually inspected with the aid of binoculars (8 x 32) as necessary. Survey conditions were clear skies, winds of 0-6 miles per hour, and a temperature of 56-78 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.

A burrowing owl (*Athene cunicularia*) (BUOW) habitat assessment was also performed during the field survey to identify potential burrows and BUOW signs within the proposed Project sites and adjacent areas. The survey included a systematic search for burrows and BUOW signs by walking through potential habitat and surveying inaccessible areas with binoculars. 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. 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, and/or signs were recorded and mapped with coordinates. One BUOW individual was observed during the reconnaissance field survey at the MW Opt. C-2 Project site.

The proposed Project sites provide limited habitat for wildlife species that commonly occur within urban communities in Riverside County. Common urban-adapted avian species were observed on site during the survey including killdeer (*Charadrius vociferus*), red-tailed hawk (*Buteo jamaicensis*), Say's phoebe (*Sayornis saya*), black phoebe (*Sayornis nigricans*), Savannah sparrow (Passerculus sandwichensis), song sparrow (Melospiza melodia), common raven (Corvus corax), American crow (Corvus brachyrhynchos), rock pigeon (Columba livia), mourning dove (Zenaida macroura), house finch (Haemorhous mexicanus), yellow-rumped warbler (Setophaga coronata), California gull (Larus californicus), American kestrel (Falco sparverius), and western meadowlark (Sturnella neglecta). California ground squirrel (Otospermophilus beecheyi) and coyote (Canis latrans) were the only two live mammals and the western fence lizard (Sceloporus occidentalis) was the only reptile observed on site during the survey. Fourteen California horned larks (Eremophila alpestris actia) (CDFW Watch List Species) were observed foraging throughout the proposed Project site MW-10b during the November 2 survey; however, nesting and/or mating behaviors were not observed. One BUOW (CDFW Species of Special Concern), observed at Project site MW Opt. C-2, was flushed from its burrow during the field survey on November 3. Both of these Project sites displayed signs of recent grading and are classified as disturbed habitats.

a) Less than Significant Impact with Mitigation

The proposed Project sites are located within a highly developed urban area, highly disturbed and surrounded by existing commercial and residential development. The literature review identified 17 sensitive plant species and 35 sensitive wildlife species recorded within five miles of the proposed Project sites (see Attachment 3, Table 3 of **Appendix B** to this MND). Although one sensitive plant community, sycamore alder riparian woodland, was identified within five miles of the sites, special status plant species are not expected to occur on the sites due to the lack of specific habitat types or suitable substrates as well as the high levels of historic and existing disturbance. Out of the 35 wildlife sensitive species identified, 33 of these species are not expected to occur due to lack of suitable habitat (e.g., riparian, scrub, woodland). One BUOW individual was observed at MW Opt. C-2 parcel, and 14 California horned larks were identified foraging

at MW-10b parcel during the field surveys on November 2 and 3, 2021. An active BUOW burrow was identified at MW Opt. C-2, associated with the observed BUOW individual.

Undeveloped areas at the proposed Project sites that contain low-growing, non-native ruderal species may provide low quality or marginal foraging and/or nesting habitat for the BUOW and California horned lark species. Although BUOW individuals were only observed at the MW Opt. C-2 site, burrows were present within six of the proposed Project sites that have potential to support BUOW: MW-03a, MW-03b, MW-09a, MW-10b, MW-13a, and MW Opt. C-2. The remaining proposed Project sites where burrows were not observed contained low quality habitat and the potential for this species to occur is low, The site-specific locations within highly developed/urbanized areas and limited available habitat structure to form burrows would likely deter individuals from long-term use of the sites.

Due to the observed presence of BUOW and California horned lark on some of the proposed Project parcels, and the presence of suitable habitat on other parcels in the proposed Project, construction activities could potentially interfere with or deter the BUOW or California horned lark species from utilizing the identified proposed Project sites for nesting or foraging. In order to avoid and minimize the potential for impacts to these sensitive species, **Mitigation Measure BIO-1** would be implemented to avoid direct impacts to burrowing owls and **Mitigation Measure BIO-2** would be implemented to avoid impacts to nesting birds in potential Project sites that contain trees. With the implementation of **Mitigation Measures BIO-1** and **BIO-2**, impacts to sensitive species would be less than significant.

As described in *Section 2 Project Description*, several proposed Project sites contain trees that could provide suitable nesting habitat for several common avian species. However, these trees are primarily located on the perimeter of the sites away from the potential construction footprints. In addition, construction of the Project would not require removal of any trees. Therefore, construction activities are not expected to result in direct impacts to tree nesting birds or habitat when they occur outside of nesting bird season. For project activities that take place during nesting bird season (January through August), direct impacts to ground nesting bird species could occur. In addition, indirect impacts such as construction noise and increased human presence could disturb nests if they are present in adjacent trees, even when outside of the direct construction footprint. To avoid direct or indirect impacts to nesting birds, implementation of **Mitigation Measures BIO-1** and **BIO-2** would require pre-construction surveys to minimize all impacts to nesting birds to less than significant.

Construction activities would primarily occur within highly disturbed sites that are located within a highly developed urban area and surrounded by existing commercial and residential development. No sensitive plant species were observed within the proposed Project sites and the existing high levels of disturbance would likely deter wildlife and nesting birds from using the site long-term. Nonetheless, **Mitigation Measure BIO-1** would be implemented to ensure avoidance of direct impacts to burrowing owls and

**Mitigation Measure BIO-2** would be implemented to avoid impacts to nesting birds in potential Project sites that contain trees. With implementation of **Mitigation Measures BIO-1** and **BIO-2**, impacts would be mitigated to less than significant.

b) Less than Significant Impact

One sensitive plant community, sycamore alder riparian woodland, was identified within five miles of the proposed Project sites. However, no sensitive plant communities, including the Sycamore alder riparian woodland, were observed within any of the proposed Project sites during field surveys as they typically have very specific habitat requirements that are not present within the primarily disturbed and developed Project sites. Cattail marsh vegetation was found at site MW-09a near a storm drain, but is not considered sensitive. The cattail marsh vegetation covers approximately 0.24 acres near the southern end of the MW-09a parcel. No vernal pools or fairy shrimp habitat were observed within the proposed Project sites, which are underlain by moderately to excessively well-drained soils, and site characteristics are not conducive to supporting vernal pools or vernal pool species.

The proposed Project sites are 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. Other than the cattail marsh vegetation observed at site MW-09a, no riparian/riverine habitats are present within the proposed Project sites as a result of past agricultural uses and urban development. The sites are currently either unvegetated, developed, dominated by exotic upland species not conducive to supporting riparian/riverine habitats, or lack hydric soils, significant hydrophytic vegetation and wetland hydrology necessary to be considered riparian/riverine habitat. Because no riparian/riverine habitat occurs within the proposed Project sites, with the exception of a small portion of site MW-09a, no further actions related to riparian/riverine habitat are required pursuant to the MSHCP.

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. Portions of the proposed Project sites are located within the habitat assessment area for BUOW, but not within a designated study area identified for any other MSHCP covered species, and the proposed Project is not located within a criteria cell or within Public/Quasi Public conserved lands (**Appendix B**). Based on the proposed 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.

Lastly, there are no jurisdictional features located within the proposed Project area that are under jurisdiction of the US Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), or CDFW. Therefore, the proposed Project would have a less than significant impact on existing riparian habitat or sensitive natural communities.

c) No Impact

Construction of the proposed Project would be confined to the identified Project sites primarily consisting of parks, disturbed lots, developed areas, and sites undergoing residential and industrial development. Based upon the findings in the Biological Resources Assessment (**Appendix B**), no riparian/riverine habitat is present within the project sites with the exception of a small portion of cattail marsh vegetation at site MW-09a. However, this habitat is present only near a storm drain and the site is entirely disturbed and developed. No jurisdictional features under the jurisdiction of the USACE, RWQCB, or CDFW were identified within any of the proposed Project sites. Therefore, the proposed Project would have no impact on jurisdictional wetlands.

No vernal pools or fairy shrimp habitat were observed within the proposed Project sites. The Project sites overall 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. 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 proposed Project sites. 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 (**Appendix B**). However, these two habitat connectivity areas would not be impacted by the proposed Project because they are separated by existing development and paved roadways and construction activities would be confined to the disturbed Project sites. Therefore, the proposed Project would have no impact on wildlife movement.

e) No Impact

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). County Ordinance No. 663 requires all proposed development projects that are located within the fee area to be reviewed to assess the most appropriate course of action to protect the survival of the species. Preparation of the Biological Resources Assessment **(Appendix B)** fulfills the requirements of the proposed Project's review under County Ordinance No. 663. The Biological Resources Assessment determined the proposed Project sites are located directly adjacent to urban roadways and the sites lack suitable grassland, coastal shrub and sagebrush habitat needed to support Stephen's Kangaroo Rat. Therefore, the proposed Project would not impact, or result is the loss of suitable habitat for the Stephen's Kangaroo Rat. There are no other biological resources protected by local policies or ordinances within the proposed Project area. Therefore, there would be no impact.

f) Less than Significant Impact with Mitigation

The proposed Project would be located in the Western Riverside MSHCP and portions of the proposed Project sites would be located within the BUOW habitat assessment area, but not within a designated survey area identified for any other MSHCP covered species. Although six proposed Project sites were observed to have the potential to support BUOW, and one site had an active individual and burrow, the remaining 15 sites contained low quality habitat and the potential for BUOW species to occur is low (see response to question *a*, above, for more details*).* Due to the observed presence of BUOW and suitable habitat, **Mitigation Measures BIO-1** and **BIO-2** would be implemented to reduce potential impacts to BUOW. The proposed Project sites would not be located within a criteria cell or Public/Quasi Public conserved lands. The closest Public/Quasi-Public conserved lands are located approximately 1.03 miles east of MW Opt. D-3 at the Lake Perris State Recreation Area (**Appendix B**). However, 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 with the implementation of **Mitigation Measures BIO-1** and **BIO-2**.

*Mitigation Measures:*

**BIO-1: Burrowing Owl Preconstruction Clearance Survey.** A qualified wildlife biologist shall conduct a pre-construction survey of the impact areas to confirm presence/absence of burrowing owl individuals no more than 14 days prior to construction. The survey methodology will be consistent with the methods outlined in the CDFW *Staff Report on Burrowing Owl Mitigation* (2012). If no active breeding or wintering owls are identified, no further action is required.

If burrowing owls are detected onsite, the following actions shall be implemented in accordance with the CDFW *Staff Report on Burrowing Owl Mitigation* (2012):

- A qualified wildlife biologist shall be onsite during initial ground-disturbing activities in potential burrowing owl habitat.
- No ground-disturbing activities shall be permitted within a buffer no less than 200 meters (656 feet) from an active burrow, depending on the level of disturbance, unless the qualified biologist determines a reduced buffer would not adversely affect the burrowing owl.
- Occupied burrows should not be disturbed during the nesting season (February 1 to August 31).
- During the nonbreeding (winter) season (September 1 to January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 50 meters (165 feet) from the burrow, depending on whether the level of disturbance is low, and if the active burrow is not directly affected by the project activity. A smaller or larger buffer may be established by the qualified biologist

following monitoring and assessments of the project's effects on the burrowing owls, following monitoring and assessments of the project's effects on the burrowing owls. If active winter burrows are found that would be directly affected by ground-disturbing activities, owls can be excluded from winter burrows according to recommendations made in the *Staff Report on Burrowing Owl Mitigation* (2012). Additionally, if burrowing owls are found on-site, a qualified biologist should prepare and submit a passive relocation program in accordance with Appendix E (i.e., Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the CDFW's Staff Report on Burrowing Owl Mitigation (2012) for CDFW review and approval prior to the commencement of disturbance activities on-site.

- Burrowing owls shall not be excluded from burrows until a Burrowing Owl Exclusion Plan is developed based on the recommendations made in Appendix E of the CDFW St*aff Report on Burrowing Owl Mitigation* (2012). The Burrowing Owl Exclusion Plan would be submitted to CDFW for review and approval prior to the commencement of disturbance activities on-site. The plan shall include, at a minimum:
  - Confirmation by site surveillance that the burrow(s) is empty of burrowing owls and other species
  - Type of scope to be used and appropriate timing of scoping
  - Occupancy factors to look for and what shall guide determination of vacancy and excavation timing
  - Methods for burrow excavation
  - Removal of other potential owl burrow surrogates or refugia onsite
  - Methods for photographic documentation of the excavation and closure of the burrow
  - Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take
  - Methods for assuring the impacted site shall continually be made inhospitable to burrowing owls and fossorial mammals until construction is complete
- Prior to passive relocation, compensatory mitigation at a ratio of 1:1 for lost breeding and/or wintering habitat shall be implemented onsite or offsite including permanent conservation and management of burrowing owl habitat through the recordation of a conservation easement, funding of a non-wasting endowment, and implementation of a Mitigation Land Management Plan based on the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) guidance. Mitigation lands would be identified through coordination with CDFW and on, adjacent, or proximate to the impact site where possible and where habitat is suitable to support BUOW. If required, compensatory mitigation should be completed prior to passive relocation

of owls and completion of construction.

- When the qualified biologist determines that burrowing owl are no longer occupying the project site and passive relocation is complete, construction activities may begin. A final letter would be prepared by the qualified biologist documenting the results of the passive relocation, and submitted to CDFW.
- Mitigation lands should be on, adjacent, or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.

**BIO-2: Preconstruction Nesting Bird Survey.** If Project construction occurs during avian nesting season (generally February 1 to August 31, but variable depending on seasonal and annual climatic conditions), as determined by a qualified biologist, then a survey for active nests shall be conducted by a qualified biologist within three days prior to construction activities to determine the presence/absence, location, and status of any active nests on-side and within 100 feet of the site. The biologist shall provide a written memorandum of results and findings prior to issuance of grading or other construction permits.

If nesting birds are found on site, a construction buffer of appropriate size (as determined by the qualified biologist) should be implemented around the active nests and demarcated with fencing or flagging. If ground/burrow nesting birds are identified, demarcation materials that will not provide perching habitat for predatory bird species should be used. Nests shall be monitored at a minimum of once per week by the qualified biologist until it has been determined that the nest is no longer being used by either the young or adults. No ground disturbance shall occur within this buffer until the qualified biologist confirms that the breeding/nesting is complete, and all the young have fledged and are capable of surviving independently of the nest. If project activities must occur within the buffer, they shall be conducted at a distance that will prevent project-related disturbances, as determined by the qualified biologist.

If no nesting birds are observed during pre-construction surveys, no further actions would be necessary.

## 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 November 2021 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 sites.

In July 2021 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 to identify 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 California Historical Landmarks list, the Built Environment Resources Directory as well as its predecessor the California State Historic Property Data File, and the Archaeological Determination of Eligibility list were also reviewed. Eighty-eight previously conducted cultural resource studies were identified within a half mile radius of the proposed Project area between 1953 to 2019. Twenty-two of these studies overlap portions of the proposed Project area and two discuss cultural resources within the proposed Project area (**Appendix C**). Thirty-six previously recorded cultural resources were identified within 0.5 miles of the Project area. Four resources had boundaries within the Project area (P-33-011604, P-33-016078, P-33-019865, and P-33-023936) and one was identified immediately adjacent to the Project area (P-33-008699). P-33-011604 consists of a historic-period agricultural well with turbine pump. P-33-016708 consists of the remnants of a historic-period water conveyance system and associated features. P-33-019865 includes the remains of a historic homestead and water conveyance system. P-33-023936 includes a historic-period alfalfa field with a loading dock.

In November 2021, 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.

A review of historical topographic maps and aerial photographs of the proposed Project area from the 1930s to the 2000s shows much of the area surrounding the Project sites were agricultural fields with sparse areas of residential development **(Appendix C).** Based on the aerial imagery, most of the agricultural land within the proposed Project area was replaced with residential, commercial, and industrial development by the early 21st century.

A pedestrian field survey was conducted between October 25 to 27, 2021 which consisted of 41 different individual parcels with up to 21 proposed well cluster locations under consideration (only 16 well clusters would be constructed). Each well cluster would include up to four boreholes, with a diameter of 12 inches each. The purpose of the field survey was to examine any exposed ground surfaces for artifacts, ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures or buildings or historic-period debris. Ground disturbances such as burrows and drainages were also visually inspected. Survey accuracy was maintained using a handheld GPS unit and a georeferenced map of the project site. Site characteristics and survey conditions were documented using field records and a digital camera. Approximately 50 percentof the Project area was inaccessible for pedestrian survey due to either being blocked off by construction fencing or because the area had already been paved over and/or developed. The pedestrian survey did not identify any new archaeological or built environment cultural resources within the Project area, and only one of the previously identified cultural resources (P-33-016078) was identified during the site visit. This resource was found to be in the same condition as when it was recorded in 2006. The other three resources were not located, and were likely destroyed as a result of development.

a) Less than Significant Impact with Mitigation Incorporated

According to the CHRIS records and field survey conducted for the Cultural Resources Assessment (**Appendix C**), only one known historical resource still exists within the proposed Project site (P-33-016078). The proposed Project would not affect this resource because it falls outside of the construction footprint for the proposed Project, and would not be disturbed by construction. Although no known historical resources would be affected by the proposed Project, construction of the proposed Project would involve ground disturbing activities which have the potential to encounter previously unknown historical resources. Although encountering unknown historical resources is highly unlikely due to the small area of disturbance created at each well cluster, as well as the proposed well locations within previously disturbed areas, implementation of **Mitigation Measure CUL-1** would ensure proper procedures are in place in the event of unanticipated discovery of previously unknown historical resources. Operation of the proposed Project would not involve ground disturbing activities and would therefore have no impact on historical resources. Implementation of **Mitigation Measure CUL-1** would reduce potential impacts during construction 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 tribal or other cultural resources have been previously recorded within or immediately adjacent to the proposed Project sites (**Appendix C**) and because of the previous ground disturbance within the Project area. Although the Project sites are considered to have low archaeological sensitivity, in the event ground-disturbing activities expose previously unrecorded resources, implementation of **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

Although the proposed Project sites are considered to have low archaeological sensitivity given the level of previous ground disturbance, and construction would disturb a relatively small area, there is always a possibility of discovering human remains during ground disturbing activities. **Mitigation Measure CUL-2** would be implemented during construction to ensure proper procedures are in place if human remains are discovered during construction. There would be no ground disturbing activities during operation of the proposed Project, and no mitigation would be required during operation related to discovery of human remains. With implementation of **Mitigation Measure CUL-2** during construction, 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) shall 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 human remains are encountered, Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5 will be followed and the County Coroner shall be notified immediately. If human remains are encountered, no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the coroner shall contact the NAHC within 24 hours. Subsequently, the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD).

The MLD shall complete inspection of the site within 48 hours of being granted access and make recommendations and engage in consultations concerning the treatment of the remains as provided in Public Resources Code Section 5097.98

## 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 (MVU 2018), and includes Well Sites MW-9 though MW-16, and Optional Site A. The remaining portion of the City of Moreno Valley and the City of Perris are serviced by SCE, including Well Sites MW-1 through MW-8 and Optional Sites B through E. 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 and battery-powered transducers. 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 3-10: 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 2020.4.0; see Appendix A for model output. When project-specific equipment is not available in CalEEMod, alternate construction equipment is selected based on similar horsepower.

The proposed Project would implement typical construction practices such as site clearing and grading, well drilling and installation, and site restoration. 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 101 haul trips for all 16 well clusters are estimated during the construction of the proposed Project. This was calculated based on four 12-inch diameter boreholes for each well cluster, varying depths of the borehole for each well cluster, plus an estimated additional 50 cubic yards of material per site for preparation for a total of approximately 1,481 cubic yards for all 16 well clusters. Haul trucks carry approximately 16 cubic yards per load requiring a total of 101 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 construction staging areas would occur per day (across all well sites).

Worker vehicle trips are based engineers' estimates of the number of workers required during construction. An estimated 10 workers would be needed per well cluster during construction of the proposed Project, each of which would drive separately due to COVID-19 related restrictions on carpooling, for a total of 20 one-way trips per day for each well cluster under construction.

Operation and maintenance would require quarterly trips to each site (with two vehicles, lasting for five days each), which is estimated to require an additional total of 10 round-trip vehicle trips a year to each well site for a total of 640 round-trip (1,280 one-way) vehicle trips annually (see *Section 2.4.7 Operation and Maintenance Vehicle Trips*). Data collection would also occur during these visits and would not require additional 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 (640 round-trips per year, averaging less than two round trips per day in total for all well sites). 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 Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? | [ ] | [ ] | [ X ] | [ ] |
| 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 well clusters 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 parcel area. 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 0.753 - 0.889 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 1.3 g 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, 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, & 2021). Therefore, the proposed Project area may be susceptible to liquefaction. Specifically, Optional Sites A through E overlie high to moderate shallow groundwater susceptible sediments (City of Perris 2021), and low deep groundwater susceptible sediments (City of Perris 2016c). Optional Site B and Optional Site E are located in areas with high susceptible sediments and Optional Site D is located in an area with moderate susceptible area to potential liquefaction. Optional Site A and Optional Site C are near areas with moderate susceptible sediments, but not within the susceptible area and are therefore not considered to be at risk of

potential liquefaction. Areas of potential liquefaction are found on and near the MARB and surrounding Lake Perris for the City of Moreno Valley (City of Moreno Valley 2006a & 2006b). MW-08 is within an area of potential liquefaction while none of the other proposed Project sites in the City of Moreno Valley are located within a susceptible area. 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 sites would be located on parcels that are flat or have a minimal slope. 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 3.67 acres for the 16 well clusters combined, and would require a National Pollutant Discharge Elimination System (NPDES) Construction General Permit for stormwater discharges. A Stormwater Pollution Prevention Plan (SWPPP) would 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, including erosion and sediment controls. Once construction is complete, all monitoring well disturbance areas would be returned to almost pre-Project conditions, including being repaved if pavement was present prior to construction, 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 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 was completed for the proposed Project in November 2021, in compliance with CEQA, federal, state, and local regulations to determine the potential Project impacts to paleontological resources in the proposed Project area (**Appendix D)**.

Federal regulations are applicable to 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's General Plan contains a policy (Policy 7-6) for paleontological resources 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 its report to reduce potential impacts. The City of Perris' General Plan contains one goal, one policy, and one implementation measure pertaining to paleontological resources; 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**).

As discussed in the Paleontological Resource Assessment Report (**Appendix D),** paleontological sensitivity of the geological units underneath the proposed Project area was assessed through a literature review, a fossil locality record search, and a review of existing geologic maps and paleontological locality data. 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 sites are located within the central Perris Block of the northern portion of the Peninsular Ranges Province, which is one of the eleven major geomorphic provinces in California. The Perris Block consists of Pleistocene and Holocene alluvial fan deposits deriving from the San Gabriel Mountains to the north and fluvial deposits from the Santa Ana River. The Project sites are composed of Quaternary young (Holocene) and Quaternary old (Pleistocene) deposits including Holocene fluvial deposits, Holocene alluvial-valley deposits, Holocene alluvial-fan deposits, and Pleistocene alluvial-fan deposits. While Holocene sediments (less than 5,000 years old) are generally too young to preserve paleontological resources, underlying Pleistocene sedimentary deposits may occur at unknown depths and have a well-documented record for containing abundant and diverse vertebrate fauna throughout California. Holocene sediments that have shallow Pleistocene alluvium (as shallow as 11 feet below ground surface) have potential for vertebrate fossils based on past discoveries within the vicinity of the Project sites. As such, ground-disturbing activities in previously undisturbed portions of the proposed Project sites underlain by geologic units with a high paleontological sensitivity (i.e., Pleistocene alluvial-fan deposits) may result in significant impacts to paleontological resources.

There are no previously recorded fossil localities in the Project sites based on the paleontological locality records search performed at NHMLAC. However, records maintained by the Western Science Center (WSC) indicate several fossil localities nearby the Project sites. WSC localities 192, 193, and 194 rendered fossil ground sloth (*Megalonyx jeffersonii*), lamine camel (*Hemiauchenia* sp.), and horse (*Equus* sp.) less than 10 miles northeast of the Project sites. Fossils from these localities were recovered from 11 to 13 feet below ground surface within Pleistocene alluvial fan deposits. (

Although ground-disturbing activities are likely to impact geologic units of high paleontological sensitivity (i.e. Pleistocene alluvial deposits) near the surface or at depth, the potential for encountering significant fossil resources during project-related ground disturbance is low and impacts to paleontological resources are not anticipated. While ground-disturbing activities in previously undisturbed portions of the Project sites underlain by Pleistocene alluvial deposits may result in significant impacts to paleontological resources, minor ground-disturbances such as clearing and grading are unlikely to impact previously undisturbed sediments. Additionally, vertical drilling of boreholes less than three feet in diameter is not conducive to paleontological monitoring because 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. As a result, disturbance to native Pleistocene sediments from well drilling would be limited due the small diameter of the boreholes, and impacts to paleontological resources due to well drilling would be negligible. While the potential to impact paleontological resources is low, there is always the potential to encounter an unanticipated paleontological resource whenever ground disturbing

activities occur. Implementation of **Mitigation Measure GEO-1** during construction would require work to stop in the immediate vicinity of fossil discovery until a qualified professional paleontologist can properly document the find. In the unlikely event an unanticipated fossil is discovered, **Mitigation Measure GEO-1** would require that it be preserved. With implementation of mitigation GEO-1, 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 the Society of Vertebrate Paleontology (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 15 months, and the proposed Project's life expectancy is 30 years. Construction impacts would include emissions associated with staging, site preparation, sonic drilling, and well construction. Operational emissions would result from quarterly well inspections and sampling visits. Further details can be found in *Section 2 Project Description*. Modeling of air emissions from construction and operation was completed in CalEEMod version 2020.4.0 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 19,260 vehicle miles traveled would occur annually. Monitoring wells would not require a connection to the electrical grid; transducers would be battery-powered and other 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 3-11: Proposed Project GHG Emissions per Year ($MTCO_2e$/year)**

| Source | $MTCO_2e$ |
|---|---|
| Area | 0 |
| Energy | 0 |
| Mobile | 20 |
| Waste | 0 |
| Water | 0 |
| Construction (amortized over 30 years) | 74 |
| **Total** | **94** |
| Threshold | 3,000 |
| *Exceed Threshold?* | *No* |

The total construction emissions from the proposed Project would be 2,220 $MTCO_2e$. Amortized over a 30-year period, the Project would generate approximately 20 $MTCO_2e$ 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 GHG impacts would be less than significant.

Long-term GHG emissions from the proposed Project would result from mobile sources for quarterly visits, which is considered negligible as described above. Total GHG emissions are 94 $MTCO_2e$ annually, which is below the 3,000 $MTCO_2e$ threshold. Therefore, impacts would be less than significant and no mitigation would be required.

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. 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 quarterly to collect manual readings and conduct inspections and maintenance. Data collection would occur at these same visits. 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 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 quarterly 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, Risk Management Plan, and Health and Safety 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 13 existing schools located within one-quarter mile of the proposed Project parcels (see *Section 2.3 Environmental Setting and Existing Conditions*). During construction, there would be minor 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 quarterly visits for manual groundwater sampling, 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. Similar to the risk of exposure to hazardous materials during construction, implementation of **Mitigation Measure HAZ-1** during operation, required under impact "b" above, would further reduce the potential exposure of schools to hazardous materials during operation of the proposed project.

d) Less Than Significant with Mitigation Incorporated

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. One of the proposed Project parcels, MW-3, is included on a list of hazardous materials sites per Government Code Section 65962.5 (DTSC 2020 and SWRCB 2015) and discussed further below.

Currently active clean-up sites in the vicinity of the proposed Project are summarized here:

- 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 located on the same parcel

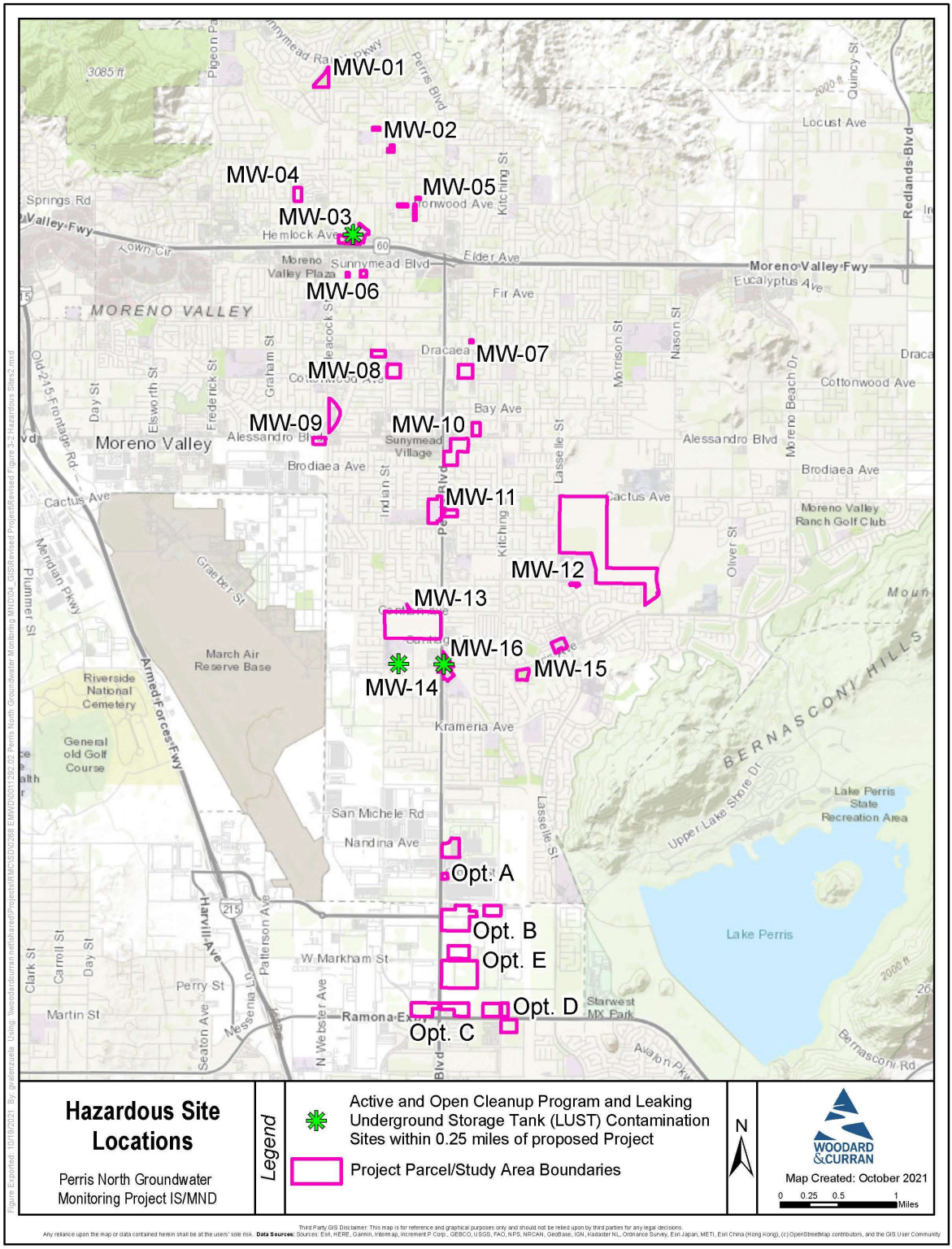
as MW-3 and 0.25 miles away from MW-6. The site investigation detected PCE, trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and trans-1,2-DCE in soil and soil vapor. Soil vapor extraction was conducted without DTSC oversight between March 2017 and April 2018 as remediation. Sampling was performed confirm remaining onsite hazardous constituents. Based on the sampling results, the soil gas concentrations rebounded, and show an increase of 20 times at one vapor probe (CSVP-1) and three times for another (CSVP-3). According the DTSC Envirostor, additional sampling needs to be done to show stable and/or downward concentration trend.

- Shell Perris Blvd at 15980 Perris Blvd. in Perris. (GeoTracker ID #T0606517323) – This LUST site is located on the parcel adjacent to the MW-16 Parcel and 100 feet away from MW-14a and MW-14b parcels. 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.

- Indian Middle School (Envirostor ID #33000006) on Iris Avenue in Moreno Valley is a school cleanup site; and is approximately 350 feet away from MW-13 and 0.4 miles from MW-14 and MW-16. 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."*

The proposed Project would involve construction activity on a listed site if the well cluster within the MW-3 parcel is located in the area north of Hemlock Street at the Festival in Moreno Valley site. The MW-16 parcel is adjacent to the listed Shell Perris Boulevard Site, where groundwater monitoring is ongoing. The MW-13 parcel is adjacent to the Indian Middle School site. The Project well parcels and nearby listed sites are shown on **Figure 3-3.**

**Figure 3-3: Hazardous Sites within One Quarter Mile of Proposed Well Site Parcels**



The Indian Middle School site has been remediated and is closed, and MW-13 would not be constructed on the same parcel. Therefore, work at this site would not expose either workers or the public to hazards from this site. However, construction of MW-3 and MW-16, which involves handling and disposal of soil during site preparation and well drilling, could expose workers to hazards from the Festival in Moreno Valley site and/or the Shell Perris Boulevard Site depending on where the wells are constructed within the parcels. However, the construction sites would not be accessible to the public, and thus the general public would not be at risk for exposure to a significant hazard related to potential contaminated soils. If contaminated soils are present, workers at these sites could be at risk for exposure to hazardous substances during construction. Therefore, **Mitigation Measure HAZ-2a** shall be implemented requiring EMWD to conduct environmental site assessments at MW-3 and MW-16 prior to purchase or lease of the parcels to identify location(s) on the parcels that avoid disturbance of existing contamination and ongoing testing and remediation efforts. Additionally, **Mitigation Measures HAZ-2b** and **HAZ-2c** shall be implemented in order to ensure proper health and safety planning to protect workers from exposure to hazardous wastes, and to dispose of hazardous materials properly (including soils and groundwater).

Operation of the Project would involve quarterly visits for inspection and monitoring which would not include ground-disturbing activities that could pose a risk of exposure to workers or the public. With **Mitigation Measures HAZ-2a, HAZ-2b, and HAZ-2c** in place, the Project's potential to create a hazard to the public or environment would be less than significant.

e) Less Than Significant Impact

The proposed Project area is near the MARB, which has its own airport, and the small, private Perris Valley Airport. The majority of the proposed Project area is located in Zone E of the Airport Influence Area for MARB, 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. A portion of the proposed Project area would fall within Zone D of the Airport Influence Area for MARB, which is on the periphery of flight corridors where there is a moderate to low noise impact. The western parcel for Optional Site C (Well Site C-1) is the only site that would be located in Zones B and C (partially in each zone). Zone C has a moderate to high noise impact, and Zone B has a high noise impact and is within or near the 65-CNEL contour. In Zone B, single-event noise is sufficient to disrupt many land use activities.

During project construction, workers at Optional Site C could be exposed to elevated noise levels due to aircraft from MARB. However, construction would involve some noisy machinery (e.g., drill rig) and workers would have hearing protection appropriate to the site and as required by OSHA. Airport noise would not substantially increase the noise exposure of workers at these sites. In addition, well construction would be temporary, lasting approximately four weeks of drilling per well. Project operation would not generate elevated noise levels because monitoring equipment includes transducers that do not

generate noise when located in the wells. Quarterly vehicle trips to and from the wells would not generate noise noticeable to the preexisting ambient noise of the roads. Maintenance and manual sampling activities, which would occur quarterly, would occur during the day, and would not involve the use of heavy machinery, other than the vehicles used to get to and from the sites. Therefore, the Project would not expose people living or working in the Project area to excessive noise. In terms of safety, 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). Impacts would be less than significant.

f) Less than Significant

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).

Construction of the proposed Project components would occur on the identified Project parcel and would not block or impair access to surrounding roadways. Additionally, no traffic lane closures would be required. Construction activities such as transport of equipment to the site and hauling would not block or impede traffic flow, and thus would not impede emergency response or evacuation. During project operation, quarterly well visits would be confined to the selected parcel sites. No full or partial road closures would occur as part of the proposed Project. Therefore, the proposed Project would not conflict with the adopted emergency response plan and emergency evacuation plan (the City EOP and LHMP), and the impact would be less than significant.

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 parcels within the Moreno Valley Local Responsibility Area (LRA) are designated

as a non-Very High Fire Hazard Severity Zone (FRAP, 2009a). Parcels within the Perris LRA are also located in non-Very High Fire Hazard Severity Zones (FRAP, 2009b) 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 HAZ-2a: Environmental Site Assessment.** Prior to EMWD purchase or lease of proposed MW-3 and MW-16 parcels, EMWD shall retain a qualified environmental professional to conduct an environmental site assessment of each parcel to evaluate the presence and extent of contamination at the parcels, in conformance with state and local guidelines and regulations. If the results of the environmental site assessments indicate the presence of contaminated soils or groundwater, or the potential to impact existing soil and/or groundwater remediation efforts within the parcel, EMWD shall evaluate if there are appropriate locations within the parcel or identify alternative parcels to safely construct and operate the monitoring wells.

**Mitigation Measure HAZ-2b: Prepare Project-Specific Health and Safety Plan.** EMWD or its contractor shall prepare a project-specific Health and Safety Plan (HASP) in accordance with 29 CFR 1910 to protect construction workers and the public during all excavation, grading and construction services. The HASP shall include, but not be limited to, the following information:

- A summary of all potential risks to construction workers and maximum exposure limits for all known and reasonably foreseeable site chemicals;
- Specified personal protective equipment and decontamination procedures, if needed Safety procedures to be followed in the event suspected hazardous materials are encountered;
- Emergency procedures, including route to the nearest hospital; and
- The identification of a site health and safety officer and responsibilities of the site health and safety officer.

**Mitigation Measure HAZ-2c: Disposal of Hazardous Materials.** EMWD or its contractor shall develop a materials disposal plan specifying how excavated material and groundwater dewatering would be removed, handled, transported, and disposed of in a safe, appropriate, and lawful manner. The plan shall identify the disposal method for soil and the approved disposal site. The plan shall specify how groundwater from dewatering would be treated and/or disposed.

### 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) 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**. The following potential well parcels are located wholly or partially within the 100-year floodplain: MW-3 parcel, MW Site-12a parcel, Optional Site B-2, Optional Site C-2, Optional Site D-1, Optional Site D-2, Optional Site D-3, Optional Site E-1, and Optional Site E-2. The following parcels are located wholly or partially within the 500-year floodplain: MW-3 parcel, Optional Site A-1, Optional Site A-2, MW Site-9a parcel, and MW Site-8a parcel.

*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. A Stipulated Judgment was entered on April 18, 2013, in Riverside County Superior Court (Case No. RIC 1207274) for the eastern portion of the San Jacinto Groundwater Basin and requires preparation of an Annual Report by the Watermaster to document activities in any given year. The Court has jurisdiction to enter this Judgment declaring and adjudicating the rights of the parties to the reasonable and beneficial use of the surface water and groundwater in the Management Area, and to impose a method of managing the water supply of the Management Area to maximize the reasonable and beneficial use of the waters, to eliminate overdraft pursuant to the provisions of the Judgment, to protect the prior rights of the Soboba Tribe, and to provide for the use of all water rights recognizing the participating parties priorities pursuant to law, including California Constitution, Article X, Section 2.The western portion of the San Jacinto Groundwater Basin (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 Basin. As the GSA, EMWD is required to develop and submit a Groundwater Sustainability Plan (GSP) by January 31, 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 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 due to groundwater contamination and the

water supply was converted to municipal water, which includes a mix of groundwater and imported water, and is treated prior to distribution to customers (including MARB). 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. Groundwater contamination was identified by EMWD through implementation of the DWSAP, as well as GeoTracker and Envirostor database research, and existing wells in the area 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 was equipped with GAC to address contamination from perfluorinated compounds (PFCs). EMWD Well 55 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

Ground cover at the potential well sites vary, and wells could be located on paved areas, grass/vegetation, 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 may 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 (approximately 100 square feet) 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 east of

the proposed Project area (approximately 1.2 miles east 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, wells with at least one potential parcel that falls within or immediately adjacent to the 100- or 500-year floodplain are MW-3, MW-8, MW-9, MW-12, Optional Site A, Optional Site B, Optional Site C, Optional Site D, and Optional Site E (FEMA 2008). The risk of floods inundating any of the other 11 well sites is low, and nearly all well facilities would be below ground. 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

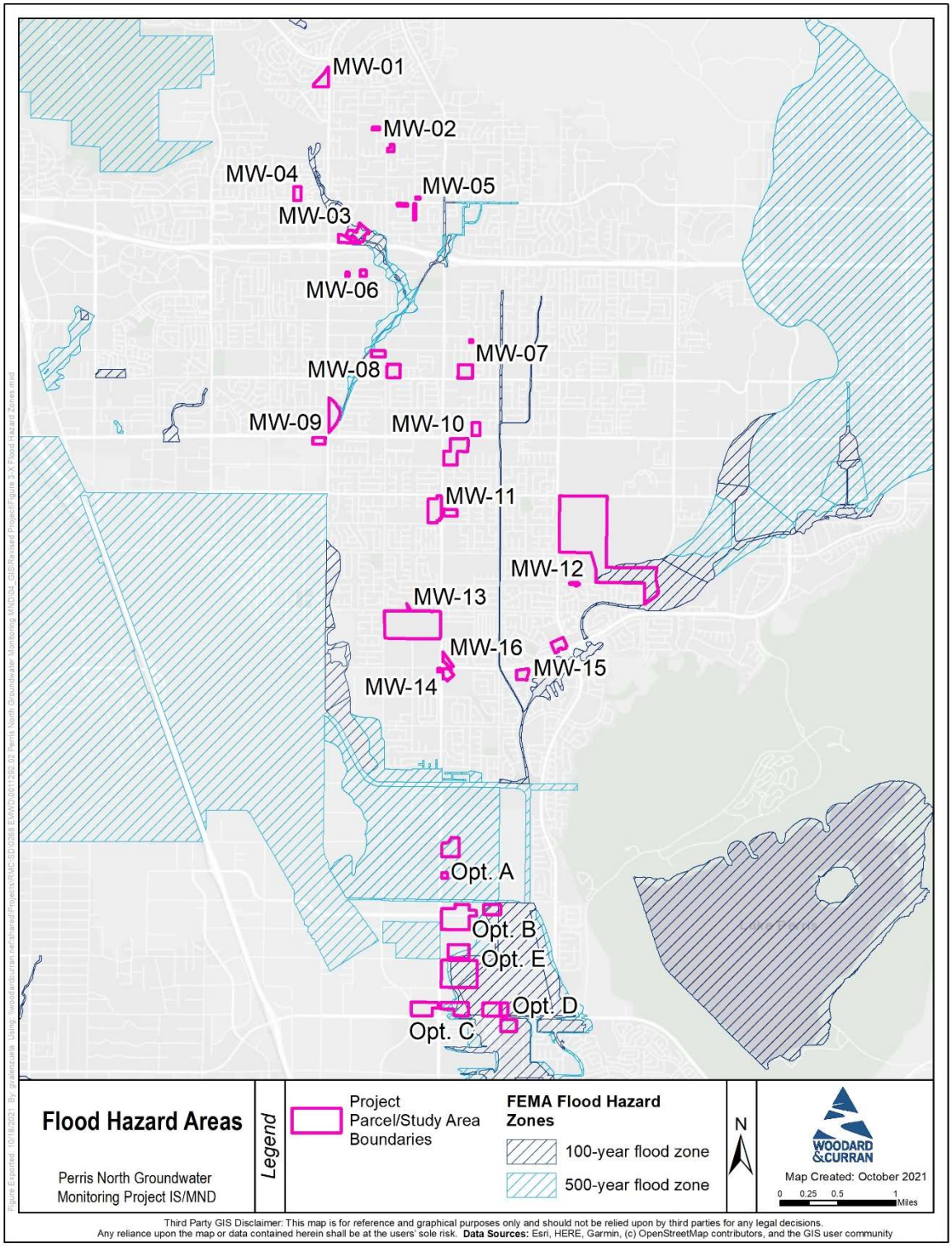
As noted previously, the Basin Plan sets water quality objectives for the proposed Project area. Water quality thresholds identified in the Basin Plan are intended to reduce pollutant discharge and ensure that water bodies are of sufficient quality to meet their designated beneficial uses. The Project 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 31, 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 3-4: 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 parcel and the zoning designation at each site.

According to the City of Moreno Valley zoning map, land use designations at the proposed well sites are residential, commercial, retail, industrial, public facility (e.g., roadway, park, administrative building), business park/light industrial, office, business park mixed use, village office/residential 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 industrial and light industrial areas and are allowed in areas zoned for residential and open space use with a conditional use permit. Wells are permitted in commercial, retail, public facility, office, business park, village office/residential and village commercial/residential areas provided that they are not within 300 feet of a residence or residential use. For wells in these zones 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 at proposed monitoring well sites are commercial, light industrial, business professional office, and future storm

drain facilities (**Table 3-14**) (City of Perris 2013a). The City of Perris zoning ordinance does not include information on whether wells would be a permitted use when located on parcels zoned for commercial, business professional office, light industrial, or future storm drain uses (City of Perris 2017a).

**Table 3-12: Zoning of Proposed Monitoring Well Sites**

| Proposed Monitoring Well Site | City | Location | Zoning Designation |
|---|---|---|---|
| MW-01 | Moreno Valley | Public park | MW-01 parcel: Residential (SP 168 R1) |
| MW-02 | Moreno Valley | Vacant parcels | MW Site-2a parcel: Residential (R5)<br>MW Site-2b parcel: Residential (R5) |
| MW-03 | Moreno Valley | Parking lot or open space | MW-03 parcel: Retail Mix of Uses (SPU 205 RMU), Commercial/Retail Development (SP 205 CR) |
| MW-04 | Moreno Valley | Vacant parcel | MW-04 parcel: Residential (R15) |
| MW-05 | Moreno Valley | Vacant parcels | MW Site-5a parcel: Residential (R5)<br>MW Site-5b parcel: Residential (R5)<br>MW Site-5c parcel: Residential (R5) |
| MW-06 | Moreno Valley | Vacant parcels | MW Site-6a parcel: Village Office/Residential (SP 204 VOR)<br>MW Site-6b parcel: Village Office/Residential (SP 204 VOR) |
| MW-07 | Moreno Valley | Vacant parcels | MW Site-7a parcel: Residential (R15)<br>MW Site-7b parcel: Residential (R10) |
| MW-08 | Moreno Valley | Vacant parcel (MW Site-8a), vacant parcel with ongoing construction of residential homes (MW Site-8b) | MW Site-8a parcel: Residential (R5)<br>MW Site-8b parcel: Residential (R10), Public (P) |
| MW-09 | Moreno Valley | Parking lot and open spaces surrounding commercial building (MW Site-9a parcel), vacant parcel (MW Site-9b parcel) | MW Site-9a parcel: Office District (O)<br>MW Site-9b parcel: Business Park-Mixed Use (BPX) |
| MW-10 | Moreno Valley | Vacant parcels | MW Site-10a parcel: Office Commercial District (OC)<br>MW Site-10b parcel: Residential (R15) |
| MW-11 | Moreno Valley | Vacant parcel (MW Site-11a), partially completed housing development with active construction (MW Site 11-b) | MW Site-11a parcel: Residential (R15)<br>MW Site-11b parcel: Residential (R10) |
| MW-12 | Moreno Valley | Vacant parcel (MW Site 12-a parcel), | MW Site-12a parcel: Residential (SP 218 LM)<br>MW Site-12b parcel: Right of way |

| Proposed Monitoring Well Site | City | Location | Zoning Designation |
|---|---|---|---|
| | | public park (MW Site 12-b parcel) | |
| MW-13 | Moreno Valley | Housing development under construction and open space | MW-13 parcel: Residential (R5), Community Commercial District (CC) |
| MW-14 | Moreno Valley | Commercial shopping center (MW Site 14-a parcel); EMWD-owned property (MW Site 14-b parcel) | MW Site-14a parcel: Community Commercial District (CC)<br>MW Site-14b parcel: Neighborhood Commercial District (NC) |
| MW-15 | Moreno Valley | Public park ( (MW Site 15-a parcel), commercial shopping center (MW Site 15-b parcel) | MW Site-15a parcel: Parks/Public Facilities (SP 193 P)<br>MW Site-15b parcel: Commercial or High Density Residential (SP 193 C or H) |
| MW-16 | Moreno Valley | Commercial site | MW-16 parcel: Community Commercial District (CC) |
| Optional Site A | Moreno Valley | Open space and parking lot (Optional Site A-a parcel), vacant lot (Optional Site A-b parcel) | Optional Site A-a parcel: Industrial (SP 208 I)<br>Optional Site A-b parcel: Industrial (SP 208 I) |
| Optional Site B | Perris | Vacant parcels | Optional Site B-a parcel: Commercial, Light Industrial (PVCC SP)<br>Optional Site B-b parcel: Light Industrial (PVCC SP) |
| Optional Site C | Perris | Vacant parcels | Optional Site C-a parcel: Commercial (PVCC SP)<br>Optional Site C-b parcel: Commercial (PVCC SP) |
| Optional Site D | Perris | Vacant parcels | Optional Site D-a parcel: Commercial (PVCC SP)<br>Optional Site D-b parcel: Future Perris Valley Storm Drain (PVCC SP)<br>Optional Site D-c parcel: Business Professional Office (PVCC SP) |
| Optional Site E | Perris | Vacant parcels | Optional Site E-a parcel: Business Professional Office (PVCC SP)<br>Optional Site E-b parcel: Light Industrial (PVCC SP) |

a) Less Than Significant Impact

The proposed monitoring wells would be constructed within established communities. All well sites currently consist of open spaces, developed areas (such as parking lots), 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 areas 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 at sites designated for various uses, including residential, commercial, retail, industrial, public facility, business park/light industrial, office, business park mixed use, village office/residential and village commercial/residential uses in the City of Moreno Valley, and commercial, light industrial, business professional office, and future storm drain facilities in the City of Perris. The wells would have minimal footprint sizes and would not significantly alter the ability of those lands to be used for their designated purposes. 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. As with the proposed wells in Moreno Valley, the wells in Perris would not prevent the parcels from being used for their planned purposes (namely commercial, light industrial, business professional office, and future storm drain facilities). Therefore, the proposed Project would not conflict with existing zoning designations. Additionally, because EMWD is a water provider proposing facilities for the production, generation, storage, treatment, or transmission of water, EMWD is not subject to local 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 as 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 3-13: 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 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, and are used as significance thresholds for the purposes of this analysis, with the City of Perris construction noise limits typically being more stringent (as described above).

*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 attenuation features at each proposed Project site are summarized in *Section 2.2, Project Overview.* Attenuation features include vegetation, wooden fences, cement masonry walls, buildings, etc.

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 parcel such that it is a minimum of 24 feet from residential property lines, and will likely be further from most of the surrounding properties given the size of the well footprint in relation to the overall size of the parcels under consideration. 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 3-14: 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

As described in *Section 2.2, Project Overview*, natural attenuation features vary by site, and include vegetation, wooden fences, cement masonry walls, buildings, and iron fences with gaps. Based on **Table 3-16**, these natural features could provide between 3 to 15 dBA of shielding.

The noise from the well drill rig would originate a minimum of 24 feet from surrounding structures, as stated in *Section 2.2, Project Overview*.

*Construction*

Construction of 16 well clusters (up to 64 individual boreholes) is expected to last 15 months and would involve noise-generating activities such as grading and well drilling. It should be noted that construction of each well cluster is expected to last approximately eight weeks, including mobilization/site preparation, drilling, well construction, and demobilization. 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 3-15: 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 (sonic) | 87[1] |
| Drilling Rig (mud rotary) | 90[1] |
| Generator | 81 |
| Pick-up Trucks | 75 |
| Pump | 81 |
| Utility Truck | 74[1] |
| Water Truck | 84[1] |
| Welder | 74 |

Source: FHWA 2006a

1. Sonic drilling rig noise level estimated based on noise measurement from previous projects that utilized sonic drilling. Mud rotary 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 20 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 (101 haul trips total; approximately 6 haul trips per well on average). 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. However, EMWD has opted to utilize the City of Moreno Valley and City of Perris noise guidelines as thresholds of significance for the purposes of this analysis, in order to provide a quantitative point of comparison for the proposed Project impacts. Although EMWD is not required to comply with city noise ordinances, 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, construction noise impacts would be reduced to less than significant, with the exception of potential noise impacts due to well drilling activities as discussed below.

*Well Drilling*

Construction of monitoring wells would last for eight weeks per well cluster from mobilization to demobilization. Of those eight weeks, up to four weeks would consist of sonic or mud rotary drilling, which would be conducted during daytime hours. Well sites are located near residences, schools, and churches that have the potential to be exposed to elevated noise levels during well construction.

Some well sites have existing attenuation features (e.g., cement block walls), as summarized in *Section 2.2, Project Overview*. However, the well drilling activities (consisting of a drill rig and pickup truck) operating simultaneously, with no shielding present, would be expected to generate high levels of noise. Mud rotary drilling is anticipated to be slightly louder than sonic drilling (**Table 3-19**), therefore it would be the most impactful activity in terms of noise and is the focus of this analysis. Mud rotary drilling would generate noise levels of 96.4 dBA $L_{eq}$ at a distance of 24 feet (the minimum safe distance between the drill rig and nearest structure), 90.1 dBA $L_{eq}$ at a distance of 50 feet, and 84.0 dBA $L_{eq}$ at a distance of 100 feet. With greater distance, noise levels would attenuate further (e.g., 78.0 $L_{eq}$ dBA at 200 feet, 70.1 $L_{eq}$ dBA at 500 feet, and 64.0 $L_{eq}$ dBA at 1,000 feet). The exact location of each well within the potential well parcel sites has not yet been determined, and the distance to sensitive receptors could vary widely. Therefore, this analysis uses a conservative assumption that the drill rig could be as close as 24 feet from an adjacent residential property line. Noise levels would attenuate to below the City of Perris residential threshold of 80 dBA $L_{eq}$ at a distance of 159 feet from the construction site if mud rotary drilling were used. Sonic drilling would be slightly quieter, with noise attenuating to below 80 dBA $L_{eq}$ at a distance of 114 feet from the construction site. For any receptors within 159 feet of mud rotary drilling, or within 114 feet from sonic drilling, the noise level would exceed 80 dBA. 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, if a well cannot be sited at a sufficient distance from noise-sensitive receptors (i.e., if noise from well drilling would not attenuate to below 80 dBA at the property line due to distance alone), sound barriers providing up

to 25 dBA[1] of noise attenuation be used during well drilling activities. With the use of all feasible sound barriers, the noise from well drilling activities would be reduced to 71.4 dBA $L_{eq}$ at a distance of 24 feet, 65.1 dBA $L_{eq}$ at a distance of 50 feet, and 59.0 dBA $L_{eq}$ at a distance of 100 feet (as calculated using the Federal Highway Administration's *Roadway Construction Noise Model*). The use of these sound walls would reduce construction noise sufficiently to avoid exposing nearby receptors to excessive noise.

The City of Moreno Valley considers 60 dBA $L_{eq}$ to be an acceptable daytime 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 89 feet from a given well site, well construction noise would attenuate to 85.0 dBA $L_{eq}$, and use of a sound barrier would reduce construction noise from the proposed Project to 60.0 dBA $L_{eq}$.

Within the City of Perris, noise level determinations are made at the residential property line. Some potential well site parcels located in the City of Perris (Optional Sites B-1 and B-2) are located adjacent to residential properties, and wells could be constructed adjacent to residential property lines. If wells in the City of Perris could not be located far enough from a residential property line for distance alone to provide sufficient attenuation, sound walls would be used, as described above, which would reduce noise levels to within the City of Perris' thresholds.

With implementation of **Mitigation Measures NOI-1** and **NOI-2**, as described here, construction noise impacts resulting from the 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 quarterly monitoring and maintenance visits. Long-term noise associated with these additional vehicle trips 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

[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.

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. The minimum distance between the drill rig and any surrounding structures would be 24 feet, at which distance the PPV would not exceed 0.2 inches/second and thus would not have the potential to cause damage to nearby structures.

**Table 3-16: 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 |
| Cassion Drilling (as reference for mud rotary and sonic drilling)[1] | 0.089[1] | 87[1] |
| Generator | N/A | N/A |
| Pick-up Trucks | 0.076[2] | 86[2] |
| Pump | N/A | N/A |
| Utility Truck | 0.076[2] | 86[2] |
| Water Truck | 0.076[2] | 86[2] |
| Welder | N/A | N/A |

Source: FTA 2018
Most construction equipment is not expected to generate vibration; these are denoted with "N/A."
1. Caisson drilling is shown here as a reference point. The proposed Project will use sonic drilling, which directs vibration energy vertically down the well shaft, and is expected to generate less vibration than caisson drilling. Mud rotary drilling is assumed to be similar to caisson drilling.
2. 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. The proposed sonic drilling technique directs vibration energy vertically (i.e., down the well shaft), and very little vibration energy propagates outward from the drill rig. Due to the minimum distance required between the drill rig and nearby structures (24 feet), vibration from sonic drilling is not expected to be noticeable outside the construction site. If mud rotary drilling is used, groundborne vibration noise from drilling rig would attenuate to below 80 VdB at a distance of 43 feet ($VdB_{distance}$ =

$VdB_{reference}$ – 30log(distance/25)) (FTA 2018). If wells were sited within this distance of sensitive receptors, vibration noise could present an annoyance. The mud rotary drilling technique would be used only where necessary, as sonic drilling is preferred, which would limit the number of sites where vibration occurs. Additionally, vibration would be temporary (up to four weeks per well cluster) and would be limited to daytime hours like other construction activities. Vibration noise from the drill rig would not stand out above other construction noise. Loaded trucks would also produce levels of vibration noise that exceed the threshold for human annoyance at a distance of 25 feet. Groundborne vibration noise from trucks would attenuate to below 80 VdB at a distance of 40 feet. If wells are sited such that trucks would pass within 40 feet of receptors, groundborne vibration noise from trucks may cause annoyance to people in buildings. However, groundborne vibration noise would be occasional and brief (occurring only as trucks enter and leave the site, or move between locations at the site). 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. One potential well site, Optional Site C-1, is located within the 65 dBA noise contour of the MARB/March Inland Port (City of Perris 2016b). During construction of the proposed project, workers at this site 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 quarterly at each well cluster, which would last approximately one week 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 may require construction on Sundays.
- 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 may require construction on Sundays.
- 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**

If wells are located such that well construction noise would exceed 80 dBA (the City of Perris noise limit in residential areas) at the property line (less than 159 feet from the property line for mud rotary drilling, or 114 feet for sonic drilling), EMWD shall require its contractor to install temporary construction noise barriers prior to the start of well construction activities. These barriers shall block the line of sight between the noise-generating components of the drilling equipment and the noise-sensitive receptor(s) and shall provide up to 25 dBA of noise attenuation, such that it can achieve sufficient attenuation to reduce construction noise at the property line to less than 80 dBA. 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 well drilling 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 2020, EMWD served an estimated retail population of 603,950 through approximately 155,561 connections, including single family accounts, 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 2020 Urban Water Management Plan (UWMP), EMWD's retail service area population will increase to approximately 807,200 in 2045 (EMWD 2021).

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 vacant parcels, developed parcels, and EMWD owned property. 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 | [ ] | [ ] | [ X ] | [ ] |

| | | | | |
|---|---|---|---|---|
| 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: | | | | |
| 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 at 16130 Lasselle Street, approximately 0.5 miles from MW Site-15a parcel and MW Site-15b parcel. 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.e). The City of Moreno Valley Parks, Recreation and Open Space Comprehensive Master Plan (2010) defines local park and recreation facilities as Community Parks, Neighborhood Parks, Mini Neighborhood Parks, Greenways and Specialty Parks. The proposed Project has identified two City of Moreno Valley parks as potential well sites. Both of these parks are classified as Neighborhood Parks; therefore, background information provided herein is focused on this park classification. 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).

Neighborhood Parks typically range from five to 20 acres in size and are geared to serve residents living within three-quarters of a mile. Amenities typically programmed into a Neighborhood Park include informal open play areas; children's play apparatus; picnic tables and shelters; barbecues; practice sports fields; basketball, tennis and volleyball courts; public restrooms; and onsite parking. The City of Moreno Valley (2010) recognizes the need to ensure park facilities are evenly distributed throughout the city by identifying service radius standards. The service radius for Neighborhood Parks is three-quarter to one mile.

The proposed Project has identified two City of Moreno Valley parks as potential well sites: Gateway Park (MW-1 parcel) and Pedrorena Park (MW Site-15a parcel). The

proposed MW-1 well site would be located in Gateway Park. The 7.67-acre Gateway Park site is designated as a Neighborhood Park and includes a concrete walking trail, playground, barbecues, open green space, picnic tables, drinking fountains, restroom, and parking lot. Most of the park's hardscape facilities, are clustered together in the southwest portion of the park. Gateway Park also connects to the Sunnymead Ranch Linear Park. The park abuts Heacock Street to the east, and residences to the north, south, and west. This park is 100 percent built out (City of Moreno Valley 2010).

The proposed MW Site-15a parcel would be located within Pedrorena Park. This Neighborhood Park is 5.50 acres and is 100 percent developed (City of Moreno Valley 2010). It includes sports fields, tennis and basketball courts, children's play equipment, paved walking trails, open green space, picnic tables, vending machines, drinking fountains, and restrooms. The western portion of the park is comprised of fields, and the hardscaped features are located on the eastern half of the park. It is bordered by Iris Avenue to the north, Rancho Del Lago to the east, and residences to the west and south.

The City of Perris Community Services Department operates and maintains a total of 24 parks (City of Perris n.d.d). The City of Perris Ordinance Number 953 sets 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.) No Impact

The proposed Project would not construct new or physically alter existing fire protection facilities. Construction of the proposed Project would occur on the parcel sites and would not require lane closures that could affect response times for fire protection services. 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. Therefore, the proposed project would have no impact on fire protection services.

a.ii.) No Impact

The proposed Project would not construct new, or physically alter existing, police protection facilities. Construction of the proposed Project would not affect response times for police services because construction would be limited to the well parcel sites and no lane closures would be required. 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. The proposed Project would have no impact on police services.

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.) Less than Significant Impact

Although well construction activities could have a footprint of up to 10,000 square feet, this impact would be limited to the construction period for each well cluster (approximately one month) and would not permanently impact public parks. Up to 1,600 square feet per well site may be used for quarterly maintenance, this impact would only last for one week each quarter, and would not permanently impact public parks. The permanent footprint of each well cluster is estimated to be 100 square feet. If both potential park sites were utilized for the proposed Project, the wells could occupy up to 200 square feet of parks in total (approximately 0.005 acres). The usable park area at Gateway Park and Pedrorena

Park would not be significantly altered due to the extremely limited size of the permanent well footprint.

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, which is the minimum parkland dedication allowed by the Quimby Act for residential subdivisions (City of Moreno Valley 2010). The City of Moreno Valley has two methods to determine its park acreage ratio. The first method only counts City-owned parkland in its calculation of total parkland acres. The second method counts City-owned parkland and school fields and facilities available for park and recreation uses. The City is heavily dependent on school fields and facilities to meet the demand for sports fields, after-school recreation programs and cultural programs; it makes up for a lack of City-owned parkland by utilizing school fields and facilities for park and recreation purposes. Therefore, it relies on the second method in evaluating its level of service. These two methods are calculated in **Table 3-17**.

**Table 3-17: Analysis of Current Parkland Acreage Requirements**

| City of Moreno Valley | Method 1 (Not counting school fields) | Method 2 (Counting school fields) |
|---|---|---|
| Population | 184,000 people | 184,000 people |
| General Plan Recommended Park Standard | 3 acres/1,000 people | 3 acres/1,000 people |
| Park Acres Required to meet General Plan Standard | 552 acres | 552 acres |
| Actual Park Acres | 393 acres | 608 acres |
| Actual Acres/1,000 Population Ratio | 2.14 acres/1,000 people | 3.30 acres/1,000 people |
| Total parkland acreage required for development of the Project | 0.005 acres | 0.005 acres |
| Acre/1,000 Population Ratio after implementation of the Project | 2.14 | 3.30 |

Source: City of Moreno Valley 2010

As shown in **Table 3-17**, the proposed Project would have a negligible effect on the City's park service ratio.

In addition to the 3 acres/1,000 residents service ratio, the City (2010) also recognizes the National Recreation and Park Association recommendation that urban cities strive to reach a goal of 10 acres per 1,000 of population counting local, regional and state/federal parkland and facilities within the agencies' sphere of influence. This ratio is presented for the City of Moreno Valley in **Table 3-18**.

**Table 3-18: Analysis of Current Local, Regional and State/Federal Open Space Requirements**

| City of Moreno Valley | Metric |
|---|---|
| Moreno Valley Parkland | 393 acres |
| School District Land | 215 acres |
| County Regional Parkland | 1,155 acres |
| State Park Recreation Area | 1,821 acres |
| Total Parkland Available | 3,584 acres |
| Desired acre/1,000 population ratio | 10 acres |
| Population | 184,000 |
| Actual acres/1,000 population ratio | 19.48 acres |
| Total parkland acreage required for development of the Project | 0.005 acre |
| Acres/1,000 population ratio after implementation of the Project | 19.48 |

Source: City of Moreno Valley 2010

As shown in **Table 3-21**, the proposed Project would have a negligible effect on the desired acres per 1,000 population ratio designated by the National Recreation and Park Association.

In total, the proposed Project could permanently replace up to 200 square feet of open green space park land within the City of Moreno Valley. This would not have a significant impact on the City's target of 3 acres per 1,000 residents of parks and open space because the City currently has a ratio of 3.30 acres of park and open space for every 1,000 residents and the Project would not appreciably reduce that ratio, as shown in **Table 3-21**. It would also not impact the City's service radius objectives for Neighborhood Parks. With implementation of the proposed Project, both of the parks would continue to offer a mix of hardscape features and open landscape features. Furthermore, the Project does not propose new housing or employment that would result in an increase in the demand for park facilities in the area or a further reduction in the park service ratio. No new parks or recreational facilities would need to be built in order to maintain existing park acreage/resident ratios. As a result, the proposed Project's impacts on parks would be less than significant.

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:* None required or recommended.

## 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*

While implementation of the proposed Project does not include new housing or employment that would increase use of existing recreation facilities, two proposed well parcels are home to existing parks. These are Gateway Park (MW-1 parcel) and Pedrorena Park (MW Site-15a parcel). Each of these parks is described above in *Section 3.15 Public Services*. Another proposed well site is located at a small unnamed park within a housing development along Casa Encantador Road (MW Site-12b parcel). Lastly, the MW-13 parcel site would be located within a landscaped greenbelt adjacent to a residential housing development. These recreational areas are all located within the City of Moreno Valley.

a) Less than Significant Impact

Construction of the wells would occur within open, landscaped areas of the parks and would not involve removal of recreational facilities or equipment. Impacts from construction and operational activities would be minimized through adherence to standard EMWD BMPs (see *Section 2.4.8 Environmental Commitments*). Ongoing O&M activities would be minimal (quarterly site visits from EMWD operators to conduct monitoring/maintenance) and would not interfere with regular use of the parks and park facilities. In addition, as explained under *Section 3.15 Public Services*, the proposed

Project would not reduce the City of Moreno Valley's park service ratio target below 3 acres per 1,000 residents and it would not impact the City's service radius objectives for Neighborhood Parks. 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. Therefore, the proposed Project would have a less-than-significant impact.

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, Ramona Expressway, 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 (WRCOG 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 16 proposed well clusters is estimated to last 15 months (each well would require approximately one-month of construction time, and two wells may be under construction at a given time). 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 28 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 on the parcels selected for well sites.

Construction-related traffic would be temporary. Construction of all wells would occur on the site parcels and would not impede circulation on the adjacent roadways nor would it require lane closures. Construction traffic is expected to consist of up to 14 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 could intermittently slow traffic as equipment is delivered to the sites, 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 four monitoring/maintenance visits per year, which would occur at the well sites and would not require lane closures.

Although construction and operation impacts would be temporary and would be primarily confined to the well parcels, the proposed Project would require transport of equipment (such as the drilling rig) and would require haul trips, deliveries of materials to staging areas, etc. Potential traffic impacts related to these activities 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 project construction 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 15-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 quarterly 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. Monitoring/maintenance visits would occur at the well site parcels and would not require lane closures that would cause drivers to seek alternate routes and increase 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 or alter 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) would be conducted using standard vehicles and would not require lane closures; operational activities would occur on the well parcel sites. Therefore, operation of the proposed Project would not increase hazards or incompatible uses.

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

d) Less Than Significant

Construction of the proposed Project would not require lane closures that could result in inadequate emergency access. Well construction would occur on the parcel sites, and would generate vehicle trips for worker travel and delivery of materials and equipment. Construction would require transportation of heavy construction equipment in the Project area, which could temporarily increase hazards near Project sites and/or staging areas, but would not impede traffic or block roadways such that emergency access would be impaired. Standard traffic control measures implemented during construction would require that emergency crews be able to access the parcel sites themselves. Because well construction would be confined to the parcels, the proposed Project would not impede emergency access to surrounding areas, impacts from construction of the proposed Project would be less than significant.

Project operation would consist of quarterly monitoring/maintenance visits which would last approximately one week. Monitoring/maintenance activities would use standard vehicles and work would be confined to the well parcels; therefore operation of the proposed Project would not have the potential to impede emergency access to surrounding areas, and impacts from operation of the proposed Project would be less than significant.

*Mitigation Measures*:

To mitigate possible impacts to circulation during construction and operation, 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 Traffic Control Plan shall, at minimum:
>
> - Identify staging locations to be used during construction;
> - Identify safe ingress and egress points from staging areas;
> - Establish haul routes for construction-related vehicle traffic; and
> - Identify alternative safe routes to maintain pedestrian and bicyclist safety during construction.
>
> 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 (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | [ ] | [ X ] | [ ] | [ ] |

*Discussion*

A *Cultural Resources Assessment Report* was prepared in November 2021 for the proposed Project. In July 2021 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 between October 25 to 27, 2021. No cultural resources were discovered during the field survey. The *Cultural Resources Assessment Report* is provided in **Appendix C**.

In November 2021 Section 106 Native American outreach was initiated. The Native American Heritage Commission (NAHC) was contacted on July 1, 2021 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 24 Native American contacts, who were sent letters in November 2021.

**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 provided written notification to Native American tribal representatives via a letter in August 2021. 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 Luiseño Indians, and Rincon Band of Luiseño 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 infrastructure, or otherwise impair the attainment of solid waste reduction goals? | [ ] | [ ] | [ X ] | [ ] |
| 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 proposed Project is located within the Riverside County Flood Control and Water Conservation District's Master Drainage Plan (MDP) for the Sunnymead Area, which evaluates drainage problems and plans stormwater and drainage facilities appropriate for the environment and economy of the area (Riverside County Flood Control and Water Conservation District 1978). Numerous potential well parcel sites are located near existing or planned MDP underground storm drain facilities. These facilities are typically located in adjacent roadway rights-of-way, and not on the well site parcels. Two proposed well sites have proposed storm drain facilities that may be located on the parcel and not merely in the adjacent right-of-way. These are: MW Site-7b parcel, where the proposed Sunnymead MDP Line P-1 would run along the eastern edge of the parcel, and Optional Site E, where the proposed Peris Valley MPD Lateral E-12 may cross a portion of the site. Optional Site C-2 and Optional Site D-1 have existing storm drain facilities, running adjacent to Ramona Expressway.

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 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 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-9 through MW-16 and Optional Site A (all parcel options). Electrical service for the Project sites MW-1 through MW-8 (all parcel options) is provided by SCE.

Electrical service for Optional Sites B, C, D, and E (all parcel options) 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 16 groundwater monitoring well clusters 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. During preliminary design of the wells, EMWD would coordinate with the Riverside County Flood

Control and Water Conservation District to locate the wells so as to avoid impacts to existing below ground storm drains. 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 quarterly 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 1,481 cubic yards of material in total would be exported for all 16 of the proposed Project's well clusters. 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 1,500 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

Construction activities and potential staging areas would be located within the well site parcels. Although construction of the proposed Project may cause short-term inconvenience and could intermittently slow traffic as equipment is delivered to the sites, the impacts would be temporary, and would not be expected to impact emergency response or evacuation. Work would not occur in the roadway right-of-way and would not require sidewalk or lane closures. Therefore, access for use by emergency response vehicles or emergency evacuations would not be affected, and the proposed Project would not impair or physically interfere with the City of Moreno Valley's or City of Perris' adopted EOP or LHMP. Impacts of construction on the adopted emergency evacuation plan would be less than significant.

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 work would be confined to the well parcel sites. The Project would involve minimal additional vehicles being added to roadways (quarterly monitoring and maintenance visits), but no work would occur in a roadway. Therefore, the Project would not interfere with emergency evacuation plans and impacts would be less than significant.

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 developed parcels 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 developed and vacant 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 developed and vacant parcels 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 is low probability of impacting biological resources. However, some proposed Project sites were found to have BUOW burrows, and a BUOW was observed at one of the sites. Additionally, horned larks were observed foraging at one proposed site. As such, **Mitigation Measures BIO-1** and **BIO-2** would be implemented during construction to reduce impacts to BOUS and nesting birds to less than significant. 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 require that any unanticipated fossil discovered onsite 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 current Well 65/66 Project consists of the development and use of two new groundwater wells and pipeline 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 create temporary lighting impacts during construction for safety and security of the construction site. **Mitigation Measures AES-1** would require lights be directed away from residences and the lowest level of illumination necessary be used to reduce impacts to surrounding land uses and people to less than significant. No lighting would be needed during operation of the proposed Project. With this mitigation measure in place, the proposed Project would have a less than significant impact on human beings as a result of lighting.

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 noise. 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. Additionally, two of the proposed Project sites are located within 0.25 miles of hazardous sites, potentially exposing construction workers to contaminated soil and/or groundwater. **Mitigation Measures HAZ-2a, 2b, and 2c** would reduce the risk of exposure to hazardous materials during construction by requiring investigation to determine presence of hazardous materials, and implementation of a project-specific Health and Safety Plan should hazardous materials be found in the construction area, along with requiring safe disposal of any hazardous materials encountered.

Construction and operation of the proposed Project may would not require temporary closures of traffic lanes, but could create traffic inconveniences. With the implementation of **Mitigation Measure TRA-1**, which requires a traffic control plan to address construction-related traffic, including construction equipment ingress and egress at the sites, 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 AES-1, BIO-1, BIO-2, CUL-1, CUL-2, GEO-1, HAZ-1 HAZ-2a, HAZ-2b, HAZ-2c, NOI-1**, **NOI-2,** and **TRA-1**.

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# 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. Horned larks were observed foraging during the November 2021 field survey and one BUOW was observed, along with its active burrow. Additionally, BUOW burrows were identified at six of the proposed Project parcels. Existing disturbance in the proposed Project area limits the potential for these species to occur in the proposed Project area, however **Mitigation Measures BIO-1** and **BIO-2** would be implemented to reduce construction-related impacts to BOUW and nesting birds to less than significant. Therefore, with mitigation, 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 resource studies have been previously conducted within a one-half-mile radius of the Project. These studies identified four recorded historical resources within or immediately adjacent to the proposed Project area of potential effect (APE). However, three of these resources were found to no longer exist and are presumed to be destroyed by development. The remaining known historical resource, a historic-period water conveyance system with associated features dating to 1950, would not overlap the Project's construction footprint and therefore would not be altered by the proposed Project. 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 tribal 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.

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

## 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.

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 are classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Fifteen proposed Project sites are located on parcels designated as Farmland of Local Importance, but these sites are not currently used for agriculture and are not zoned for agricultural use. Each proposed well would have a limited permanent footprint (approximately 100 square feet) which would not preclude the parcels from agricultural use. The proposed Project would not convert 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**, nine potential well parcels are located wholly or partially in the 100-year floodplain (MW-3 parcel, MW Site-12a parcel, Optional Site B-2, Optional Site C-2, Optional Site D-1, Optional Site D-2, Optional Site D-3, Optional Site E-1, and Optional Site E-2) and five wells are located wholly or partially in the 500-year floodplain (MW-3 parcel, Optional Site A-1, Optional Site A-2, MW Site-9a parcel, and MW Site-8a parcel). 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, though trees are located at multiple proposed Project sites, generally along the perimeter. No nests or birds exhibiting nesting behaviors were observed during the field survey performed as part of the Biological Resources Assessment, though one BUOW was observed at one Project site and burrows were observed at six sites and California horned lark was observed foraging at one site. Although 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, the presence of nearby trees and observation of sensitive avian species means there is potential for impacts and **Mitigation Measures BIO-1** and **BIO-2** would be implemented. With implementation of these mitigation measures, 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] https://www.nae.usace.army.mil/Portals/74/docs/regulatory/InvasiveSpecies/policy.pdf

## 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.

## 4.13 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 70-80 percentile, 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 2014-2018 American Community Survey data, which defines the Statewide MHI was $71,228. A DAC would therefore be a community with an MHI of $56,982 or less and an SDAC would be a community with an MHI of $42,737 or less. According to the DWR Mapping Tool as shown in **Figure 4-2**, 11 potential parcel sites are located within DACs (MW-03 parcel, MW-04 parcel, MW Site-05a, MW Site-05b, MW Site-08a, MW Site-08b, MW Site-09a, MW Site-09b, Mw Site-10b, MW Site-11b, and MW-16 parcel), five potential parcel sites are located within SDACs (MW Site-06a, MW Site-06b, MW Site-07a, MW Site-07b, MW Site-10a), and the remaining parcels are located within non-DAC areas.

## Figure 4-1: USEPA EJScreen Map of Minority Population

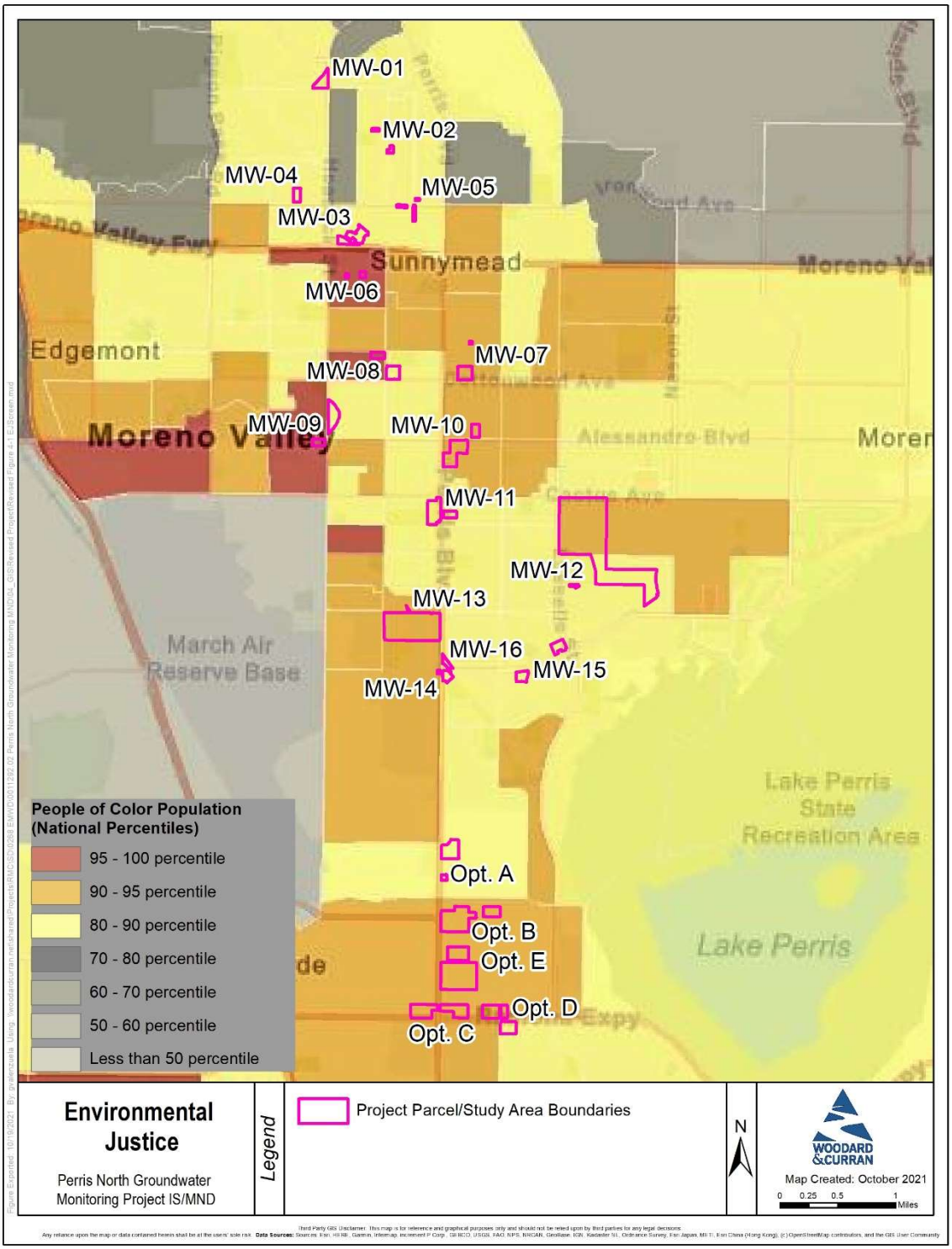
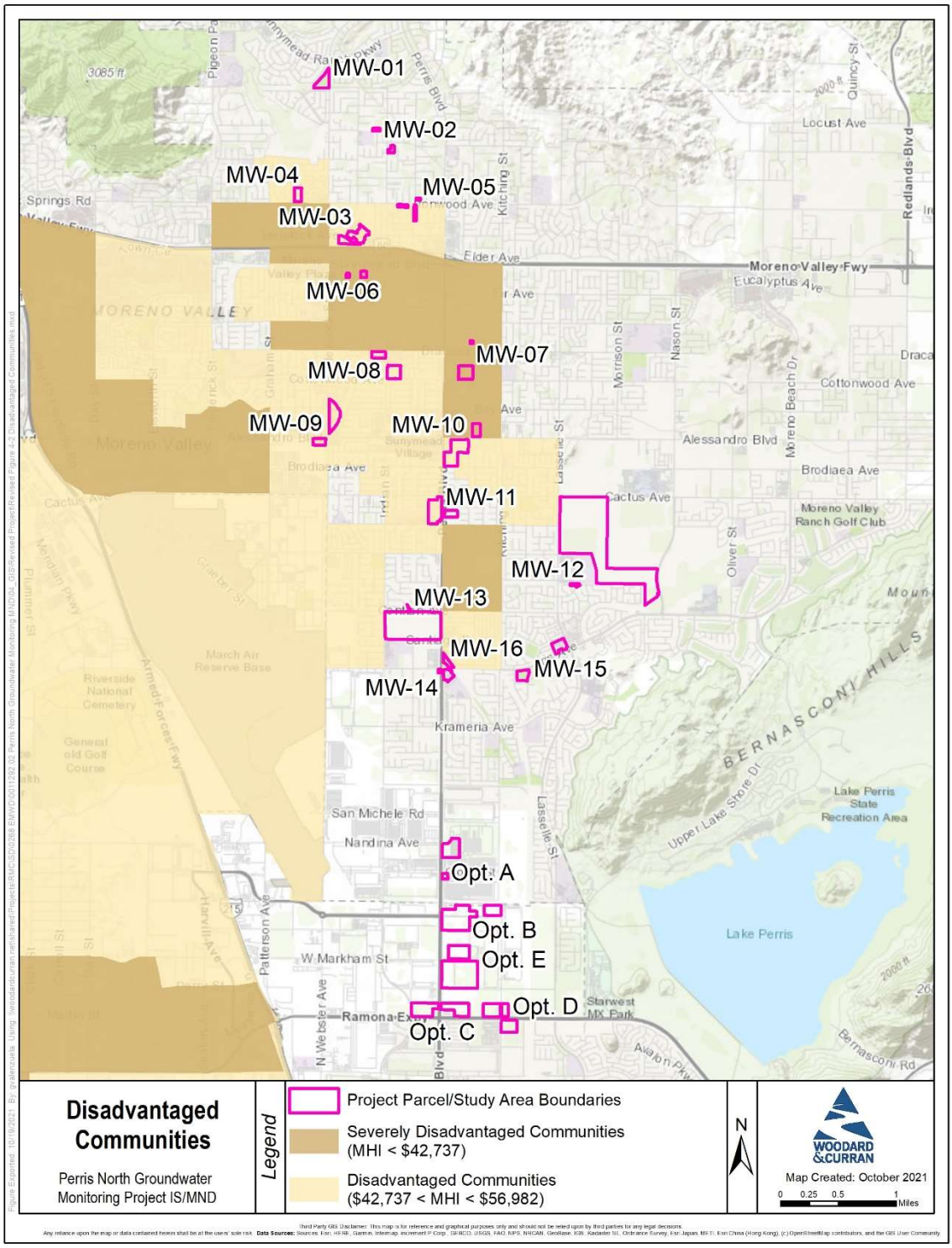


**Figure 4-2: DWR DAC Mapping Tool**



*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 GW Monitoring Wells - Riverside-South Coast County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# Perris North GW Monitoring Wells

**Riverside-South Coast County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Other Non-Asphalt Surfaces | 160.00 | 1000sqft | 3.67 | 160,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.4 | **Precipitation Freq (Days)** | 28 |
| **Climate Zone** | 10 | | | **Operational Year** | 2025 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 390.98 | **CH4 Intensity (lb/MWhr)** | 0.033 | **N2O Intensity (lb/MWhr)** | 0.004 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Site prep phase captures site prep and construction/demobilization (same equipment list).

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

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

Trips and VMT - Based on engineering inputs and project description.

Grading - Per project description

Vehicle Trips - Based on project description.

Area Coating - 16 well clusters at 100 sq ft each.

Landscape Equipment - No change in landscaping.

Construction Off-road Equipment Mitigation - BMPs

Fleet Mix -

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Parking | 9600 | 1600 |
| tblConstDustMitigation | CleanPavedRoadPercentReduction | 0 | 5 |
| tblConstDustMitigation | WaterUnpavedRoadVehicleSpeed | 0 | 15 |
| tblConstructionPhase | NumDays | 8.00 | 448.00 |
| tblConstructionPhase | NumDays | 5.00 | 476.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConstructionPhase | PhaseEndDate | 11/23/2022 | 2/11/2024 |
| tblConstructionPhase | PhaseEndDate | 11/11/2022 | 2/25/2024 |
| tblConstructionPhase | PhaseStartDate | 11/12/2022 | 11/21/2022 |
| tblGrading | AcresOfGrading | 0.00 | 3.70 |
| tblGrading | MaterialExported | 0.00 | 1,481.00 |
| tblLandscapeEquipment | NumberSummerDays | 250 | 0 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 6.00 |
| tblTripsAndVMT | HaulingTripNumber | 185.00 | 202.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 25.00 | 20.00 |
| tblTripsAndVMT | WorkerTripNumber | 25.00 | 20.00 |
| tblVehicleTrips | CC_TL | 8.40 | 15.10 |
| tblVehicleTrips | CC_TTP | 0.00 | 100.00 |
| tblVehicleTrips | PR_TP | 0.00 | 100.00 |
| tblVehicleTrips | WD_TR | 0.00 | 0.10 |

## 2.0 Emissions Summary

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 | 0.1161 | 0.9154 | 0.9235 | 2.5200e-003 | 0.0138 | 0.0392 | 0.0530 | 3.3700e-003 | 0.0373 | 0.0407 | 0.0000 | 219.1779 | 219.1779 | 0.0528 | 7.4000e-004 | 220.7180 |
| 2023 | 0.8756 | 6.6761 | 7.2163 | 0.0202 | 0.0906 | 0.2745 | 0.3651 | 0.0239 | 0.2610 | 0.2849 | 0.0000 | 1,762.5548 | 1,762.5548 | 0.4326 | 5.0400e-003 | 1,774.8708 |
| 2024 | 0.1074 | 0.7953 | 0.9232 | 2.5700e-003 | 0.0141 | 0.0315 | 0.0456 | 3.4400e-003 | 0.0300 | 0.0334 | 0.0000 | 223.5073 | 223.5073 | 0.0535 | 6.9000e-004 | 225.0508 |
| **Maximum** | **0.8756** | **6.6761** | **7.2163** | **0.0202** | **0.0906** | **0.2745** | **0.3651** | **0.0239** | **0.2610** | **0.2849** | **0.0000** | **1,762.5548** | **1,762.5548** | **0.4326** | **5.0400e-003** | **1,774.8708** |

### 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 | 0.1161 | 0.9154 | 0.9235 | 2.5200e-003 | 0.0122 | 0.0392 | 0.0514 | 3.1300e-003 | 0.0373 | 0.0405 | 0.0000 | 219.1776 | 219.1776 | 0.0528 | 7.4000e-004 | 220.7178 |
| 2023 | 0.8756 | 6.6761 | 7.2163 | 0.0202 | 0.0857 | 0.2745 | 0.3602 | 0.0229 | 0.2610 | 0.2838 | 0.0000 | 1,762.5528 | 1,762.5528 | 0.4326 | 5.0400e-003 | 1,774.8688 |
| 2024 | 0.1074 | 0.7953 | 0.9232 | 2.5700e-003 | 0.0124 | 0.0315 | 0.0439 | 3.1900e-003 | 0.0300 | 0.0332 | 0.0000 | 223.5070 | 223.5070 | 0.0535 | 6.9000e-004 | 225.0505 |
| **Maximum** | **0.8756** | **6.6761** | **7.2163** | **0.0202** | **0.0857** | **0.2745** | **0.3602** | **0.0229** | **0.2610** | **0.2838** | **0.0000** | **1,762.5528** | **1,762.5528** | **0.4326** | **5.0400e-003** | **1,774.8688** |

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## EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | 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** | **6.90** | **0.00** | **1.77** | **5.01** | **0.00** | **0.43** | **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** | **11-7-2022** | **2-6-2023** | 1.7974 | 1.7974 |
| **2** | **2-7-2023** | **5-6-2023** | 1.8415 | 1.8415 |
| **3** | **5-7-2023** | **8-6-2023** | 1.9034 | 1.9034 |
| **4** | **8-7-2023** | **11-6-2023** | 1.9035 | 1.9035 |
| **5** | **11-7-2023** | **2-6-2024** | 1.8569 | 1.8569 |
| **6** | **2-7-2024** | **5-6-2024** | 0.1841 | 0.1841 |
| | | **Highest** | 1.9035 | 1.9035 |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 | 0.0107 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 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 | 6.9100e-003 | 0.0126 | 0.0826 | 2.1000e-004 | 0.0238 | 1.7000e-004 | 0.0239 | 6.3500e-003 | 1.6000e-004 | 6.5000e-003 | 0.0000 | 19.7847 | 19.7847 | 9.0000e-004 | 9.2000e-004 | 20.0807 |
| 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** | **0.0176** | **0.0126** | **0.0826** | **2.1000e-004** | **0.0238** | **1.7000e-004** | **0.0239** | **6.3500e-003** | **1.6000e-004** | **6.5000e-003** | **0.0000** | **19.7847** | **19.7847** | **9.0000e-004** | **9.2000e-004** | **20.0807** |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 | 0.0107 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 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 | 6.9100e-003 | 0.0126 | 0.0826 | 2.1000e-004 | 0.0238 | 1.7000e-004 | 0.0239 | 6.3500e-003 | 1.6000e-004 | 6.5000e-003 | 0.0000 | 19.7847 | 19.7847 | 9.0000e-004 | 9.2000e-004 | 20.0807 |
| 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** | **0.0176** | **0.0126** | **0.0826** | **2.1000e-004** | **0.0238** | **1.7000e-004** | **0.0239** | **6.3500e-003** | **1.6000e-004** | **6.5000e-003** | **0.0000** | **19.7847** | **19.7847** | **9.0000e-004** | **9.2000e-004** | **20.0807** |

| | 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 Preparation | Site Preparation | 11/7/2022 | 2/25/2024 | 7 | 476 | |
| 2 | Drilling | Grading | 11/21/2022 | 2/11/2024 | 7 | 448 | |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**Acres of Grading (Site Preparation Phase): 3.7**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 3.67**

**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 | Excavators | 0 | 8.00 | 158 | 0.38 |
| Drilling | Graders | 0 | 8.00 | 187 | 0.41 |
| Drilling | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Site Preparation | Cement and Mortar Mixers | 1 | 2.00 | 9 | 0.56 |
| Site Preparation | Generator Sets | 1 | 6.00 | 84 | 0.74 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 6.00 | 97 | 0.37 |
| Site Preparation | Off-Highway Trucks | 1 | 3.00 | 402 | 0.38 |
| Site Preparation | Off-Highway Trucks | 1 | 2.00 | 402 | 0.38 |
| Site Preparation | Off-Highway Trucks | 2 | 2.00 | 402 | 0.38 |
| Site Preparation | Pumps | 1 | 6.00 | 84 | 0.74 |
| Site Preparation | Welders | 1 | 4.00 | 46 | 0.45 |
| Drilling | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Drilling | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Drilling | Cranes | 1 | 8.00 | 231 | 0.29 |
| Drilling | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Drilling | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Drilling | Off-Highway Trucks | 1 | 8.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 1 | 6.00 | 402 | 0.38 |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | | | | | |
|---|---|---|---|---|---|
| Drilling | Off-Highway Trucks | 2 | 6.00 | 402 | 0.38 |
| Drilling | Welders | 1 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 10 | 20.00 | 6.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Drilling | 10 | 20.00 | 0.00 | 202.00 | 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

Clean Paved Roads

## 3.2 Site Preparation - 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 | | | | | 1.9600e-003 | 0.0000 | 1.9600e-003 | 2.1000e-004 | 0.0000 | 2.1000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0436 | 0.3417 | 0.3782 | 8.7000e-004 | | 0.0158 | 0.0158 | | 0.0153 | 0.0153 | 0.0000 | 74.7718 | 74.7718 | 0.0154 | 0.0000 | 75.1563 |
| **Total** | **0.0436** | **0.3417** | **0.3782** | **8.7000e-004** | **1.9600e-003** | **0.0158** | **0.0178** | **2.1000e-004** | **0.0153** | **0.0155** | **0.0000** | **74.7718** | **74.7718** | **0.0154** | **0.0000** | **75.1563** |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 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 | 2.6000e-004 | 7.3200e-003 | 2.4700e-003 | 3.0000e-005 | 1.0400e-003 | 1.0000e-004 | 1.1400e-003 | 3.0000e-004 | 1.0000e-004 | 4.0000e-004 | 0.0000 | 2.8894 | 2.8894 | 3.0000e-005 | 4.3000e-004 | 3.0180 |
| Worker | 1.9200e-003 | 1.5000e-003 | 0.0187 | 5.0000e-005 | 6.0500e-003 | 3.0000e-005 | 6.0800e-003 | 1.6100e-003 | 3.0000e-005 | 1.6300e-003 | 0.0000 | 4.7494 | 4.7494 | 1.3000e-004 | 1.3000e-004 | 4.7921 |
| **Total** | **2.1800e-003** | **8.8200e-003** | **0.0212** | **8.0000e-005** | **7.0900e-003** | **1.3000e-004** | **7.2200e-003** | **1.9100e-003** | **1.3000e-004** | **2.0300e-003** | **0.0000** | **7.6389** | **7.6389** | **1.6000e-004** | **5.6000e-004** | **7.8100** |

### 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 | | | | | 8.8000e-004 | 0.0000 | 8.8000e-004 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0436 | 0.3417 | 0.3782 | 8.7000e-004 | | 0.0158 | 0.0158 | | 0.0153 | 0.0153 | 0.0000 | 74.7717 | 74.7717 | 0.0154 | 0.0000 | 75.1562 |
| **Total** | **0.0436** | **0.3417** | **0.3782** | **8.7000e-004** | **8.8000e-004** | **0.0158** | **0.0167** | **1.0000e-004** | **0.0153** | **0.0154** | **0.0000** | **74.7717** | **74.7717** | **0.0154** | **0.0000** | **75.1562** |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 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 | 2.6000e-004 | 7.3200e-003 | 2.4700e-003 | 3.0000e-005 | 1.0100e-003 | 1.0000e-004 | 1.1100e-003 | 2.9000e-004 | 1.0000e-004 | 3.9000e-004 | 0.0000 | 2.8894 | 2.8894 | 3.0000e-005 | 4.3000e-004 | 3.0180 |
| Worker | 1.9200e-003 | 1.5000e-003 | 0.0187 | 5.0000e-005 | 5.7800e-003 | 3.0000e-005 | 5.8100e-003 | 1.5400e-003 | 3.0000e-005 | 1.5700e-003 | 0.0000 | 4.7494 | 4.7494 | 1.3000e-004 | 1.3000e-004 | 4.7921 |
| **Total** | **2.1800e-003** | **8.8200e-003** | **0.0212** | **8.0000e-005** | **6.7900e-003** | **1.3000e-004** | **6.9200e-003** | **1.8300e-003** | **1.3000e-004** | **1.9600e-003** | **0.0000** | **7.6389** | **7.6389** | **1.6000e-004** | **5.6000e-004** | **7.8100** |

## 3.2 Site Preparation - 2023

**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 | | | | | 1.9600e-003 | 0.0000 | 1.9600e-003 | 2.1000e-004 | 0.0000 | 2.1000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.2718 | 2.0754 | 2.4904 | 5.7500e-003 | | 0.0915 | 0.0915 | | 0.0885 | 0.0885 | 0.0000 | 496.4229 | 496.4229 | 0.1010 | 0.0000 | 498.9486 |
| **Total** | **0.2718** | **2.0754** | **2.4904** | **5.7500e-003** | **1.9600e-003** | **0.0915** | **0.0935** | **2.1000e-004** | **0.0885** | **0.0888** | **0.0000** | **496.4229** | **496.4229** | **0.1010** | **0.0000** | **498.9486** |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | 1.1900e-003 | 0.0375 | 0.0150 | 1.9000e-004 | 6.9200e-003 | 3.1000e-004 | 7.2300e-003 | 2.0000e-003 | 3.0000e-004 | 2.2900e-003 | 0.0000 | 18.4234 | 18.4234 | 1.9000e-004 | 2.7200e-003 | 19.2399 |
| Worker | 0.0118 | 8.7700e-003 | 0.1143 | 3.3000e-004 | 0.0401 | 1.9000e-004 | 0.0403 | 0.0107 | 1.8000e-004 | 0.0108 | 0.0000 | 30.5086 | 30.5086 | 7.6000e-004 | 8.1000e-004 | 30.7691 |
| **Total** | **0.0130** | **0.0463** | **0.1292** | **5.2000e-004** | **0.0470** | **5.0000e-004** | **0.0475** | **0.0127** | **4.8000e-004** | **0.0131** | **0.0000** | **48.9321** | **48.9321** | **9.5000e-004** | **3.5300e-003** | **50.0090** |

### 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 | | | | | 8.8000e-004 | 0.0000 | 8.8000e-004 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.2718 | 2.0754 | 2.4904 | 5.7500e-003 | | 0.0915 | 0.0915 | | 0.0885 | 0.0885 | 0.0000 | 496.4223 | 496.4223 | 0.1010 | 0.0000 | 498.9481 |
| **Total** | **0.2718** | **2.0754** | **2.4904** | **5.7500e-003** | **8.8000e-004** | **0.0915** | **0.0924** | **1.0000e-004** | **0.0885** | **0.0886** | **0.0000** | **496.4223** | **496.4223** | **0.1010** | **0.0000** | **498.9481** |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

**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 | 1.1900e-003 | 0.0375 | 0.0150 | 1.9000e-004 | 6.6700e-003 | 3.1000e-004 | 6.9800e-003 | 1.9400e-003 | 3.0000e-004 | 2.2300e-003 | 0.0000 | 18.4234 | 18.4234 | 1.9000e-004 | 2.7200e-003 | 19.2399 |
| Worker | 0.0118 | 8.7700e-003 | 0.1143 | 3.3000e-004 | 0.0384 | 1.9000e-004 | 0.0386 | 0.0102 | 1.8000e-004 | 0.0104 | 0.0000 | 30.5086 | 30.5086 | 7.6000e-004 | 8.1000e-004 | 30.7691 |
| **Total** | **0.0130** | **0.0463** | **0.1292** | **5.2000e-004** | **0.0451** | **5.0000e-004** | **0.0456** | **0.0122** | **4.8000e-004** | **0.0126** | **0.0000** | **48.9321** | **48.9321** | **9.5000e-004** | **3.5300e-003** | **50.0090** |

## 3.2 Site Preparation - 2024

**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 | | | | | 1.9600e-003 | 0.0000 | 1.9600e-003 | 2.1000e-004 | 0.0000 | 2.1000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0399 | 0.2989 | 0.3805 | 8.8000e-004 | | 0.0124 | 0.0124 | | 0.0120 | 0.0120 | 0.0000 | 76.1803 | 76.1803 | 0.0154 | 0.0000 | 76.5653 |
| **Total** | **0.0399** | **0.2989** | **0.3805** | **8.8000e-004** | **1.9600e-003** | **0.0124** | **0.0144** | **2.1000e-004** | **0.0120** | **0.0122** | **0.0000** | **76.1803** | **76.1803** | **0.0154** | **0.0000** | **76.5653** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2024

### 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 | 1.8000e-004 | 5.7600e-003 | 2.2700e-003 | 3.0000e-005 | 1.0600e-003 | 5.0000e-005 | 1.1100e-003 | 3.1000e-004 | 5.0000e-005 | 3.5000e-004 | 0.0000 | 2.7831 | 2.7831 | 3.0000e-005 | 4.1000e-004 | 2.9063 |
| Worker | 1.7000e-003 | 1.2000e-003 | 0.0164 | 5.0000e-005 | 6.1600e-003 | 3.0000e-005 | 6.1800e-003 | 1.6300e-003 | 3.0000e-005 | 1.6600e-003 | 0.0000 | 4.5326 | 4.5326 | 1.1000e-004 | 1.2000e-004 | 4.5696 |
| **Total** | **1.8800e-003** | **6.9600e-003** | **0.0187** | **8.0000e-005** | **7.2200e-003** | **8.0000e-005** | **7.2900e-003** | **1.9400e-003** | **8.0000e-005** | **2.0100e-003** | **0.0000** | **7.3156** | **7.3156** | **1.4000e-004** | **5.3000e-004** | **7.4759** |

### 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 | | | | | 8.8000e-004 | 0.0000 | 8.8000e-004 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0399 | 0.2989 | 0.3805 | 8.8000e-004 | | 0.0124 | 0.0124 | | 0.0120 | 0.0120 | 0.0000 | 76.1802 | 76.1802 | 0.0154 | 0.0000 | 76.5652 |
| **Total** | **0.0399** | **0.2989** | **0.3805** | **8.8000e-004** | **8.8000e-004** | **0.0124** | **0.0133** | **1.0000e-004** | **0.0120** | **0.0121** | **0.0000** | **76.1802** | **76.1802** | **0.0154** | **0.0000** | **76.5652** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2024

**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 | 1.8000e-004 | 5.7600e-003 | 2.2700e-003 | 3.0000e-005 | 1.0200e-003 | 5.0000e-005 | 1.0700e-003 | 3.0000e-004 | 5.0000e-005 | 3.4000e-004 | 0.0000 | 2.7831 | 2.7831 | 3.0000e-005 | 4.1000e-004 | 2.9063 |
| Worker | 1.7000e-003 | 1.2000e-003 | 0.0164 | 5.0000e-005 | 5.8900e-003 | 3.0000e-005 | 5.9200e-003 | 1.5700e-003 | 3.0000e-005 | 1.5900e-003 | 0.0000 | 4.5326 | 4.5326 | 1.1000e-004 | 1.2000e-004 | 4.5696 |
| **Total** | **1.8800e-003** | **6.9600e-003** | **0.0187** | **8.0000e-005** | **6.9100e-003** | **8.0000e-005** | **6.9900e-003** | **1.8700e-003** | **8.0000e-005** | **1.9300e-003** | **0.0000** | **7.3156** | **7.3156** | **1.4000e-004** | **5.3000e-004** | **7.4759** |

## 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 | | | | | 9.0000e-005 | 0.0000 | 9.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0689 | 0.5625 | 0.5100 | 1.5200e-003 | | 0.0232 | 0.0232 | | 0.0219 | 0.0219 | 0.0000 | 132.7123 | 132.7123 | 0.0371 | 0.0000 | 133.6407 |
| **Total** | **0.0689** | **0.5625** | **0.5100** | **1.5200e-003** | **9.0000e-005** | **0.0232** | **0.0233** | **1.0000e-005** | **0.0219** | **0.0219** | **0.0000** | **132.7123** | **132.7123** | **0.0371** | **0.0000** | **133.6407** |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 | 1.2400e-003 | 2.7000e-004 | 1.0000e-005 | 1.6000e-004 | 1.0000e-005 | 1.7000e-004 | 4.0000e-005 | 1.0000e-005 | 6.0000e-005 | 0.0000 | 0.5145 | 0.5145 | 1.0000e-005 | 8.0000e-005 | 0.5388 |
| 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 | 1.4300e-003 | 1.1200e-003 | 0.0140 | 4.0000e-005 | 4.5100e-003 | 2.0000e-005 | 4.5300e-003 | 1.2000e-003 | 2.0000e-005 | 1.2200e-003 | 0.0000 | 3.5405 | 3.5405 | 1.0000e-004 | 1.0000e-004 | 3.5723 |
| **Total** | **1.4600e-003** | **2.3600e-003** | **0.0142** | **5.0000e-005** | **4.6700e-003** | **3.0000e-005** | **4.7000e-003** | **1.2400e-003** | **3.0000e-005** | **1.2800e-003** | **0.0000** | **4.0550** | **4.0550** | **1.1000e-004** | **1.8000e-004** | **4.1111** |

### 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 | | | | | 4.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0689 | 0.5625 | 0.5100 | 1.5200e-003 | | 0.0232 | 0.0232 | | 0.0219 | 0.0219 | 0.0000 | 132.7121 | 132.7121 | 0.0371 | 0.0000 | 133.6405 |
| **Total** | **0.0689** | **0.5625** | **0.5100** | **1.5200e-003** | **4.0000e-005** | **0.0232** | **0.0232** | **1.0000e-005** | **0.0219** | **0.0219** | **0.0000** | **132.7121** | **132.7121** | **0.0371** | **0.0000** | **133.6405** |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 | 1.2400e-003 | 2.7000e-004 | 1.0000e-005 | 1.5000e-004 | 1.0000e-005 | 1.7000e-004 | 4.0000e-005 | 1.0000e-005 | 6.0000e-005 | 0.0000 | 0.5145 | 0.5145 | 1.0000e-005 | 8.0000e-005 | 0.5388 |
| 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 | 1.4300e-003 | 1.1200e-003 | 0.0140 | 4.0000e-005 | 4.3100e-003 | 2.0000e-005 | 4.3300e-003 | 1.1500e-003 | 2.0000e-005 | 1.1700e-003 | 0.0000 | 3.5405 | 3.5405 | 1.0000e-004 | 1.0000e-004 | 3.5723 |
| **Total** | **1.4600e-003** | **2.3600e-003** | **0.0142** | **5.0000e-005** | **4.4600e-003** | **3.0000e-005** | **4.5000e-003** | **1.1900e-003** | **3.0000e-005** | **1.2300e-003** | **0.0000** | **4.0550** | **4.0550** | **1.1000e-004** | **1.8000e-004** | **4.1111** |

## 3.3 Drilling - 2023

**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 | | | | | 9.0000e-005 | 0.0000 | 9.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.5788 | 4.5369 | 4.4801 | 0.0136 | | 0.1822 | 0.1822 | | 0.1717 | 0.1717 | 0.0000 | 1,182.3079 | 1,182.3079 | 0.3298 | 0.0000 | 1,190.5534 |
| **Total** | **0.5788** | **4.5369** | **4.4801** | **0.0136** | **9.0000e-005** | **0.1822** | **0.1823** | **1.0000e-005** | **0.1717** | **0.1717** | **0.0000** | **1,182.3079** | **1,182.3079** | **0.3298** | **0.0000** | **1,190.5534** |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | 1.7000e-004 | 8.6700e-003 | 2.2800e-003 | 5.0000e-005 | 1.4200e-003 | 1.0000e-004 | 1.5200e-003 | 3.9000e-004 | 9.0000e-005 | 4.8000e-004 | 0.0000 | 4.3833 | 4.3833 | 6.0000e-005 | 6.9000e-004 | 4.5907 |
| 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 | 0.0118 | 8.7700e-003 | 0.1143 | 3.3000e-004 | 0.0401 | 1.9000e-004 | 0.0403 | 0.0107 | 1.8000e-004 | 0.0108 | 0.0000 | 30.5086 | 30.5086 | 7.6000e-004 | 8.1000e-004 | 30.7691 |
| **Total** | **0.0120** | **0.0174** | **0.1166** | **3.8000e-004** | **0.0415** | **2.9000e-004** | **0.0418** | **0.0110** | **2.7000e-004** | **0.0113** | **0.0000** | **34.8920** | **34.8920** | **8.2000e-004** | **1.5000e-003** | **35.3598** |

### 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 | | | | | 4.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.5788 | 4.5369 | 4.4801 | 0.0136 | | 0.1822 | 0.1822 | | 0.1717 | 0.1717 | 0.0000 | 1,182.3065 | 1,182.3065 | 0.3298 | 0.0000 | 1,190.5520 |
| **Total** | **0.5788** | **4.5369** | **4.4801** | **0.0136** | **4.0000e-005** | **0.1822** | **0.1822** | **1.0000e-005** | **0.1717** | **0.1717** | **0.0000** | **1,182.3065** | **1,182.3065** | **0.3298** | **0.0000** | **1,190.5520** |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

**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 | 1.7000e-004 | 8.6700e-003 | 2.2800e-003 | 5.0000e-005 | 1.3700e-003 | 1.0000e-004 | 1.4700e-003 | 3.8000e-004 | 9.0000e-005 | 4.7000e-004 | 0.0000 | 4.3833 | 4.3833 | 6.0000e-005 | 6.9000e-004 | 4.5907 |
| 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 | 0.0118 | 8.7700e-003 | 0.1143 | 3.3000e-004 | 0.0384 | 1.9000e-004 | 0.0386 | 0.0102 | 1.8000e-004 | 0.0104 | 0.0000 | 30.5086 | 30.5086 | 7.6000e-004 | 8.1000e-004 | 30.7691 |
| **Total** | **0.0120** | **0.0174** | **0.1166** | **3.8000e-004** | **0.0398** | **2.9000e-004** | **0.0400** | **0.0106** | **2.7000e-004** | **0.0109** | **0.0000** | **34.8920** | **34.8920** | **8.2000e-004** | **1.5000e-003** | **35.3598** |

## 3.3 Drilling - 2024

**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 | | | | | 9.0000e-005 | 0.0000 | 9.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0643 | 0.4876 | 0.5114 | 1.5600e-003 | | 0.0190 | 0.0190 | | 0.0179 | 0.0179 | 0.0000 | 136.1157 | 136.1157 | 0.0379 | 0.0000 | 137.0627 |
| **Total** | **0.0643** | **0.4876** | **0.5114** | **1.5600e-003** | **9.0000e-005** | **0.0190** | **0.0191** | **1.0000e-005** | **0.0179** | **0.0179** | **0.0000** | **136.1157** | **136.1157** | **0.0379** | **0.0000** | **137.0627** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2024

### 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 | 2.0000e-005 | 1.0000e-003 | 2.7000e-004 | 1.0000e-005 | 1.6000e-004 | 1.0000e-005 | 1.7000e-004 | 4.0000e-005 | 1.0000e-005 | 6.0000e-005 | 0.0000 | 0.4961 | 0.4961 | 1.0000e-005 | 8.0000e-005 | 0.5196 |
| 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 | 1.2700e-003 | 9.0000e-004 | 0.0123 | 4.0000e-005 | 4.6200e-003 | 2.0000e-005 | 4.6400e-003 | 1.2300e-003 | 2.0000e-005 | 1.2500e-003 | 0.0000 | 3.3994 | 3.3994 | 8.0000e-005 | 9.0000e-005 | 3.4272 |
| **Total** | **1.2900e-003** | **1.9000e-003** | **0.0126** | **5.0000e-005** | **4.7800e-003** | **3.0000e-005** | **4.8100e-003** | **1.2700e-003** | **3.0000e-005** | **1.3100e-003** | **0.0000** | **3.8956** | **3.8956** | **9.0000e-005** | **1.7000e-004** | **3.9468** |

### 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 | | | | | 4.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0643 | 0.4876 | 0.5114 | 1.5600e-003 | | 0.0190 | 0.0190 | | 0.0179 | 0.0179 | 0.0000 | 136.1156 | 136.1156 | 0.0379 | 0.0000 | 137.0626 |
| **Total** | **0.0643** | **0.4876** | **0.5114** | **1.5600e-003** | **4.0000e-005** | **0.0190** | **0.0190** | **1.0000e-005** | **0.0179** | **0.0179** | **0.0000** | **136.1156** | **136.1156** | **0.0379** | **0.0000** | **137.0626** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2024

**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 | 2.0000e-005 | 1.0000e-003 | 2.7000e-004 | 1.0000e-005 | 1.6000e-004 | 1.0000e-005 | 1.7000e-004 | 4.0000e-005 | 1.0000e-005 | 5.0000e-005 | 0.0000 | 0.4961 | 0.4961 | 1.0000e-005 | 8.0000e-005 | 0.5196 |
| 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 | 1.2700e-003 | 9.0000e-004 | 0.0123 | 4.0000e-005 | 4.4200e-003 | 2.0000e-005 | 4.4400e-003 | 1.1800e-003 | 2.0000e-005 | 1.2000e-003 | 0.0000 | 3.3994 | 3.3994 | 8.0000e-005 | 9.0000e-005 | 3.4272 |
| **Total** | **1.2900e-003** | **1.9000e-003** | **0.0126** | **5.0000e-005** | **4.5800e-003** | **3.0000e-005** | **4.6100e-003** | **1.2200e-003** | **3.0000e-005** | **1.2500e-003** | **0.0000** | **3.8956** | **3.8956** | **9.0000e-005** | **1.7000e-004** | **3.9468** |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive 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 | 6.9100e-003 | 0.0126 | 0.0826 | 2.1000e-004 | 0.0238 | 1.7000e-004 | 0.0239 | 6.3500e-003 | 1.6000e-004 | 6.5000e-003 | 0.0000 | 19.7847 | 19.7847 | 9.0000e-004 | 9.2000e-004 | 20.0807 |
| Unmitigated | 6.9100e-003 | 0.0126 | 0.0826 | 2.1000e-004 | 0.0238 | 1.7000e-004 | 0.0239 | 6.3500e-003 | 1.6000e-004 | 6.5000e-003 | 0.0000 | 19.7847 | 19.7847 | 9.0000e-004 | 9.2000e-004 | 20.0807 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Other Non-Asphalt Surfaces | 16.00 | 0.00 | 0.00 | 62,816 | 62,816 |
| Total | 16.00 | 0.00 | 0.00 | 62,816 | 62,816 |

## 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 Non-Asphalt Surfaces | 16.60 | 15.10 | 6.90 | 0.00 | 100.00 | 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 Non-Asphalt Surfaces | 0.540541 | 0.056458 | 0.173793 | 0.136090 | 0.025268 | 0.007074 | 0.011525 | 0.018705 | 0.000610 | 0.000304 | 0.023606 | 0.001094 | 0.004932 |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 |

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 Non-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** |

**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 Non-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** |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

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

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Other Non-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

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0107 | 0.0000 | 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 | 0.0107 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 6.2 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 | 3.7000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0103 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 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** | **0.0107** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**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 | 3.7000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0103 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 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** | **0.0107** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

Perris North GW Monitoring Wells - Riverside-South Coast County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | Total 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 Non-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 Non-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 |

Perris North GW Monitoring Wells - Riverside-South Coast County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Other Non-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 Non-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 |
|---|---|---|---|---|---|---|

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# Perris North GW Monitoring Wells

**Riverside-South Coast County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Other Non-Asphalt Surfaces | 160.00 | 1000sqft | 3.67 | 160,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.4 | **Precipitation Freq (Days)** | 28 |
| **Climate Zone** | 10 | | | **Operational Year** | 2025 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 390.98 | **CH4 Intensity (lb/MWhr)** | 0.033 | **N2O Intensity (lb/MWhr)** | 0.004 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Site prep phase captures site prep and construction/demobilization (same equipment list).

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

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

Trips and VMT - Based on engineering inputs and project description.

Grading - Per project description

Vehicle Trips - Based on project description.

Area Coating - 16 well clusters at 100 sq ft each.

Landscape Equipment - No change in landscaping.

Construction Off-road Equipment Mitigation - BMPs

Fleet Mix -

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Parking | 9600 | 1600 |
| tblConstDustMitigation | CleanPavedRoadPercentReduction | 0 | 5 |
| tblConstDustMitigation | WaterUnpavedRoadVehicleSpeed | 0 | 15 |
| tblConstructionPhase | NumDays | 8.00 | 448.00 |
| tblConstructionPhase | NumDays | 5.00 | 476.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConstructionPhase | PhaseEndDate | 11/23/2022 | 2/11/2024 |
| tblConstructionPhase | PhaseEndDate | 11/11/2022 | 2/25/2024 |
| tblConstructionPhase | PhaseStartDate | 11/12/2022 | 11/21/2022 |
| tblGrading | AcresOfGrading | 0.00 | 3.70 |
| tblGrading | MaterialExported | 0.00 | 1,481.00 |
| tblLandscapeEquipment | NumberSummerDays | 250 | 0 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 6.00 |
| tblTripsAndVMT | HaulingTripNumber | 185.00 | 202.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 25.00 | 20.00 |
| tblTripsAndVMT | WorkerTripNumber | 25.00 | 20.00 |
| tblVehicleTrips | CC_TL | 8.40 | 15.10 |
| tblVehicleTrips | CC_TTP | 0.00 | 100.00 |
| tblVehicleTrips | PR_TP | 0.00 | 100.00 |
| tblVehicleTrips | WD_TR | 0.00 | 0.10 |

## 2.0 Emissions Summary

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 2.1 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 | 5.1035 | 40.3010 | 40.0240 | 0.1109 | 0.5021 | 1.7132 | 2.2153 | 0.1328 | 1.6294 | 1.7622 | 0.0000 | 10,648.8974 | 10,648.8974 | 2.6251 | 0.0320 | 10,724.0520 |
| 2023 | 4.8046 | 36.5814 | 39.4790 | 0.1108 | 0.5021 | 1.5039 | 2.0060 | 0.1328 | 1.4299 | 1.5626 | 0.0000 | 10,637.7452 | 10,637.7452 | 2.6130 | 0.0303 | 10,712.0883 |
| 2024 | 4.6221 | 34.2321 | 39.1497 | 0.1107 | 0.5021 | 1.3519 | 1.8539 | 0.1328 | 1.2837 | 1.4165 | 0.0000 | 10,628.5001 | 10,628.5001 | 2.6045 | 0.0292 | 10,702.3224 |
| **Maximum** | **5.1035** | **40.3010** | **40.0240** | **0.1109** | **0.5021** | **1.7132** | **2.2153** | **0.1328** | **1.6294** | **1.7622** | **0.0000** | **10,648.8974** | **10,648.8974** | **2.6251** | **0.0320** | **10,724.0520** |

### 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 | 5.1035 | 40.3010 | 40.0240 | 0.1109 | 0.4762 | 1.7132 | 2.1895 | 0.1271 | 1.6294 | 1.7565 | 0.0000 | 10,648.8974 | 10,648.8974 | 2.6251 | 0.0320 | 10,724.0520 |
| 2023 | 4.8046 | 36.5814 | 39.4790 | 0.1108 | 0.4762 | 1.5039 | 1.9802 | 0.1271 | 1.4299 | 1.5569 | 0.0000 | 10,637.7452 | 10,637.7452 | 2.6130 | 0.0303 | 10,712.0883 |
| 2024 | 4.6221 | 34.2321 | 39.1497 | 0.1107 | 0.4762 | 1.3519 | 1.8281 | 0.1271 | 1.2837 | 1.4108 | 0.0000 | 10,628.5001 | 10,628.5001 | 2.6045 | 0.0292 | 10,702.3224 |
| **Maximum** | **5.1035** | **40.3010** | **40.0240** | **0.1109** | **0.4762** | **1.7132** | **2.1895** | **0.1271** | **1.6294** | **1.7565** | **0.0000** | **10,648.8974** | **10,648.8974** | **2.6251** | **0.0320** | **10,724.0520** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | 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 | 5.15 | 0.00 | 1.28 | 4.30 | 0.00 | 0.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 2.2 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 | 0.0602 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| 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 | 0.0526 | 0.0959 | 0.6124 | 1.6200e-003 | 0.1858 | 1.3000e-003 | 0.1871 | 0.0496 | 1.2200e-003 | 0.0508 | | 165.1229 | 165.1229 | 7.5900e-003 | 7.7400e-003 | 167.6184 |
| **Total** | **0.1128** | **0.0961** | **0.6287** | **1.6200e-003** | **0.1858** | **1.3600e-003** | **0.1871** | **0.0496** | **1.2800e-003** | **0.0508** | | **165.1579** | **165.1579** | **7.6800e-003** | **7.7400e-003** | **167.6557** |

### 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 | 0.0602 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| 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 | 0.0526 | 0.0959 | 0.6124 | 1.6200e-003 | 0.1858 | 1.3000e-003 | 0.1871 | 0.0496 | 1.2200e-003 | 0.0508 | | 165.1229 | 165.1229 | 7.5900e-003 | 7.7400e-003 | 167.6184 |
| **Total** | **0.1128** | **0.0961** | **0.6287** | **1.6200e-003** | **0.1858** | **1.3600e-003** | **0.1871** | **0.0496** | **1.2800e-003** | **0.0508** | | **165.1579** | **165.1579** | **7.6800e-003** | **7.7400e-003** | **167.6557** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | 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 Preparation | Site Preparation | 11/7/2022 | 2/25/2024 | 7 | 476 | |
| 2 | Drilling | Grading | 11/21/2022 | 2/11/2024 | 7 | 448 | |

**Acres of Grading (Site Preparation Phase): 3.7**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 3.67**

**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 | Excavators | 0 | 8.00 | 158 | 0.38 |
| Drilling | Graders | 0 | 8.00 | 187 | 0.41 |
| Drilling | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Site Preparation | Cement and Mortar Mixers | 1 | 2.00 | 9 | 0.56 |
| Site Preparation | Generator Sets | 1 | 6.00 | 84 | 0.74 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 6.00 | 97 | 0.37 |
| Site Preparation | Off-Highway Trucks | 1 | 3.00 | 402 | 0.38 |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | | | | | |
|---|---|---|---|---|---|
| Site Preparation | Off-Highway Trucks | 1 | 2.00 | 402 | 0.38 |
| Site Preparation | Off-Highway Trucks | 2 | 2.00 | 402 | 0.38 |
| Site Preparation | Pumps | 1 | 6.00 | 84 | 0.74 |
| Site Preparation | Welders | 1 | 4.00 | 46 | 0.45 |
| Drilling | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Drilling | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Drilling | Cranes | 1 | 8.00 | 231 | 0.29 |
| Drilling | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Drilling | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Drilling | Off-Highway Trucks | 1 | 8.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 1 | 6.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 2 | 6.00 | 402 | 0.38 |
| Drilling | Welders | 1 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 10 | 20.00 | 6.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Drilling | 10 | 20.00 | 0.00 | 202.00 | 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

Clean Paved Roads

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 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 | | | | | 8.2400e-003 | 0.0000 | 8.2400e-003 | 8.9000e-004 | 0.0000 | 8.9000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.5870 | 12.4269 | 13.7515 | 0.0315 | | 0.5760 | 0.5760 | | 0.5574 | 0.5574 | | 2,997.1555 | 2,997.1555 | 0.6165 | | 3,012.5685 |
| **Total** | **1.5870** | **12.4269** | **13.7515** | **0.0315** | **8.2400e-003** | **0.5760** | **0.5842** | **8.9000e-004** | **0.5574** | **0.5583** | | **2,997.1555** | **2,997.1555** | **0.6165** | | **3,012.5685** |

### 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 | 0.0000 |
| Vendor | 9.3500e-003 | 0.2673 | 0.0916 | 1.0900e-003 | 0.0384 | 3.6700e-003 | 0.0421 | 0.0111 | 3.5100e-003 | 0.0146 | | 115.8935 | 115.8935 | 1.2100e-003 | 0.0172 | 121.0492 |
| Worker | 0.0736 | 0.0530 | 0.6453 | 1.8400e-003 | 0.2236 | 1.1100e-003 | 0.2247 | 0.0593 | 1.0200e-003 | 0.0603 | | 186.0315 | 186.0315 | 5.0800e-003 | 5.2000e-003 | 187.7096 |
| **Total** | **0.0830** | **0.3203** | **0.7369** | **2.9300e-003** | **0.2620** | **4.7800e-003** | **0.2668** | **0.0704** | **4.5300e-003** | **0.0749** | | **301.9250** | **301.9250** | **6.2900e-003** | **0.0224** | **308.7588** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2022

### 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 | | | | | 3.7100e-003 | 0.0000 | 3.7100e-003 | 4.0000e-004 | 0.0000 | 4.0000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.5870 | 12.4269 | 13.7515 | 0.0315 | | 0.5760 | 0.5760 | | 0.5574 | 0.5574 | 0.0000 | 2,997.1555 | 2,997.1555 | 0.6165 | | 3,012.5685 |
| **Total** | **1.5870** | **12.4269** | **13.7515** | **0.0315** | **3.7100e-003** | **0.5760** | **0.5797** | **4.0000e-004** | **0.5574** | **0.5578** | **0.0000** | **2,997.1555** | **2,997.1555** | **0.6165** | | **3,012.5685** |

### 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 | 0.0000 |
| Vendor | 9.3500e-003 | 0.2673 | 0.0916 | 1.0900e-003 | 0.0371 | 3.6700e-003 | 0.0407 | 0.0107 | 3.5100e-003 | 0.0142 | | 115.8935 | 115.8935 | 1.2100e-003 | 0.0172 | 121.0492 |
| Worker | 0.0736 | 0.0530 | 0.6453 | 1.8400e-003 | 0.2138 | 1.1100e-003 | 0.2150 | 0.0569 | 1.0200e-003 | 0.0579 | | 186.0315 | 186.0315 | 5.0800e-003 | 5.2000e-003 | 187.7096 |
| **Total** | **0.0830** | **0.3203** | **0.7369** | **2.9300e-003** | **0.2509** | **4.7800e-003** | **0.2557** | **0.0676** | **4.5300e-003** | **0.0722** | | **301.9250** | **301.9250** | **6.2900e-003** | **0.0224** | **308.7588** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | | | | | 8.2400e-003 | 0.0000 | 8.2400e-003 | 8.9000e-004 | 0.0000 | 8.9000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4892 | 11.3723 | 13.6462 | 0.0315 | | 0.5013 | 0.5013 | | 0.4851 | 0.4851 | | 2,998.4248 | 2,998.4248 | 0.6102 | | 3,013.6807 |
| **Total** | **1.4892** | **11.3723** | **13.6462** | **0.0315** | **8.2400e-003** | **0.5013** | **0.5095** | **8.9000e-004** | **0.4851** | **0.4860** | | **2,998.4248** | **2,998.4248** | **0.6102** | | **3,013.6807** |

### 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 | 0.0000 |
| Vendor | 6.2600e-003 | 0.2079 | 0.0834 | 1.0500e-003 | 0.0384 | 1.7100e-003 | 0.0401 | 0.0111 | 1.6400e-003 | 0.0127 | | 111.4385 | 111.4385 | 1.1100e-003 | 0.0165 | 116.3777 |
| Worker | 0.0684 | 0.0468 | 0.5942 | 1.7800e-003 | 0.2236 | 1.0500e-003 | 0.2246 | 0.0593 | 9.6000e-004 | 0.0603 | | 180.0847 | 180.0847 | 4.5800e-003 | 4.8000e-003 | 181.6302 |
| **Total** | **0.0747** | **0.2547** | **0.6776** | **2.8300e-003** | **0.2620** | **2.7600e-003** | **0.2647** | **0.0704** | **2.6000e-003** | **0.0730** | | **291.5232** | **291.5232** | **5.6900e-003** | **0.0213** | **298.0078** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | | | | | 3.7100e-003 | 0.0000 | 3.7100e-003 | 4.0000e-004 | 0.0000 | 4.0000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4892 | 11.3723 | 13.6462 | 0.0315 | | 0.5013 | 0.5013 | | 0.4851 | 0.4851 | 0.0000 | 2,998.4248 | 2,998.4248 | 0.6102 | | 3,013.6807 |
| **Total** | **1.4892** | **11.3723** | **13.6462** | **0.0315** | **3.7100e-003** | **0.5013** | **0.5050** | **4.0000e-004** | **0.4851** | **0.4855** | **0.0000** | **2,998.4248** | **2,998.4248** | **0.6102** | | **3,013.6807** |

### 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 | 0.0000 |
| Vendor | 6.2600e-003 | 0.2079 | 0.0834 | 1.0500e-003 | 0.0371 | 1.7100e-003 | 0.0388 | 0.0107 | 1.6400e-003 | 0.0124 | | 111.4385 | 111.4385 | 1.1100e-003 | 0.0165 | 116.3777 |
| Worker | 0.0684 | 0.0468 | 0.5942 | 1.7800e-003 | 0.2138 | 1.0500e-003 | 0.2149 | 0.0569 | 9.6000e-004 | 0.0579 | | 180.0847 | 180.0847 | 4.5800e-003 | 4.8000e-003 | 181.6302 |
| **Total** | **0.0747** | **0.2547** | **0.6776** | **2.8300e-003** | **0.2509** | **2.7600e-003** | **0.2537** | **0.0676** | **2.6000e-003** | **0.0702** | | **291.5232** | **291.5232** | **5.6900e-003** | **0.0213** | **298.0078** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2024

### 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 | | | | | 8.2400e-003 | 0.0000 | 8.2400e-003 | 8.9000e-004 | 0.0000 | 8.9000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4237 | 10.6736 | 13.5900 | 0.0315 | | 0.4439 | 0.4439 | | 0.4291 | 0.4291 | | 2,999.0871 | 2,999.0871 | 0.6063 | | 3,014.2438 |
| **Total** | **1.4237** | **10.6736** | **13.5900** | **0.0315** | **8.2400e-003** | **0.4439** | **0.4521** | **8.9000e-004** | **0.4291** | **0.4300** | | **2,999.0871** | **2,999.0871** | **0.6063** | | **3,014.2438** |

### 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 | 0.0000 |
| Vendor | 6.1600e-003 | 0.2079 | 0.0825 | 1.0300e-003 | 0.0384 | 1.7000e-003 | 0.0401 | 0.0111 | 1.6300e-003 | 0.0127 | | 109.7229 | 109.7229 | 1.1500e-003 | 0.0162 | 114.5800 |
| Worker | 0.0640 | 0.0417 | 0.5557 | 1.7300e-003 | 0.2236 | 1.0000e-003 | 0.2246 | 0.0593 | 9.2000e-004 | 0.0602 | | 174.3853 | 174.3853 | 4.1600e-003 | 4.4600e-003 | 175.8183 |
| **Total** | **0.0701** | **0.2496** | **0.6382** | **2.7600e-003** | **0.2620** | **2.7000e-003** | **0.2647** | **0.0704** | **2.5500e-003** | **0.0729** | | **284.1082** | **284.1082** | **5.3100e-003** | **0.0207** | **290.3983** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2024

### 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 | | | | | 3.7100e-003 | 0.0000 | 3.7100e-003 | 4.0000e-004 | 0.0000 | 4.0000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4237 | 10.6736 | 13.5900 | 0.0315 | | 0.4439 | 0.4439 | | 0.4291 | 0.4291 | 0.0000 | 2,999.0871 | 2,999.0871 | 0.6063 | | 3,014.2437 |
| **Total** | **1.4237** | **10.6736** | **13.5900** | **0.0315** | **3.7100e-003** | **0.4439** | **0.4476** | **4.0000e-004** | **0.4291** | **0.4295** | **0.0000** | **2,999.0871** | **2,999.0871** | **0.6063** | | **3,014.2437** |

### 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 | 0.0000 |
| Vendor | 6.1600e-003 | 0.2079 | 0.0825 | 1.0300e-003 | 0.0371 | 1.7000e-003 | 0.0388 | 0.0107 | 1.6300e-003 | 0.0124 | | 109.7229 | 109.7229 | 1.1500e-003 | 0.0162 | 114.5800 |
| Worker | 0.0640 | 0.0417 | 0.5557 | 1.7300e-003 | 0.2138 | 1.0000e-003 | 0.2148 | 0.0569 | 9.2000e-004 | 0.0578 | | 174.3853 | 174.3853 | 4.1600e-003 | 4.4600e-003 | 175.8183 |
| **Total** | **0.0701** | **0.2496** | **0.6382** | **2.7600e-003** | **0.2509** | **2.7000e-003** | **0.2536** | **0.0676** | **2.5500e-003** | **0.0702** | | **284.1082** | **284.1082** | **5.3100e-003** | **0.0207** | **290.3983** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 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 | | | | | 4.2000e-004 | 0.0000 | 4.2000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.3586 | 27.4400 | 24.8772 | 0.0744 | | 1.1307 | 1.1307 | | 1.0658 | 1.0658 | | 7,136.1087 | 7,136.1087 | 1.9969 | | 7,186.0299 |
| **Total** | **3.3586** | **27.4400** | **24.8772** | **0.0744** | **4.2000e-004** | **1.1307** | **1.1311** | **6.0000e-005** | **1.0658** | **1.0659** | | **7,136.1087** | **7,136.1087** | **1.9969** | | **7,186.0299** |

### 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 | 1.3600e-003 | 0.0607 | 0.0132 | 2.6000e-004 | 7.8900e-003 | 6.7000e-004 | 8.5600e-003 | 2.1600e-003 | 6.4000e-004 | 2.8000e-003 | | 27.6767 | 27.6767 | 3.7000e-004 | 4.3600e-003 | 28.9852 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0736 | 0.0530 | 0.6453 | 1.8400e-003 | 0.2236 | 1.1100e-003 | 0.2247 | 0.0593 | 1.0200e-003 | 0.0603 | | 186.0315 | 186.0315 | 5.0800e-003 | 5.2000e-003 | 187.7096 |
| **Total** | **0.0750** | **0.1137** | **0.6584** | **2.1000e-003** | **0.2314** | **1.7800e-003** | **0.2332** | **0.0615** | **1.6600e-003** | **0.0631** | | **213.7082** | **213.7082** | **5.4500e-003** | **9.5600e-003** | **216.6948** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2022

### 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 | | | | | 1.9000e-004 | 0.0000 | 1.9000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.3586 | 27.4400 | 24.8772 | 0.0744 | | 1.1307 | 1.1307 | | 1.0658 | 1.0658 | 0.0000 | 7,136.1087 | 7,136.1087 | 1.9969 | | 7,186.0299 |
| **Total** | **3.3586** | **27.4400** | **24.8772** | **0.0744** | **1.9000e-004** | **1.1307** | **1.1309** | **3.0000e-005** | **1.0658** | **1.0659** | **0.0000** | **7,136.1087** | **7,136.1087** | **1.9969** | | **7,186.0299** |

### 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 | 1.3600e-003 | 0.0607 | 0.0132 | 2.6000e-004 | 7.5900e-003 | 6.7000e-004 | 8.2600e-003 | 2.0900e-003 | 6.4000e-004 | 2.7300e-003 | | 27.6767 | 27.6767 | 3.7000e-004 | 4.3600e-003 | 28.9852 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0736 | 0.0530 | 0.6453 | 1.8400e-003 | 0.2138 | 1.1100e-003 | 0.2150 | 0.0569 | 1.0200e-003 | 0.0579 | | 186.0315 | 186.0315 | 5.0800e-003 | 5.2000e-003 | 187.7096 |
| **Total** | **0.0750** | **0.1137** | **0.6584** | **2.1000e-003** | **0.2214** | **1.7800e-003** | **0.2232** | **0.0590** | **1.6600e-003** | **0.0607** | | **213.7082** | **213.7082** | **5.4500e-003** | **9.5600e-003** | **216.6948** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | | | | | 4.2000e-004 | 0.0000 | 4.2000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1714 | 24.8599 | 24.5483 | 0.0744 | | 0.9983 | 0.9983 | | 0.9407 | 0.9407 | | 7,141.2130 | 7,141.2130 | 1.9921 | | 7,191.0164 |
| **Total** | **3.1714** | **24.8599** | **24.5483** | **0.0744** | **4.2000e-004** | **0.9983** | **0.9987** | **6.0000e-005** | **0.9407** | **0.9407** | | **7,141.2130** | **7,141.2130** | **1.9921** | | **7,191.0164** |

### 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 | 9.1000e-004 | 0.0477 | 0.0126 | 2.5000e-004 | 7.8900e-003 | 5.4000e-004 | 8.4400e-003 | 2.1600e-003 | 5.2000e-004 | 2.6800e-003 | | 26.4996 | 26.4996 | 3.7000e-004 | 4.1800e-003 | 27.7532 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0684 | 0.0468 | 0.5942 | 1.7800e-003 | 0.2236 | 1.0500e-003 | 0.2246 | 0.0593 | 9.6000e-004 | 0.0603 | | 180.0847 | 180.0847 | 4.5800e-003 | 4.8000e-003 | 181.6302 |
| **Total** | **0.0694** | **0.0945** | **0.6068** | **2.0300e-003** | **0.2314** | **1.5900e-003** | **0.2330** | **0.0615** | **1.4800e-003** | **0.0629** | | **206.5843** | **206.5843** | **4.9500e-003** | **8.9800e-003** | **209.3834** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | | | | | 1.9000e-004 | 0.0000 | 1.9000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1714 | 24.8599 | 24.5483 | 0.0744 | | 0.9983 | 0.9983 | | 0.9407 | 0.9407 | 0.0000 | 7,141.2130 | 7,141.2130 | 1.9921 | | 7,191.0164 |
| **Total** | **3.1714** | **24.8599** | **24.5483** | **0.0744** | **1.9000e-004** | **0.9983** | **0.9985** | **3.0000e-005** | **0.9407** | **0.9407** | **0.0000** | **7,141.2130** | **7,141.2130** | **1.9921** | | **7,191.0164** |

### 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 | 9.1000e-004 | 0.0477 | 0.0126 | 2.5000e-004 | 7.5900e-003 | 5.4000e-004 | 8.1400e-003 | 2.0900e-003 | 5.2000e-004 | 2.6100e-003 | | 26.4996 | 26.4996 | 3.7000e-004 | 4.1800e-003 | 27.7532 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0684 | 0.0468 | 0.5942 | 1.7800e-003 | 0.2138 | 1.0500e-003 | 0.2149 | 0.0569 | 9.6000e-004 | 0.0579 | | 180.0847 | 180.0847 | 4.5800e-003 | 4.8000e-003 | 181.6302 |
| **Total** | **0.0694** | **0.0945** | **0.6068** | **2.0300e-003** | **0.2214** | **1.5900e-003** | **0.2230** | **0.0590** | **1.4800e-003** | **0.0605** | | **206.5843** | **206.5843** | **4.9500e-003** | **8.9800e-003** | **209.3834** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2024

### 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 | | | | | 4.2000e-004 | 0.0000 | 4.2000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.0634 | 23.2194 | 24.3530 | 0.0745 | | 0.9037 | 0.9037 | | 0.8506 | 0.8506 | | 7,144.8527 | 7,144.8527 | 1.9883 | | 7,194.5611 |
| **Total** | **3.0634** | **23.2194** | **24.3530** | **0.0745** | **4.2000e-004** | **0.9037** | **0.9042** | **6.0000e-005** | **0.8506** | **0.8507** | | **7,144.8527** | **7,144.8527** | **1.9883** | | **7,194.5611** |

### 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 | 9.1000e-004 | 0.0479 | 0.0128 | 2.4000e-004 | 7.8900e-003 | 5.4000e-004 | 8.4300e-003 | 2.1600e-003 | 5.2000e-004 | 2.6800e-003 | | 26.0668 | 26.0668 | 3.9000e-004 | 4.1100e-003 | 27.3009 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0640 | 0.0417 | 0.5557 | 1.7300e-003 | 0.2236 | 1.0000e-003 | 0.2246 | 0.0593 | 9.2000e-004 | 0.0602 | | 174.3853 | 174.3853 | 4.1600e-003 | 4.4600e-003 | 175.8183 |
| **Total** | **0.0649** | **0.0895** | **0.5685** | **1.9700e-003** | **0.2314** | **1.5400e-003** | **0.2330** | **0.0615** | **1.4400e-003** | **0.0629** | | **200.4521** | **200.4521** | **4.5500e-003** | **8.5700e-003** | **203.1193** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2024

### 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 | | | | | 1.9000e-004 | 0.0000 | 1.9000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.0634 | 23.2194 | 24.3530 | 0.0745 | | 0.9037 | 0.9037 | | 0.8506 | 0.8506 | 0.0000 | 7,144.8527 | 7,144.8527 | 1.9883 | | 7,194.5611 |
| **Total** | **3.0634** | **23.2194** | **24.3530** | **0.0745** | **1.9000e-004** | **0.9037** | **0.9039** | **3.0000e-005** | **0.8506** | **0.8506** | **0.0000** | **7,144.8527** | **7,144.8527** | **1.9883** | | **7,194.5611** |

### 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 | 9.1000e-004 | 0.0479 | 0.0128 | 2.4000e-004 | 7.5900e-003 | 5.4000e-004 | 8.1300e-003 | 2.0900e-003 | 5.2000e-004 | 2.6100e-003 | | 26.0668 | 26.0668 | 3.9000e-004 | 4.1100e-003 | 27.3009 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0640 | 0.0417 | 0.5557 | 1.7300e-003 | 0.2138 | 1.0000e-003 | 0.2148 | 0.0569 | 9.2000e-004 | 0.0578 | | 174.3853 | 174.3853 | 4.1600e-003 | 4.4600e-003 | 175.8183 |
| **Total** | **0.0649** | **0.0895** | **0.5685** | **1.9700e-003** | **0.2214** | **1.5400e-003** | **0.2230** | **0.0590** | **1.4400e-003** | **0.0604** | | **200.4521** | **200.4521** | **4.5500e-003** | **8.5700e-003** | **203.1193** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive 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 | 0.0526 | 0.0959 | 0.6124 | 1.6200e-003 | 0.1858 | 1.3000e-003 | 0.1871 | 0.0496 | 1.2200e-003 | 0.0508 | | 165.1229 | 165.1229 | 7.5900e-003 | 7.7400e-003 | 167.6184 |
| Unmitigated | 0.0526 | 0.0959 | 0.6124 | 1.6200e-003 | 0.1858 | 1.3000e-003 | 0.1871 | 0.0496 | 1.2200e-003 | 0.0508 | | 165.1229 | 165.1229 | 7.5900e-003 | 7.7400e-003 | 167.6184 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Other Non-Asphalt Surfaces | 16.00 | 0.00 | 0.00 | 62,816 | 62,816 |
| Total | 16.00 | 0.00 | 0.00 | 62,816 | 62,816 |

## 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 Non-Asphalt Surfaces | 16.60 | 15.10 | 6.90 | 0.00 | 100.00 | 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 Non-Asphalt Surfaces | 0.540541 | 0.056458 | 0.173793 | 0.136090 | 0.025268 | 0.007074 | 0.011525 | 0.018705 | 0.000610 | 0.000304 | 0.023606 | 0.001094 | 0.004932 |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 Non-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 Non-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 | 0.0602 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| Unmitigated | 0.0602 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |

Perris North GW Monitoring Wells - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | 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 | 2.0300e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0567 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.5000e-003 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| **Total** | **0.0602** | **1.5000e-004** | **0.0163** | **0.0000** | | **6.0000e-005** | **6.0000e-005** | | **6.0000e-005** | **6.0000e-005** | | **0.0350** | **0.0350** | **9.0000e-005** | | **0.0373** |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**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 | 2.0300e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0567 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.5000e-003 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| **Total** | **0.0602** | **1.5000e-004** | **0.0163** | **0.0000** | | **6.0000e-005** | **6.0000e-005** | | **6.0000e-005** | **6.0000e-005** | | **0.0350** | **0.0350** | **9.0000e-005** | | **0.0373** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# Perris North GW Monitoring Wells

**Riverside-South Coast County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Other Non-Asphalt Surfaces | 160.00 | 1000sqft | 3.67 | 160,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.4 | **Precipitation Freq (Days)** | 28 |
| **Climate Zone** | 10 | | | **Operational Year** | 2025 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 390.98 | **CH4 Intensity (lb/MWhr)** | 0.033 | **N2O Intensity (lb/MWhr)** | 0.004 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Site prep phase captures site prep and construction/demobilization (same equipment list).

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

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

Trips and VMT - Based on engineering inputs and project description.

Grading - Per project description

Vehicle Trips - Based on project description.

Area Coating - 16 well clusters at 100 sq ft each.

Landscape Equipment - No change in landscaping.

Construction Off-road Equipment Mitigation - BMPs

Fleet Mix -

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Parking | 9600 | 1600 |
| tblConstDustMitigation | CleanPavedRoadPercentReduction | 0 | 5 |
| tblConstDustMitigation | WaterUnpavedRoadVehicleSpeed | 0 | 15 |
| tblConstructionPhase | NumDays | 8.00 | 448.00 |
| tblConstructionPhase | NumDays | 5.00 | 476.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConstructionPhase | PhaseEndDate | 11/23/2022 | 2/11/2024 |
| tblConstructionPhase | PhaseEndDate | 11/11/2022 | 2/25/2024 |
| tblConstructionPhase | PhaseStartDate | 11/12/2022 | 11/21/2022 |
| tblGrading | AcresOfGrading | 0.00 | 3.70 |
| tblGrading | MaterialExported | 0.00 | 1,481.00 |
| tblLandscapeEquipment | NumberSummerDays | 250 | 0 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Off-Highway Trucks |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 6.00 |
| tblTripsAndVMT | HaulingTripNumber | 185.00 | 202.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 25.00 | 20.00 |
| tblTripsAndVMT | WorkerTripNumber | 25.00 | 20.00 |
| tblVehicleTrips | CC_TL | 8.40 | 15.10 |
| tblVehicleTrips | CC_TTP | 0.00 | 100.00 |
| tblVehicleTrips | PR_TP | 0.00 | 100.00 |
| tblVehicleTrips | WD_TR | 0.00 | 0.10 |

## 2.0 Emissions Summary

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 2.1 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 | 5.1144 | 40.2804 | 40.3221 | 0.1113 | 0.5021 | 1.7132 | 2.2153 | 0.1328 | 1.6294 | 1.7622 | 0.0000 | 10,687.4446 | 10,687.4446 | 2.6252 | 0.0317 | 10,762.5191 |
| 2023 | 4.8144 | 36.5634 | 39.7511 | 0.1112 | 0.5021 | 1.5039 | 2.0060 | 0.1328 | 1.4299 | 1.5626 | 0.0000 | 10,674.7547 | 10,674.7547 | 2.6131 | 0.0300 | 10,749.0154 |
| 2024 | 4.6308 | 34.2146 | 39.4034 | 0.1110 | 0.5021 | 1.3519 | 1.8539 | 0.1328 | 1.2837 | 1.4165 | 0.0000 | 10,664.2578 | 10,664.2578 | 2.6045 | 0.0290 | 10,738.0030 |
| **Maximum** | **5.1144** | **40.2804** | **40.3221** | **0.1113** | **0.5021** | **1.7132** | **2.2153** | **0.1328** | **1.6294** | **1.7622** | **0.0000** | **10,687.4446** | **10,687.4446** | **2.6252** | **0.0317** | **10,762.5191** |

### 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 | 5.1144 | 40.2804 | 40.3221 | 0.1113 | 0.4762 | 1.7132 | 2.1894 | 0.1271 | 1.6294 | 1.7565 | 0.0000 | 10,687.4446 | 10,687.4446 | 2.6252 | 0.0317 | 10,762.5191 |
| 2023 | 4.8144 | 36.5634 | 39.7511 | 0.1112 | 0.4762 | 1.5039 | 1.9802 | 0.1271 | 1.4299 | 1.5569 | 0.0000 | 10,674.7547 | 10,674.7547 | 2.6131 | 0.0300 | 10,749.0154 |
| 2024 | 4.6308 | 34.2146 | 39.4034 | 0.1110 | 0.4762 | 1.3519 | 1.8281 | 0.1271 | 1.2837 | 1.4107 | 0.0000 | 10,664.2578 | 10,664.2578 | 2.6045 | 0.0290 | 10,738.0030 |
| **Maximum** | **5.1144** | **40.2804** | **40.3221** | **0.1113** | **0.4762** | **1.7132** | **2.1894** | **0.1271** | **1.6294** | **1.7565** | **0.0000** | **10,687.4446** | **10,687.4446** | **2.6252** | **0.0317** | **10,762.5191** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | 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 | 5.15 | 0.00 | 1.28 | 4.30 | 0.00 | 0.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 2.2 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 | 0.0602 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| 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 | 0.0599 | 0.0903 | 0.7045 | 1.7500e-003 | 0.1858 | 1.3000e-003 | 0.1871 | 0.0496 | 1.2200e-003 | 0.0508 | | 177.8914 | 177.8914 | 7.5500e-003 | 7.5800e-003 | 180.3401 |
| **Total** | **0.1201** | **0.0905** | **0.7208** | **1.7500e-003** | **0.1858** | **1.3600e-003** | **0.1871** | **0.0496** | **1.2800e-003** | **0.0508** | | **177.9264** | **177.9264** | **7.6400e-003** | **7.5800e-003** | **180.3774** |

### 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 | 0.0602 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| 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 | 0.0599 | 0.0903 | 0.7045 | 1.7500e-003 | 0.1858 | 1.3000e-003 | 0.1871 | 0.0496 | 1.2200e-003 | 0.0508 | | 177.8914 | 177.8914 | 7.5500e-003 | 7.5800e-003 | 180.3401 |
| **Total** | **0.1201** | **0.0905** | **0.7208** | **1.7500e-003** | **0.1858** | **1.3600e-003** | **0.1871** | **0.0496** | **1.2800e-003** | **0.0508** | | **177.9264** | **177.9264** | **7.6400e-003** | **7.5800e-003** | **180.3774** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | 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 Preparation | Site Preparation | 11/7/2022 | 2/25/2024 | 7 | 476 | |
| 2 | Drilling | Grading | 11/21/2022 | 2/11/2024 | 7 | 448 | |

**Acres of Grading (Site Preparation Phase): 3.7**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 3.67**

**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 | Excavators | 0 | 8.00 | 158 | 0.38 |
| Drilling | Graders | 0 | 8.00 | 187 | 0.41 |
| Drilling | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Site Preparation | Cement and Mortar Mixers | 1 | 2.00 | 9 | 0.56 |
| Site Preparation | Generator Sets | 1 | 6.00 | 84 | 0.74 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 6.00 | 97 | 0.37 |
| Site Preparation | Off-Highway Trucks | 1 | 3.00 | 402 | 0.38 |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | | | | | |
|---|---|---|---|---|---|
| Site Preparation | Off-Highway Trucks | 1 | 2.00 | 402 | 0.38 |
| Site Preparation | Off-Highway Trucks | 2 | 2.00 | 402 | 0.38 |
| Site Preparation | Pumps | 1 | 6.00 | 84 | 0.74 |
| Site Preparation | Welders | 1 | 4.00 | 46 | 0.45 |
| Drilling | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Drilling | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Drilling | Cranes | 1 | 8.00 | 231 | 0.29 |
| Drilling | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Drilling | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Drilling | Off-Highway Trucks | 1 | 8.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 1 | 6.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 2 | 6.00 | 402 | 0.38 |
| Drilling | Welders | 1 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 10 | 20.00 | 6.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Drilling | 10 | 20.00 | 0.00 | 202.00 | 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

Clean Paved Roads

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 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 | | | | | 8.2400e-003 | 0.0000 | 8.2400e-003 | 8.9000e-004 | 0.0000 | 8.9000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.5870 | 12.4269 | 13.7515 | 0.0315 | | 0.5760 | 0.5760 | | 0.5574 | 0.5574 | | 2,997.1555 | 2,997.1555 | 0.6165 | | 3,012.5685 |
| **Total** | **1.5870** | **12.4269** | **13.7515** | **0.0315** | **8.2400e-003** | **0.5760** | **0.5842** | **8.9000e-004** | **0.5574** | **0.5583** | | **2,997.1555** | **2,997.1555** | **0.6165** | | **3,012.5685** |

### 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 | 0.0000 |
| Vendor | 9.7600e-003 | 0.2537 | 0.0882 | 1.0900e-003 | 0.0384 | 3.6600e-003 | 0.0421 | 0.0111 | 3.5000e-003 | 0.0146 | | 115.7672 | 115.7672 | 1.2300e-003 | 0.0172 | 120.9138 |
| Worker | 0.0788 | 0.0511 | 0.7962 | 2.0300e-003 | 0.2236 | 1.1100e-003 | 0.2247 | 0.0593 | 1.0200e-003 | 0.0603 | | 205.3788 | 205.3788 | 5.1200e-003 | 5.0800e-003 | 207.0218 |
| **Total** | **0.0886** | **0.3048** | **0.8844** | **3.1200e-003** | **0.2620** | **4.7700e-003** | **0.2668** | **0.0704** | **4.5200e-003** | **0.0749** | | **321.1460** | **321.1460** | **6.3500e-003** | **0.0223** | **327.9357** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2022

### 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 | | | | | 3.7100e-003 | 0.0000 | 3.7100e-003 | 4.0000e-004 | 0.0000 | 4.0000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.5870 | 12.4269 | 13.7515 | 0.0315 | | 0.5760 | 0.5760 | | 0.5574 | 0.5574 | 0.0000 | 2,997.1555 | 2,997.1555 | 0.6165 | | 3,012.5685 |
| **Total** | **1.5870** | **12.4269** | **13.7515** | **0.0315** | **3.7100e-003** | **0.5760** | **0.5797** | **4.0000e-004** | **0.5574** | **0.5578** | **0.0000** | **2,997.1555** | **2,997.1555** | **0.6165** | | **3,012.5685** |

### 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 | 0.0000 |
| Vendor | 9.7600e-003 | 0.2537 | 0.0882 | 1.0900e-003 | 0.0371 | 3.6600e-003 | 0.0407 | 0.0107 | 3.5000e-003 | 0.0142 | | 115.7672 | 115.7672 | 1.2300e-003 | 0.0172 | 120.9138 |
| Worker | 0.0788 | 0.0511 | 0.7962 | 2.0300e-003 | 0.2138 | 1.1100e-003 | 0.2150 | 0.0569 | 1.0200e-003 | 0.0579 | | 205.3788 | 205.3788 | 5.1200e-003 | 5.0800e-003 | 207.0218 |
| **Total** | **0.0886** | **0.3048** | **0.8844** | **3.1200e-003** | **0.2509** | **4.7700e-003** | **0.2557** | **0.0676** | **4.5200e-003** | **0.0722** | | **321.1460** | **321.1460** | **6.3500e-003** | **0.0223** | **327.9357** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | | | | | 8.2400e-003 | 0.0000 | 8.2400e-003 | 8.9000e-004 | 0.0000 | 8.9000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4892 | 11.3723 | 13.6462 | 0.0315 | | 0.5013 | 0.5013 | | 0.4851 | 0.4851 | | 2,998.4248 | 2,998.4248 | 0.6102 | | 3,013.6807 |
| **Total** | **1.4892** | **11.3723** | **13.6462** | **0.0315** | **8.2400e-003** | **0.5013** | **0.5095** | **8.9000e-004** | **0.4851** | **0.4860** | | **2,998.4248** | **2,998.4248** | **0.6102** | | **3,013.6807** |

### 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 | 0.0000 |
| Vendor | 6.7600e-003 | 0.1960 | 0.0807 | 1.0500e-003 | 0.0384 | 1.7100e-003 | 0.0401 | 0.0111 | 1.6300e-003 | 0.0127 | | 111.1626 | 111.1626 | 1.1300e-003 | 0.0164 | 116.0860 |
| Worker | 0.0730 | 0.0451 | 0.7317 | 1.9700e-003 | 0.2236 | 1.0500e-003 | 0.2246 | 0.0593 | 9.6000e-004 | 0.0603 | | 198.7481 | 198.7481 | 4.5900e-003 | 4.6900e-003 | 200.2612 |
| **Total** | **0.0798** | **0.2411** | **0.8125** | **3.0200e-003** | **0.2620** | **2.7600e-003** | **0.2647** | **0.0704** | **2.5900e-003** | **0.0730** | | **309.9107** | **309.9107** | **5.7200e-003** | **0.0211** | **316.3472** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | | | | | 3.7100e-003 | 0.0000 | 3.7100e-003 | 4.0000e-004 | 0.0000 | 4.0000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4892 | 11.3723 | 13.6462 | 0.0315 | | 0.5013 | 0.5013 | | 0.4851 | 0.4851 | 0.0000 | 2,998.4248 | 2,998.4248 | 0.6102 | | 3,013.6807 |
| **Total** | **1.4892** | **11.3723** | **13.6462** | **0.0315** | **3.7100e-003** | **0.5013** | **0.5050** | **4.0000e-004** | **0.4851** | **0.4855** | **0.0000** | **2,998.4248** | **2,998.4248** | **0.6102** | | **3,013.6807** |

### 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 | 0.0000 |
| Vendor | 6.7600e-003 | 0.1960 | 0.0807 | 1.0500e-003 | 0.0371 | 1.7100e-003 | 0.0388 | 0.0107 | 1.6300e-003 | 0.0124 | | 111.1626 | 111.1626 | 1.1300e-003 | 0.0164 | 116.0860 |
| Worker | 0.0730 | 0.0451 | 0.7317 | 1.9700e-003 | 0.2138 | 1.0500e-003 | 0.2149 | 0.0569 | 9.6000e-004 | 0.0579 | | 198.7481 | 198.7481 | 4.5900e-003 | 4.6900e-003 | 200.2612 |
| **Total** | **0.0798** | **0.2411** | **0.8125** | **3.0200e-003** | **0.2509** | **2.7600e-003** | **0.2537** | **0.0676** | **2.5900e-003** | **0.0702** | | **309.9107** | **309.9107** | **5.7200e-003** | **0.0211** | **316.3472** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2024

### 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 | | | | | 8.2400e-003 | 0.0000 | 8.2400e-003 | 8.9000e-004 | 0.0000 | 8.9000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4237 | 10.6736 | 13.5900 | 0.0315 | | 0.4439 | 0.4439 | | 0.4291 | 0.4291 | | 2,999.0871 | 2,999.0871 | 0.6063 | | 3,014.2438 |
| **Total** | **1.4237** | **10.6736** | **13.5900** | **0.0315** | **8.2400e-003** | **0.4439** | **0.4521** | **8.9000e-004** | **0.4291** | **0.4300** | | **2,999.0871** | **2,999.0871** | **0.6063** | | **3,014.2438** |

### 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 | 0.0000 |
| Vendor | 6.6600e-003 | 0.1960 | 0.0798 | 1.0300e-003 | 0.0384 | 1.7000e-003 | 0.0401 | 0.0111 | 1.6200e-003 | 0.0127 | | 109.4494 | 109.4494 | 1.1700e-003 | 0.0162 | 114.2911 |
| Worker | 0.0681 | 0.0402 | 0.6840 | 1.9000e-003 | 0.2236 | 1.0000e-003 | 0.2246 | 0.0593 | 9.2000e-004 | 0.0602 | | 192.4214 | 192.4214 | 4.1600e-003 | 4.3600e-003 | 193.8244 |
| **Total** | **0.0747** | **0.2362** | **0.7638** | **2.9300e-003** | **0.2620** | **2.7000e-003** | **0.2647** | **0.0704** | **2.5400e-003** | **0.0729** | | **301.8707** | **301.8707** | **5.3300e-003** | **0.0205** | **308.1155** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2024

### 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 | | | | | 3.7100e-003 | 0.0000 | 3.7100e-003 | 4.0000e-004 | 0.0000 | 4.0000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4237 | 10.6736 | 13.5900 | 0.0315 | | 0.4439 | 0.4439 | | 0.4291 | 0.4291 | 0.0000 | 2,999.0871 | 2,999.0871 | 0.6063 | | 3,014.2437 |
| **Total** | **1.4237** | **10.6736** | **13.5900** | **0.0315** | **3.7100e-003** | **0.4439** | **0.4476** | **4.0000e-004** | **0.4291** | **0.4295** | **0.0000** | **2,999.0871** | **2,999.0871** | **0.6063** | | **3,014.2437** |

### 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 | 0.0000 |
| Vendor | 6.6600e-003 | 0.1960 | 0.0798 | 1.0300e-003 | 0.0371 | 1.7000e-003 | 0.0388 | 0.0107 | 1.6200e-003 | 0.0124 | | 109.4494 | 109.4494 | 1.1700e-003 | 0.0162 | 114.2911 |
| Worker | 0.0681 | 0.0402 | 0.6840 | 1.9000e-003 | 0.2138 | 1.0000e-003 | 0.2148 | 0.0569 | 9.2000e-004 | 0.0578 | | 192.4214 | 192.4214 | 4.1600e-003 | 4.3600e-003 | 193.8244 |
| **Total** | **0.0747** | **0.2362** | **0.7638** | **2.9300e-003** | **0.2509** | **2.7000e-003** | **0.2536** | **0.0676** | **2.5400e-003** | **0.0702** | | **301.8707** | **301.8707** | **5.3300e-003** | **0.0205** | **308.1155** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 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 | | | | | 4.2000e-004 | 0.0000 | 4.2000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.3586 | 27.4400 | 24.8772 | 0.0744 | | 1.1307 | 1.1307 | | 1.0658 | 1.0658 | | 7,136.1087 | 7,136.1087 | 1.9969 | | 7,186.0299 |
| **Total** | **3.3586** | **27.4400** | **24.8772** | **0.0744** | **4.2000e-004** | **1.1307** | **1.1311** | **6.0000e-005** | **1.0658** | **1.0659** | | **7,136.1087** | **7,136.1087** | **1.9969** | | **7,186.0299** |

### 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 | 1.4300e-003 | 0.0576 | 0.0128 | 2.6000e-004 | 7.8900e-003 | 6.7000e-004 | 8.5600e-003 | 2.1600e-003 | 6.4000e-004 | 2.8000e-003 | | 27.6556 | 27.6556 | 3.7000e-004 | 4.3600e-003 | 28.9632 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0788 | 0.0511 | 0.7962 | 2.0300e-003 | 0.2236 | 1.1100e-003 | 0.2247 | 0.0593 | 1.0200e-003 | 0.0603 | | 205.3788 | 205.3788 | 5.1200e-003 | 5.0800e-003 | 207.0218 |
| **Total** | **0.0802** | **0.1087** | **0.8090** | **2.2900e-003** | **0.2314** | **1.7800e-003** | **0.2332** | **0.0615** | **1.6600e-003** | **0.0631** | | **233.0344** | **233.0344** | **5.4900e-003** | **9.4400e-003** | **235.9850** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2022

### 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 | | | | | 1.9000e-004 | 0.0000 | 1.9000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.3586 | 27.4400 | 24.8772 | 0.0744 | | 1.1307 | 1.1307 | | 1.0658 | 1.0658 | 0.0000 | 7,136.1087 | 7,136.1087 | 1.9969 | | 7,186.0299 |
| **Total** | **3.3586** | **27.4400** | **24.8772** | **0.0744** | **1.9000e-004** | **1.1307** | **1.1309** | **3.0000e-005** | **1.0658** | **1.0659** | **0.0000** | **7,136.1087** | **7,136.1087** | **1.9969** | | **7,186.0299** |

### 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 | 1.4300e-003 | 0.0576 | 0.0128 | 2.6000e-004 | 7.5900e-003 | 6.7000e-004 | 8.2600e-003 | 2.0900e-003 | 6.4000e-004 | 2.7300e-003 | | 27.6556 | 27.6556 | 3.7000e-004 | 4.3600e-003 | 28.9632 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0788 | 0.0511 | 0.7962 | 2.0300e-003 | 0.2138 | 1.1100e-003 | 0.2150 | 0.0569 | 1.0200e-003 | 0.0579 | | 205.3788 | 205.3788 | 5.1200e-003 | 5.0800e-003 | 207.0218 |
| **Total** | **0.0802** | **0.1087** | **0.8090** | **2.2900e-003** | **0.2214** | **1.7800e-003** | **0.2232** | **0.0590** | **1.6600e-003** | **0.0607** | | **233.0344** | **233.0344** | **5.4900e-003** | **9.4400e-003** | **235.9850** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | | | | | 4.2000e-004 | 0.0000 | 4.2000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1714 | 24.8599 | 24.5483 | 0.0744 | | 0.9983 | 0.9983 | | 0.9407 | 0.9407 | | 7,141.2130 | 7,141.2130 | 1.9921 | | 7,191.0164 |
| **Total** | **3.1714** | **24.8599** | **24.5483** | **0.0744** | **4.2000e-004** | **0.9983** | **0.9987** | **6.0000e-005** | **0.9407** | **0.9407** | | **7,141.2130** | **7,141.2130** | **1.9921** | | **7,191.0164** |

### 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 | 9.9000e-004 | 0.0450 | 0.0124 | 2.5000e-004 | 7.8900e-003 | 5.4000e-004 | 8.4300e-003 | 2.1600e-003 | 5.2000e-004 | 2.6800e-003 | | 26.4582 | 26.4582 | 3.8000e-004 | 4.1700e-003 | 27.7100 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0730 | 0.0451 | 0.7317 | 1.9700e-003 | 0.2236 | 1.0500e-003 | 0.2246 | 0.0593 | 9.6000e-004 | 0.0603 | | 198.7481 | 198.7481 | 4.5900e-003 | 4.6900e-003 | 200.2612 |
| **Total** | **0.0740** | **0.0902** | **0.7441** | **2.2200e-003** | **0.2314** | **1.5900e-003** | **0.2330** | **0.0615** | **1.4800e-003** | **0.0629** | | **225.2063** | **225.2063** | **4.9700e-003** | **8.8600e-003** | **227.9711** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | | | | | 1.9000e-004 | 0.0000 | 1.9000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1714 | 24.8599 | 24.5483 | 0.0744 | | 0.9983 | 0.9983 | | 0.9407 | 0.9407 | 0.0000 | 7,141.2130 | 7,141.2130 | 1.9921 | | 7,191.0164 |
| **Total** | **3.1714** | **24.8599** | **24.5483** | **0.0744** | **1.9000e-004** | **0.9983** | **0.9985** | **3.0000e-005** | **0.9407** | **0.9407** | **0.0000** | **7,141.2130** | **7,141.2130** | **1.9921** | | **7,191.0164** |

### 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 | 9.9000e-004 | 0.0450 | 0.0124 | 2.5000e-004 | 7.5900e-003 | 5.4000e-004 | 8.1400e-003 | 2.0900e-003 | 5.2000e-004 | 2.6100e-003 | | 26.4582 | 26.4582 | 3.8000e-004 | 4.1700e-003 | 27.7100 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0730 | 0.0451 | 0.7317 | 1.9700e-003 | 0.2138 | 1.0500e-003 | 0.2149 | 0.0569 | 9.6000e-004 | 0.0579 | | 198.7481 | 198.7481 | 4.5900e-003 | 4.6900e-003 | 200.2612 |
| **Total** | **0.0740** | **0.0902** | **0.7441** | **2.2200e-003** | **0.2214** | **1.5900e-003** | **0.2230** | **0.0590** | **1.4800e-003** | **0.0605** | | **225.2063** | **225.2063** | **4.9700e-003** | **8.8600e-003** | **227.9711** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2024

### 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 | | | | | 4.2000e-004 | 0.0000 | 4.2000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.0634 | 23.2194 | 24.3530 | 0.0745 | | 0.9037 | 0.9037 | | 0.8506 | 0.8506 | | 7,144.8527 | 7,144.8527 | 1.9883 | | 7,194.5611 |
| **Total** | **3.0634** | **23.2194** | **24.3530** | **0.0745** | **4.2000e-004** | **0.9037** | **0.9042** | **6.0000e-005** | **0.8506** | **0.8507** | | **7,144.8527** | **7,144.8527** | **1.9883** | | **7,194.5611** |

### 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 | 9.8000e-004 | 0.0452 | 0.0125 | 2.4000e-004 | 7.8900e-003 | 5.4000e-004 | 8.4300e-003 | 2.1600e-003 | 5.2000e-004 | 2.6800e-003 | | 26.0260 | 26.0260 | 4.0000e-004 | 4.1000e-003 | 27.2582 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0681 | 0.0402 | 0.6840 | 1.9000e-003 | 0.2236 | 1.0000e-003 | 0.2246 | 0.0593 | 9.2000e-004 | 0.0602 | | 192.4214 | 192.4214 | 4.1600e-003 | 4.3600e-003 | 193.8244 |
| **Total** | **0.0690** | **0.0853** | **0.6965** | **2.1400e-003** | **0.2314** | **1.5400e-003** | **0.2330** | **0.0615** | **1.4400e-003** | **0.0629** | | **218.4473** | **218.4473** | **4.5600e-003** | **8.4600e-003** | **221.0827** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2024

### 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 | | | | | 1.9000e-004 | 0.0000 | 1.9000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.0634 | 23.2194 | 24.3530 | 0.0745 | | 0.9037 | 0.9037 | | 0.8506 | 0.8506 | 0.0000 | 7,144.8527 | 7,144.8527 | 1.9883 | | 7,194.5611 |
| **Total** | **3.0634** | **23.2194** | **24.3530** | **0.0745** | **1.9000e-004** | **0.9037** | **0.9039** | **3.0000e-005** | **0.8506** | **0.8506** | **0.0000** | **7,144.8527** | **7,144.8527** | **1.9883** | | **7,194.5611** |

### 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 | 9.8000e-004 | 0.0452 | 0.0125 | 2.4000e-004 | 7.5900e-003 | 5.4000e-004 | 8.1300e-003 | 2.0900e-003 | 5.2000e-004 | 2.6100e-003 | | 26.0260 | 26.0260 | 4.0000e-004 | 4.1000e-003 | 27.2582 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0681 | 0.0402 | 0.6840 | 1.9000e-003 | 0.2138 | 1.0000e-003 | 0.2148 | 0.0569 | 9.2000e-004 | 0.0578 | | 192.4214 | 192.4214 | 4.1600e-003 | 4.3600e-003 | 193.8244 |
| **Total** | **0.0690** | **0.0853** | **0.6965** | **2.1400e-003** | **0.2214** | **1.5400e-003** | **0.2230** | **0.0590** | **1.4400e-003** | **0.0604** | | **218.4473** | **218.4473** | **4.5600e-003** | **8.4600e-003** | **221.0827** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive 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 | 0.0599 | 0.0903 | 0.7045 | 1.7500e-003 | 0.1858 | 1.3000e-003 | 0.1871 | 0.0496 | 1.2200e-003 | 0.0508 | | 177.8914 | 177.8914 | 7.5500e-003 | 7.5800e-003 | 180.3401 |
| Unmitigated | 0.0599 | 0.0903 | 0.7045 | 1.7500e-003 | 0.1858 | 1.3000e-003 | 0.1871 | 0.0496 | 1.2200e-003 | 0.0508 | | 177.8914 | 177.8914 | 7.5500e-003 | 7.5800e-003 | 180.3401 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Other Non-Asphalt Surfaces | 16.00 | 0.00 | 0.00 | 62,816 | 62,816 |
| Total | 16.00 | 0.00 | 0.00 | 62,816 | 62,816 |

## 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 Non-Asphalt Surfaces | 16.60 | 15.10 | 6.90 | 0.00 | 100.00 | 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 Non-Asphalt Surfaces | 0.540541 | 0.056458 | 0.173793 | 0.136090 | 0.025268 | 0.007074 | 0.011525 | 0.018705 | 0.000610 | 0.000304 | 0.023606 | 0.001094 | 0.004932 |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 Non-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** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 Non-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 | 0.0602 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| Unmitigated | 0.0602 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.0300e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0567 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.5000e-003 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| **Total** | **0.0602** | **1.5000e-004** | **0.0163** | **0.0000** | | **6.0000e-005** | **6.0000e-005** | | **6.0000e-005** | **6.0000e-005** | | **0.0350** | **0.0350** | **9.0000e-005** | | **0.0373** |

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**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 | 2.0300e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0567 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.5000e-003 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0350 | 0.0350 | 9.0000e-005 | | 0.0373 |
| **Total** | **0.0602** | **1.5000e-004** | **0.0163** | **0.0000** | | **6.0000e-005** | **6.0000e-005** | | **6.0000e-005** | **6.0000e-005** | | **0.0350** | **0.0350** | **9.0000e-005** | | **0.0373** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

Perris North GW Monitoring Wells - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# Perris North GW Monitoring Wells - Mass Daily

**Riverside-South Coast County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Other Non-Asphalt Surfaces | 20.00 | 1000sqft | 0.46 | 20,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.4 | **Precipitation Freq (Days)** | 28 |
| **Climate Zone** | 10 | | | **Operational Year** | 2024 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 390.98 | **CH4 Intensity (lb/MWhr)** | 0.033 | **N2O Intensity (lb/MWhr)** | 0.004 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Capturing concurrent construction at multiple well sites.

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

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

Trips and VMT - Based on engineering inputs and project description.

Grading - Area of disturbance.

Vehicle Trips - Based on project description.

Consumer Products - Operational emissions accounted for in separate model run.

Area Coating - Operational emissions accounted for in separate model run.

Landscape Equipment - Operational emissions accounted for in separate model run.

Construction Off-road Equipment Mitigation - BMPs

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Fleet Mix -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Parking | 1200 | 0 |
| tblConstDustMitigation | CleanPavedRoadPercentReduction | 0 | 5 |
| tblConstDustMitigation | WaterUnpavedRoadVehicleSpeed | 0 | 15 |
| tblConstructionPhase | NumDays | 2.00 | 208.00 |
| tblConstructionPhase | NumDays | 1.00 | 208.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConsumerProducts | ROG_EF | 1.98E-05 | 0 |
| tblConsumerProducts | ROG_EF_Degreaser | 3.542E-07 | 0 |
| tblConsumerProducts | ROG_EF_PesticidesFertilizers | 5.152E-08 | 0 |
| tblGrading | AcresOfGrading | 0.00 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 186.00 |
| tblLandscapeEquipment | NumberSummerDays | 250 | 0 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 6.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 8.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 12.00 |
| tblTripsAndVMT | WorkerTripNumber | 50.00 | 40.00 |
| tblTripsAndVMT | WorkerTripNumber | 50.00 | 40.00 |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | 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 | | | | | |
| 2023 | 9.6270 | 73.0479 | 79.4805 | 0.2219 | 0.9757 | 3.0069 | 3.9826 | 0.2601 | 2.8588 | 3.1189 | 0.0000 | 21,303.0816 | 21,303.0816 | 5.2255 | 0.0526 | 21,449.4064 |
| **Maximum** | **9.6270** | **73.0479** | **79.4805** | **0.2219** | **0.9757** | **3.0069** | **3.9826** | **0.2601** | **2.8588** | **3.1189** | **0.0000** | **21,303.0816** | **21,303.0816** | **5.2255** | **0.0526** | **21,449.4064** |

### 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 | | | | | |
| 2023 | 9.6270 | 73.0479 | 79.4805 | 0.2219 | 0.9325 | 3.0069 | 3.9394 | 0.2497 | 2.8588 | 3.1085 | 0.0000 | 21,303.0816 | 21,303.0816 | 5.2255 | 0.0526 | 21,449.4064 |
| **Maximum** | **9.6270** | **73.0479** | **79.4805** | **0.2219** | **0.9325** | **3.0069** | **3.9394** | **0.2497** | **2.8588** | **3.1085** | **0.0000** | **21,303.0816** | **21,303.0816** | **5.2255** | **0.0526** | **21,449.4064** |

| | 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** | **4.42** | **0.00** | **1.08** | **4.00** | **0.00** | **0.33** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 2.2 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 | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-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 | 0.0000 |
| **Total** | **1.9000e-004** | **2.0000e-005** | **2.0400e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **4.3800e-003** | **4.3800e-003** | **1.0000e-005** | **0.0000** | **4.6600e-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 | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-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 | 0.0000 |
| **Total** | **1.9000e-004** | **2.0000e-005** | **2.0400e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **4.3800e-003** | **4.3800e-003** | **1.0000e-005** | **0.0000** | **4.6600e-003** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | 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 Preparation | Site Preparation | 1/2/2023 | 7/28/2023 | 7 | 208 | |
| 2 | Drilling | Grading | 1/2/2023 | 7/28/2023 | 7 | 208 | |

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.46**

**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 Preparation | Air Compressors | 2 | 6.00 | 78 | 0.48 |
| Site Preparation | Cement and Mortar Mixers | 2 | 2.00 | 9 | 0.56 |
| Site Preparation | Generator Sets | 2 | 6.00 | 84 | 0.74 |
| Site Preparation | Graders | 0 | 8.00 | 187 | 0.41 |
| Site Preparation | Off-Highway Trucks | 2 | 3.00 | 402 | 0.38 |
| Site Preparation | Off-Highway Trucks | 2 | 2.00 | 402 | 0.38 |
| Site Preparation | Off-Highway Trucks | 4 | 2.00 | 402 | 0.38 |
| Site Preparation | Pumps | 2 | 6.00 | 84 | 0.74 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | | | | | |
|---|---|---|---|---|---|
| Site Preparation | Tractors/Loaders/Backhoes | 2 | 6.00 | 97 | 0.37 |
| Site Preparation | Welders | 2 | 4.00 | 46 | 0.45 |
| Drilling | Air Compressors | 2 | 8.00 | 78 | 0.48 |
| Drilling | Bore/Drill Rigs | 2 | 8.00 | 221 | 0.50 |
| Drilling | Cranes | 2 | 8.00 | 231 | 0.29 |
| Drilling | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Drilling | Graders | 0 | 6.00 | 187 | 0.41 |
| Drilling | Off-Highway Trucks | 2 | 8.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 2 | 6.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 4 | 6.00 | 402 | 0.38 |
| Drilling | Rubber Tired Dozers | 0 | 6.00 | 247 | 0.40 |
| Drilling | Tractors/Loaders/Backhoes | 0 | 7.00 | 97 | 0.37 |
| Drilling | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Drilling | Welders | 2 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 20 | 40.00 | 12.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Drilling | 20 | 40.00 | 0.00 | 23.00 | 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

Clean Paved Roads

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | | | | | 2.5500e-003 | 0.0000 | 2.5500e-003 | 2.8000e-004 | 0.0000 | 2.8000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.9784 | 22.7445 | 27.2924 | 0.0630 | | 1.0026 | 1.0026 | | 0.9703 | 0.9703 | | 5,996.8496 | 5,996.8496 | 1.2205 | | 6,027.3615 |
| **Total** | **2.9784** | **22.7445** | **27.2924** | **0.0630** | **2.5500e-003** | **1.0026** | **1.0051** | **2.8000e-004** | **0.9703** | **0.9706** | | **5,996.8496** | **5,996.8496** | **1.2205** | | **6,027.3615** |

### 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 | 0.0000 |
| Vendor | 0.0135 | 0.3921 | 0.1614 | 2.1000e-003 | 0.0769 | 3.4100e-003 | 0.0803 | 0.0221 | 3.2700e-003 | 0.0254 | | 222.3252 | 222.3252 | 2.2700e-003 | 0.0329 | 232.1721 |
| Worker | 0.1461 | 0.0902 | 1.4635 | 3.9300e-003 | 0.4471 | 2.0900e-003 | 0.4492 | 0.1186 | 1.9200e-003 | 0.1205 | | 397.4961 | 397.4961 | 9.1900e-003 | 9.3800e-003 | 400.5223 |
| **Total** | **0.1596** | **0.4823** | **1.6249** | **6.0300e-003** | **0.5240** | **5.5000e-003** | **0.5295** | **0.1407** | **5.1900e-003** | **0.1459** | | **619.8213** | **619.8213** | **0.0115** | **0.0422** | **632.6944** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | | | | | 1.1500e-003 | 0.0000 | 1.1500e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.9784 | 22.7445 | 27.2924 | 0.0630 | | 1.0026 | 1.0026 | | 0.9703 | 0.9703 | 0.0000 | 5,996.8496 | 5,996.8496 | 1.2205 | | 6,027.3614 |
| **Total** | **2.9784** | **22.7445** | **27.2924** | **0.0630** | **1.1500e-003** | **1.0026** | **1.0037** | **1.2000e-004** | **0.9703** | **0.9704** | **0.0000** | **5,996.8496** | **5,996.8496** | **1.2205** | | **6,027.3614** |

### 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 | 0.0000 |
| Vendor | 0.0135 | 0.3921 | 0.1614 | 2.1000e-003 | 0.0741 | 3.4100e-003 | 0.0775 | 0.0215 | 3.2700e-003 | 0.0247 | | 222.3252 | 222.3252 | 2.2700e-003 | 0.0329 | 232.1721 |
| Worker | 0.1461 | 0.0902 | 1.4635 | 3.9300e-003 | 0.4277 | 2.0900e-003 | 0.4298 | 0.1138 | 1.9200e-003 | 0.1157 | | 397.4961 | 397.4961 | 9.1900e-003 | 9.3800e-003 | 400.5223 |
| **Total** | **0.1596** | **0.4823** | **1.6249** | **6.0300e-003** | **0.5018** | **5.5000e-003** | **0.5073** | **0.1353** | **5.1900e-003** | **0.1405** | | **619.8213** | **619.8213** | **0.0115** | **0.0422** | **632.6944** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | | | | | 1.1000e-004 | 0.0000 | 1.1000e-004 | 2.0000e-005 | 0.0000 | 2.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 6.3427 | 49.7198 | 49.0967 | 0.1488 | | 1.9966 | 1.9966 | | 1.8813 | 1.8813 | | 14,282.4260 | 14,282.4260 | 3.9843 | | 14,382.0327 |
| **Total** | **6.3427** | **49.7198** | **49.0967** | **0.1488** | **1.1000e-004** | **1.9966** | **1.9967** | **2.0000e-005** | **1.8813** | **1.8813** | | **14,282.4260** | **14,282.4260** | **3.9843** | | **14,382.0327** |

### 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 | 2.4000e-004 | 0.0110 | 3.0400e-003 | 6.0000e-005 | 1.9400e-003 | 1.3000e-004 | 2.0700e-003 | 5.3000e-004 | 1.3000e-004 | 6.6000e-004 | | 6.4886 | 6.4886 | 9.0000e-005 | 1.0200e-003 | 6.7956 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.1461 | 0.0902 | 1.4635 | 3.9300e-003 | 0.4471 | 2.0900e-003 | 0.4492 | 0.1186 | 1.9200e-003 | 0.1205 | | 397.4961 | 397.4961 | 9.1900e-003 | 9.3800e-003 | 400.5223 |
| **Total** | **0.1463** | **0.1013** | **1.4665** | **3.9900e-003** | **0.4491** | **2.2200e-003** | **0.4513** | **0.1191** | **2.0500e-003** | **0.1212** | | **403.9847** | **403.9847** | **9.2800e-003** | **0.0104** | **407.3179** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | | | | | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 6.3427 | 49.7198 | 49.0967 | 0.1488 | | 1.9966 | 1.9966 | | 1.8813 | 1.8813 | 0.0000 | 14,282.4260 | 14,282.4260 | 3.9843 | | 14,382.0327 |
| **Total** | **6.3427** | **49.7198** | **49.0967** | **0.1488** | **5.0000e-005** | **1.9966** | **1.9966** | **1.0000e-005** | **1.8813** | **1.8813** | **0.0000** | **14,282.4260** | **14,282.4260** | **3.9843** | | **14,382.0327** |

### 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 | 2.4000e-004 | 0.0110 | 3.0400e-003 | 6.0000e-005 | 1.8600e-003 | 1.3000e-004 | 2.0000e-003 | 5.1000e-004 | 1.3000e-004 | 6.4000e-004 | | 6.4886 | 6.4886 | 9.0000e-005 | 1.0200e-003 | 6.7956 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.1461 | 0.0902 | 1.4635 | 3.9300e-003 | 0.4277 | 2.0900e-003 | 0.4298 | 0.1138 | 1.9200e-003 | 0.1157 | | 397.4961 | 397.4961 | 9.1900e-003 | 9.3800e-003 | 400.5223 |
| **Total** | **0.1463** | **0.1013** | **1.4665** | **3.9900e-003** | **0.4295** | **2.2200e-003** | **0.4318** | **0.1143** | **2.0500e-003** | **0.1164** | | **403.9847** | **403.9847** | **9.2800e-003** | **0.0104** | **407.3179** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive 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 | 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 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Other Non-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 Non-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 Non-Asphalt Surfaces | 0.537845 | 0.056225 | 0.173186 | 0.138405 | 0.025906 | 0.007191 | 0.011447 | 0.018769 | 0.000611 | 0.000309 | 0.023821 | 0.001097 | 0.005189 |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 Non-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** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 Non-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 | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-003 |
| Unmitigated | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-003 |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust 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 | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-003 |
| **Total** | **1.9000e-004** | **2.0000e-005** | **2.0400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **4.3800e-003** | **4.3800e-003** | **1.0000e-005** | | **4.6600e-003** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**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 | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-003 |
| **Total** | **1.9000e-004** | **2.0000e-005** | **2.0400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **4.3800e-003** | **4.3800e-003** | **1.0000e-005** | | **4.6600e-003** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Summer

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# Perris North GW Monitoring Wells - Mass Daily

**Riverside-South Coast County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Other Non-Asphalt Surfaces | 20.00 | 1000sqft | 0.46 | 20,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.4 | **Precipitation Freq (Days)** | 28 |
| **Climate Zone** | 10 | | | **Operational Year** | 2024 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 390.98 | **CH4 Intensity (lb/MWhr)** | 0.033 | **N2O Intensity (lb/MWhr)** | 0.004 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Capturing concurrent construction at multiple well sites.

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

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

Trips and VMT - Based on engineering inputs and project description.

Grading - Area of disturbance.

Vehicle Trips - Based on project description.

Consumer Products - Operational emissions accounted for in separate model run.

Area Coating - Operational emissions accounted for in separate model run.

Landscape Equipment - Operational emissions accounted for in separate model run.

Construction Off-road Equipment Mitigation - BMPs

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Fleet Mix -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Parking | 1200 | 0 |
| tblConstDustMitigation | CleanPavedRoadPercentReduction | 0 | 5 |
| tblConstDustMitigation | WaterUnpavedRoadVehicleSpeed | 0 | 15 |
| tblConstructionPhase | NumDays | 2.00 | 208.00 |
| tblConstructionPhase | NumDays | 1.00 | 208.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblConsumerProducts | ROG_EF | 1.98E-05 | 0 |
| tblConsumerProducts | ROG_EF_Degreaser | 3.542E-07 | 0 |
| tblConsumerProducts | ROG_EF_PesticidesFertilizers | 5.152E-08 | 0 |
| tblGrading | AcresOfGrading | 0.00 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 186.00 |
| tblLandscapeEquipment | NumberSummerDays | 250 | 0 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 6.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 8.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 12.00 |
| tblTripsAndVMT | WorkerTripNumber | 50.00 | 40.00 |
| tblTripsAndVMT | WorkerTripNumber | 50.00 | 40.00 |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | 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 | | | | | |
| 2023 | 9.6077 | 73.0790 | 78.9358 | 0.2211 | 0.9757 | 3.0069 | 3.9826 | 0.2601 | 2.8588 | 3.1190 | 0.0000 | 21,228.9900 | 21,228.9900 | 5.2254 | 0.0532 | 21,375.4764 |
| **Maximum** | **9.6077** | **73.0790** | **78.9358** | **0.2211** | **0.9757** | **3.0069** | **3.9826** | **0.2601** | **2.8588** | **3.1190** | **0.0000** | **21,228.9900** | **21,228.9900** | **5.2254** | **0.0532** | **21,375.4764** |

### 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 | | | | | |
| 2023 | 9.6077 | 73.0790 | 78.9358 | 0.2211 | 0.9325 | 3.0069 | 3.9395 | 0.2497 | 2.8588 | 3.1086 | 0.0000 | 21,228.9900 | 21,228.9900 | 5.2254 | 0.0532 | 21,375.4764 |
| **Maximum** | **9.6077** | **73.0790** | **78.9358** | **0.2211** | **0.9325** | **3.0069** | **3.9395** | **0.2497** | **2.8588** | **3.1086** | **0.0000** | **21,228.9900** | **21,228.9900** | **5.2254** | **0.0532** | **21,375.4764** |

| | 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** | **4.42** | **0.00** | **1.08** | **4.00** | **0.00** | **0.33** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 2.2 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 | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-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 | 0.0000 |
| **Total** | **1.9000e-004** | **2.0000e-005** | **2.0400e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **4.3800e-003** | **4.3800e-003** | **1.0000e-005** | **0.0000** | **4.6600e-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 | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-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 | 0.0000 |
| **Total** | **1.9000e-004** | **2.0000e-005** | **2.0400e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **4.3800e-003** | **4.3800e-003** | **1.0000e-005** | **0.0000** | **4.6600e-003** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | 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 Preparation | Site Preparation | 1/2/2023 | 7/28/2023 | 7 | 208 | |
| 2 | Drilling | Grading | 1/2/2023 | 7/28/2023 | 7 | 208 | |

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.46**

**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 Preparation | Air Compressors | 2 | 6.00 | 78 | 0.48 |
| Site Preparation | Cement and Mortar Mixers | 2 | 2.00 | 9 | 0.56 |
| Site Preparation | Generator Sets | 2 | 6.00 | 84 | 0.74 |
| Site Preparation | Graders | 0 | 8.00 | 187 | 0.41 |
| Site Preparation | Off-Highway Trucks | 2 | 3.00 | 402 | 0.38 |
| Site Preparation | Off-Highway Trucks | 2 | 2.00 | 402 | 0.38 |
| Site Preparation | Off-Highway Trucks | 4 | 2.00 | 402 | 0.38 |
| Site Preparation | Pumps | 2 | 6.00 | 84 | 0.74 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

| | | | | | |
|---|---|---|---|---|---|
| Site Preparation | Tractors/Loaders/Backhoes | 2 | 6.00 | 97 | 0.37 |
| Site Preparation | Welders | 2 | 4.00 | 46 | 0.45 |
| Drilling | Air Compressors | 2 | 8.00 | 78 | 0.48 |
| Drilling | Bore/Drill Rigs | 2 | 8.00 | 221 | 0.50 |
| Drilling | Cranes | 2 | 8.00 | 231 | 0.29 |
| Drilling | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Drilling | Graders | 0 | 6.00 | 187 | 0.41 |
| Drilling | Off-Highway Trucks | 2 | 8.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 2 | 6.00 | 402 | 0.38 |
| Drilling | Off-Highway Trucks | 4 | 6.00 | 402 | 0.38 |
| Drilling | Rubber Tired Dozers | 0 | 6.00 | 247 | 0.40 |
| Drilling | Tractors/Loaders/Backhoes | 0 | 7.00 | 97 | 0.37 |
| Drilling | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Drilling | Welders | 2 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 20 | 40.00 | 12.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Drilling | 20 | 40.00 | 0.00 | 23.00 | 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

Clean Paved Roads

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | | | | | 2.5500e-003 | 0.0000 | 2.5500e-003 | 2.8000e-004 | 0.0000 | 2.8000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.9784 | 22.7445 | 27.2924 | 0.0630 | | 1.0026 | 1.0026 | | 0.9703 | 0.9703 | | 5,996.8496 | 5,996.8496 | 1.2205 | | 6,027.3615 |
| **Total** | **2.9784** | **22.7445** | **27.2924** | **0.0630** | **2.5500e-003** | **1.0026** | **1.0051** | **2.8000e-004** | **0.9703** | **0.9706** | | **5,996.8496** | **5,996.8496** | **1.2205** | | **6,027.3615** |

### 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 | 0.0000 |
| Vendor | 0.0125 | 0.4158 | 0.1669 | 2.1000e-003 | 0.0769 | 3.4300e-003 | 0.0803 | 0.0221 | 3.2800e-003 | 0.0254 | | 222.8770 | 222.8770 | 2.2200e-003 | 0.0330 | 232.7553 |
| Worker | 0.1369 | 0.0936 | 1.1884 | 3.5600e-003 | 0.4471 | 2.0900e-003 | 0.4492 | 0.1186 | 1.9200e-003 | 0.1205 | | 360.1694 | 360.1694 | 9.1600e-003 | 9.6000e-003 | 363.2604 |
| **Total** | **0.1494** | **0.5094** | **1.3552** | **5.6600e-003** | **0.5240** | **5.5200e-003** | **0.5295** | **0.1407** | **5.2000e-003** | **0.1459** | | **583.0463** | **583.0463** | **0.0114** | **0.0426** | **596.0157** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.2 Site Preparation - 2023

### 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 | | | | | 1.1500e-003 | 0.0000 | 1.1500e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.9784 | 22.7445 | 27.2924 | 0.0630 | | 1.0026 | 1.0026 | | 0.9703 | 0.9703 | 0.0000 | 5,996.8496 | 5,996.8496 | 1.2205 | | 6,027.3614 |
| **Total** | **2.9784** | **22.7445** | **27.2924** | **0.0630** | **1.1500e-003** | **1.0026** | **1.0037** | **1.2000e-004** | **0.9703** | **0.9704** | **0.0000** | **5,996.8496** | **5,996.8496** | **1.2205** | | **6,027.3614** |

### 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 | 0.0000 |
| Vendor | 0.0125 | 0.4158 | 0.1669 | 2.1000e-003 | 0.0741 | 3.4300e-003 | 0.0776 | 0.0215 | 3.2800e-003 | 0.0247 | | 222.8770 | 222.8770 | 2.2200e-003 | 0.0330 | 232.7553 |
| Worker | 0.1369 | 0.0936 | 1.1884 | 3.5600e-003 | 0.4277 | 2.0900e-003 | 0.4298 | 0.1138 | 1.9200e-003 | 0.1157 | | 360.1694 | 360.1694 | 9.1600e-003 | 9.6000e-003 | 363.2604 |
| **Total** | **0.1494** | **0.5094** | **1.3552** | **5.6600e-003** | **0.5018** | **5.5200e-003** | **0.5073** | **0.1353** | **5.2000e-003** | **0.1405** | | **583.0463** | **583.0463** | **0.0114** | **0.0426** | **596.0157** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | | | | | 1.1000e-004 | 0.0000 | 1.1000e-004 | 2.0000e-005 | 0.0000 | 2.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 6.3427 | 49.7198 | 49.0967 | 0.1488 | | 1.9966 | 1.9966 | | 1.8813 | 1.8813 | | 14,282.4260 | 14,282.4260 | 3.9843 | | 14,382.0327 |
| **Total** | **6.3427** | **49.7198** | **49.0967** | **0.1488** | **1.1000e-004** | **1.9966** | **1.9967** | **2.0000e-005** | **1.8813** | **1.8813** | | **14,282.4260** | **14,282.4260** | **3.9843** | | **14,382.0327** |

### 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 | 2.2000e-004 | 0.0117 | 3.1000e-003 | 6.0000e-005 | 1.9400e-003 | 1.3000e-004 | 2.0700e-003 | 5.3000e-004 | 1.3000e-004 | 6.6000e-004 | | 6.4988 | 6.4988 | 9.0000e-005 | 1.0200e-003 | 6.8062 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.1369 | 0.0936 | 1.1884 | 3.5600e-003 | 0.4471 | 2.0900e-003 | 0.4492 | 0.1186 | 1.9200e-003 | 0.1205 | | 360.1694 | 360.1694 | 9.1600e-003 | 9.6000e-003 | 363.2604 |
| **Total** | **0.1371** | **0.1053** | **1.1915** | **3.6200e-003** | **0.4491** | **2.2200e-003** | **0.4513** | **0.1191** | **2.0500e-003** | **0.1212** | | **366.6681** | **366.6681** | **9.2500e-003** | **0.0106** | **370.0666** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 3.3 Drilling - 2023

### 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 | | | | | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | | | 0.0000 | | | 0.0000 |
| Off-Road | 6.3427 | 49.7198 | 49.0967 | 0.1488 | | 1.9966 | 1.9966 | | 1.8813 | 1.8813 | 0.0000 | 14,282.4260 | 14,282.4260 | 3.9843 | | 14,382.0327 |
| **Total** | **6.3427** | **49.7198** | **49.0967** | **0.1488** | **5.0000e-005** | **1.9966** | **1.9966** | **1.0000e-005** | **1.8813** | **1.8813** | **0.0000** | **14,282.4260** | **14,282.4260** | **3.9843** | | **14,382.0327** |

### 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 | 2.2000e-004 | 0.0117 | 3.1000e-003 | 6.0000e-005 | 1.8600e-003 | 1.3000e-004 | 2.0000e-003 | 5.1000e-004 | 1.3000e-004 | 6.4000e-004 | | 6.4988 | 6.4988 | 9.0000e-005 | 1.0200e-003 | 6.8062 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.1369 | 0.0936 | 1.1884 | 3.5600e-003 | 0.4277 | 2.0900e-003 | 0.4298 | 0.1138 | 1.9200e-003 | 0.1157 | | 360.1694 | 360.1694 | 9.1600e-003 | 9.6000e-003 | 363.2604 |
| **Total** | **0.1371** | **0.1053** | **1.1915** | **3.6200e-003** | **0.4295** | **2.2200e-003** | **0.4318** | **0.1143** | **2.0500e-003** | **0.1164** | | **366.6681** | **366.6681** | **9.2500e-003** | **0.0106** | **370.0666** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive 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 | 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 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Other Non-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 Non-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 Non-Asphalt Surfaces | 0.537845 | 0.056225 | 0.173186 | 0.138405 | 0.025906 | 0.007191 | 0.011447 | 0.018769 | 0.000611 | 0.000309 | 0.023821 | 0.001097 | 0.005189 |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 Non-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** |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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 Non-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 | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-003 |
| Unmitigated | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-003 |

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | 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 | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-003 |
| **Total** | **1.9000e-004** | **2.0000e-005** | **2.0400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **4.3800e-003** | **4.3800e-003** | **1.0000e-005** | | **4.6600e-003** |

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 6.2 Area by SubCategory

**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 | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.9000e-004 | 2.0000e-005 | 2.0400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 4.3800e-003 | 4.3800e-003 | 1.0000e-005 | | 4.6600e-003 |
| **Total** | **1.9000e-004** | **2.0000e-005** | **2.0400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **4.3800e-003** | **4.3800e-003** | **1.0000e-005** | | **4.6600e-003** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

Perris North GW Monitoring Wells - Mass Daily - Riverside-South Coast County, Winter

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

## 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

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# APPENDIX B: BIOLOGICAL RESOURCES ASSESSMENT

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November 22, 2021
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 Project, Riverside County, California**

Dear Ms. Prickett:

This report documents the findings of a Biological Resources Assessment (BRA) conducted by Rincon Consultants, Inc. (Rincon), for the proposed Perris North Basin Groundwater Contamination Monitoring Project ("project"). The Eastern Municipal Water District (EMWD) proposes the construction and operation of twenty monitoring wells (MW) at twenty locations throughout the cities of Moreno Valley and Perris in Riverside County, California. Forty-one potential locations, including optional locations, were evaluated for biological constraints for the proposed MW sites. This BRA documents existing site conditions via desktop analysis and field surveys to evaluate potential impacts to sensitive biological resources for the proposed and optional MW site locations (i.e., project sites). This 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 areas include the proposed limits of work over approximately 569-acres for the forty-one potential MW project sites and an additional 500-foot buffer (where feasible) around the project sites for the BUOW habitat assessment.

# Project Location and Description

The project sites are within the cities of Moreno Valley and Perris in western Riverside County, California (Attachment 1, Figure 1 and Figure 2). The project sites 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, the project sites and their corresponding Assessor Parcel Numbers (APNs) are identified in Table 1. The project sites are located within the United States Geological Survey of Riverside East, CA, Sunnymead, CA, and Perris, CA 7.5-minute topographic quadrangles. The project sites are in an area characterized by a mix of agricultural, residential, commercial, and industrial development.

## Table 1 Project Sites and Corresponding APNs

| Project Site | APN |
|---|---|
| MW-01 | 260141030 |
| MW-02a | 475090003 |
| MW-02b | 475160065, 475160056 |
| MW-03a | 481090034, 481090019, 481090018, 481090021, 481020021, 481020023 |
| MW-03b | 481090033 |
| MW-04 | 264100009, 264100008 |
| MW-05a | 481342020, 481342028 |
| MW-05b | 481341034 |
| MW-05c | 475300064 |
| MW-06a | 481120020 |
| MW-06b | 481140025, 481140024 |
| MW-07a | 479121021 |
| MW-07b | 479140022 |
| MW-08a | 482121001 |
| MW-08b | 482161024, 482161022, 482161021, 482161023 |
| MW-09a | 482180075, 482180074 |
| MW-09b | 297170090 |
| MW-10a | 479220024 |
| MW-10b | 484020006, 484020025, 484020018 |
| MW-11a | 484231016, 484231015 |
| MW-11b | 482582039, 482582040 |
| MW-12a | 486300013, 486320009, |
| MW-12b | No APN designated (GPS: 33.898872 N, -117.206045 W) |
| MW-13a | 485220041, 485220032, 485220040 ,485220042 |
| MW-13b | 485121012 |
| MW-14a | 312360005, 312360006, 312360002, 312360003, 312360004, 312360007, 312360001 |
| MW-14b | 316030015 |
| MW-15a | 486160037 |
| MW15b | 486160048 |
| MW-16 | 486211022 |
| MW Opt. A-1 | 312250043 |
| MW Opt. A-2 | 312270001 |
| MW Opt. B-1 | 302100025, 302100010, 302100009, 302100011, 302100002 |
| MW Opt. B-2 | 302100029 |
| MW Opt. C-1 | 302060041 |
| MW Opt. C-2 | 302130035, 302130034, 302130027 |
| MW Opt. D-1 | 302130041 |
| MW Opt. D-2 | 302140002 |
| MW Opt. D-3 | 303140001 |
| MW Opt. E-1 | 302110032, 302110023, 302110024 |
| MW Opt. E-2 | 302120024 |

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. Attachment 1, Figure 2 (1-4) shows the location of each MW project site within the Perris North Basin as identified.

The construction of each MW would require disturbance of an approximately 100 x 100-foot area within the project sites identified. 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, 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 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 field surveys, 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* (2021b), *Perris, CA* and *Sunnymead, CA* USGS 7.5-minute topographic quadrangles, literature detailing the habitat requirements of subject species, and aerial photographs (Google Earth 2021 and topographic maps USGS 2021). 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 project sites 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 2021a), Biogeographic Information and Observation System (BIOS; CDFW 2021b) and United States Fish and Wildlife Service (USFWS) Critical Habitat Portal (USFWS 2021a) and Information for Planning and Consultation (IPaC; USFWS 2021b) 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 2021). The *National Wetlands Inventory* (NWI; USFWS 2021c) 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* (CNPS 2021), and CDFW *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2021c).

## Field Reconnaissance Surveys

Field reconnaissance surveys of the project sites were 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 biologists Christopher Hughes and Charleen Rode conducted the reconnaissance surveys from November 2 through November 4, 2021. The biologists surveyed the project sites on foot and visually inspected the areas with the aid of binoculars (8 x 32) as necessary.

Identification of potentially jurisdictional aquatic resources during the reconnaissance survey included assessment of 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; however, a formal jurisdictional delineation of waters and wetlands was not completed. During the surveys, the biologist noted general site characteristics, documented vegetation, wildlife species observed, and took representative photographs at each project site (Attachment 2). Vegetation communities were mapped by walking transects of the project sites and captured using a GPS with a minimum of 10-meter accuracy. Data gathered from the field surveys was checked for quality and consistency, and all species identified to the finest taxonomic level. Survey conditions included temperatures ranging from 56-78 degrees Fahrenheit (°F), clear skies, and winds of 0-6 miles per hour (mph).

## BUOW Habitat Assessment

A BUOW habitat assessment was also conducted during the field reconnaissance surveys. Rincon biologists Christopher Hughes and Charleen Rode walked through each project site (i.e., the 41 proposed project sites and 500-foot buffers, where accessible) to identify potential burrows and BUOW sign. Biologists did not have full access to project site MW-12a, this site was surveyed only from the perimeters with the aid of binoculars (8 x 32). 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 project site boundaries. The surveys included a systematic search for burrows and BUOW signs by walking transects through potential habitat within the project sites and buffer areas. Survey transects were spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines did not exceed 30 meters (approximately 100 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 project sites are 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°F during the summer and 41 to 65°F during the winter. The average annual precipitation in the region is 10.34 inches (United States Climate Data 2021).

Current land use at the project sites consists of parks, disturbed lots, developed areas, and sites undergoing residential and industrial development. Areas of similar land use are located in the surrounding vicinity. The locations for the proposed MWs include EMWD maintained lots all of which are adjacent to commercial and residential developments. Rincon biologists observed various levels of recent debris dumping (concrete and trash), large soil storage areas, small soil spoil piles, ongoing construction, and homeless campsites throughout the study areas.

## Watershed and Drainages

The project sites are 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.

During the recent field surveys biologists observed the following: two ephemeral swale features on the northern extent of MW-07b due to urban run-off from residential neighborhood streets; one stormwater drainage along the southern extent of MW-09a containing a small 0.24-acre patch of cattail (*Typha latifolia*) marsh vegetation; man-made culverts and drainage ditches throughout MW-12a; ephemeral swale feature along western portion of Opt. A-1; stormwater drainages in Opt. C-1, Opt. D-1, and Opt. D-2; and an established man-made drainage in Opt. E-2 north of Amazon commercial distribution center.

The project sites are underlain by moderately well-drained soils. Project sites containing maintained earthen bottom drainages and ephemeral swales observed during the field surveys were all dry during the surveys. The drainages and ephemeral swale features observed were dry at the time of the field surveys and exhibited signs of regular maintenance, mostly clear of vegetation with the exception of MW-09a where common cattails (*Typha latifolia*) were present. The southern corner of MW-09a may be considered jurisdictional for CDFW. All of the other MW project sites showed no signs persistent emergents, emergent mosses, or lichens. Riparian/riverine resources were not observed to present potential issues for jurisdictional delineation resources for the rest of the project sites, with the exception of MW-09a.

## Topography and Soils

Topography throughout the project sites was relatively level with elevations ranging from 1,455 feet above mean sea level (msl) in the southern project sites and gradually increases to approximately 1,670 feet above msl in the northern project sites. Project site locations primarily consisted of level ground

within disturbed vacant lots, developed park areas, developed shopping centers, and residential and commercial areas.

The USDA NRCS Web Soil Survey delineates 27 soil map units found within the project sites:

- Chino silt loam, drained
- Domino fine sandy loam, eroded
- Domino fine sandy loam, saline-alkali
- Domino silt loam
- Domino silt loam, saline-alkali
- Exeter sandy loam, 0 to 2 percent slopes
- Exeter sandy loam, deep, 0 to 2 percent slopes
- Exeter sandy loam, deep, 2 to 8 percent slopes, eroded
- Exeter very fine sandy loam, deep, 0 to 5 percent slopes
- Grangeville sandy loam, drained, saline-alkali, 0 to 5 percent slopes
- Greenfield sandy loam, 0 to 2 percent slopes
- Greenfield sandy loam 2 to 8 percent slopes, eroded
- Greenfield sandy loam 8 to 15 percent slopes eroded
- Hanford coarse sandy loam, 0 to 2 percent slopes
- Hanford coarse sandy loam, 2 to 8 percent slopes
- Hanford fine sandy loam, 0 to 2 percent slopes
- Monserate sandy loam, 0 to 5 percent slopes
- Pachappa fine sandy loam, 0 to 2 percent slopes
- Pachappa fine sandy loam, 2 to 8 percent slopes, eroded
- Ramona sandy loam, 0 to 2 percent slopes, MLRA 19
- Ramona sandy loam, 2 to 5 percent slopes, eroded
- Ramona sandy loam 8 to 15 percent slopes, severely eroded
- Ramona very fine sandy loam, 0 to 8 percent slopes, eroded
- San Emigdio loam, 0 to 2 percent slopes
- Traver fine sandy loam, saline-alkali
- Traver loamy fine sand, eroded
- Willows silty clay

Site specific soil observations are consistent with those mapped by the USDA NRCS Web Soil Survey. These 27 map units can be organized into 12 soil series that are described below. Table 2 provides a complete list of each soil type found within each project site. 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 sites are included on the *National Hydric Soils List* (USDA NRCS 2021c).

## Chino Soils

Chino silt loam soils are somewhat poorly drained soils that occur in flood plains. It is alluvium derived from granite. A typical profile consists of silt loam soils textures down to 14 inches and silty clay loam extending down to 60 inches. Available water storage is high (about 10.5 inches), and the runoff class is medium. Chino soils are commonly used for grazing or for growing irrigated truck and row crops.

## Domino Soils

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 salt grass (*Distichlis spicata*), sedges, annual grasses, and forbs.

## Exeter Soils

The Exeter series consists of moderately deep to a duripan, moderately well drained soils that formed in alluvium mainly from granitic sources. These soils are mainly found on alluvial fans and stream terraces at elevations of 20 to 700 feet. These soils are used for irrigated cropland growing oranges, olives and deciduous orchards, vineyards, and row crops. They are also used for dairy and cattle production and building site development. Vegetation in uncultivated areas is mainly annual grasses and forbs.

## Grangeville Soils

Grangeville sandy loam soils are moderately well drained soils. These soils occur in alluvial fans and are alluvium derived from granite. A typical profile consists of sandy loam soils textures down to 17 inches and sandy clay loam extending down to 60 inches. Available storage is moderate (about 7.2 inches), and the runoff class is very low.

## Greenfield Soils

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

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

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

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

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.

## San Emigdio Soils

The San Emigdio series consists of very deep, well drained soils that formed in dominantly sedimentary alluvium. San Emigdio soils are on fans and floodplains and have slopes of 0 to 15 percent. These soils are alluvium derived from sedimentary rocks. A typical profile consists of loam soils textures down to 8 inches and fine sandy loam extending down to 40 inches with stratified sandy clay loam to silt loam continuing down to 60 inches. Available storage is moderate (about 8.7 inches) and the runoff class is very low. Used for growing citrus fruit, alfalfa, truck crops, dryland grain, and some areas are in homesites.

## Traver Soils

The Traver series is a member of a coarse-loamy, mixed, thermic family of Natric Haploxeralfs. The soils have light brownish gray, calcareous, fine sandy loam A horizons, light brownish gray, calcareous, fine sandy loam Bt horizons which overlie very pale brown, calcareous fine sandy loam C horizons. The alluvium is from granitic bedrock. Traver soils are moderately well drained soils that occur in valley floors. These soils are used mainly for early spring pasture and where reclaimed they are used for

general field crops such as cotton, sugar beets, and alfalfa as well as irrigated pasture. Vegetation is salt-grass and salt-tolerant weeds; occasional spots are nearly bare of vegetation.

## Willow Soils

The Willows series consists of very deep, poorly to very poorly drained sodic soils formed in alluvium from mixed rock sources. Willows soils are in flood basins with slope ranges from 0 to 2 percent. These soils are alluvium derived from mixed sources and are generally used for growing rice, sugar beets and safflower. Original vegetation was saline-sodic tolerant plants.

**Table 2 Soil Units within the Project Sites**

| Project Site | Soil Units |
|---|---|
| MW-01 | Hanford coarse sandy loam, 2 to 8 percent slopes; Ramona sandy loam, 2 to 5 percent slopes, eroded; Ramona sandy loam, 8 to 15 percent slopes, severely eroded |
| MW-02a | Ramona sandy loam, 2 to 5 percent slopes, eroded; Greenfield sandy loam, 2 to 8 percent slopes, eroded |
| MW-02b | Greenfield sandy loam, 2 to 8 percent slopes, eroded |
| MW-03a | Ramona sandy loam, 2 to 5 percent slopes, eroded; Hanford coarse sandy loam, 2 to 8 percent slopes; Greenfield sandy loam, 2 to 8 percent slopes, eroded; Greenfield sandy loam, 8 to 15 percent slopes, eroded |
| MW-03b | Greenfield sandy loam, 0 to 2 percent slopes; Greenfield sandy loam, 8 to 15 percent slopes, eroded |
| MW-04 | Hanford fine sandy loam, 0 to 2 percent slopes; Greenfield sandy loam, 0 to 2 percent slopes |
| MW-05a | Ramona sandy loam, 2 to 5 percent slopes, eroded; Greenfield sandy loam, 2 to 8 percent slopes, eroded |
| MW-05b | Greenfield sandy loam, 2 to 8 percent slopes, eroded |
| MW-05c | Greenfield sandy loam, 2 to 8 percent slopes, eroded |
| MW-06a | Greenfield sandy loam, 2 to 8 percent slopes, eroded |
| MW-06b | Greenfield sandy loam, 2 to 8 percent slopes, eroded |
| MW-07a | Ramona sandy loam, 2 to 5 percent slopes, eroded |
| MW-07b | Ramona sandy loam, 2 to 5 percent slopes, eroded; Pachappa fine sandy loam, 2 to 8 percent slopes, eroded |
| MW-08a | Hanford fine sandy loam, 0 to 2 percent slopes; Exeter sandy loam, deep, 2 to 8 percent slopes, eroded; Greenfield sandy loam, 0 to 2 percent slopes; Monserate sandy loam, 0 to 5 percent slopes |
| MW-08b | Pachappa fine sandy loam, 2 to 8 percent slopes, eroded; Greenfield sandy loam, 0 to 2 percent slopes; Hanford fine sandy loam, 0 to 2 percent slopes; |
| MW-09a | Ramona sandy loam, 2 to 5 percent slopes, eroded; Monserate sandy loam, 0 to 5 percent slopes |
| MW-09b | Monserate sandy loam, 0 to 5 percent slopes |
| MW-10a | Pachappa fine sandy loam, 2 to 8 percent slopes, eroded; Greenfield sandy loam, 0 to 2 percent slopes; Exeter sandy loam, deep, 2 to 8 percent slopes, eroded |
| MW-10b | Greenfield sandy loam, 0 to 2 percent slopes; Exeter sandy loam, deep, 2 to 8 percent slopes, eroded |

| Project Site | Soil Units |
|---|---|
| MW-11a | Hanford coarse sandy loam, 0 to 2 percent slopes; Hanford fine sandy loam, 0 to 2 percent slopes |
| MW-11b | Greenfield sandy loam, 0 to 2 percent slopes; Hanford fine sandy loam, 0 to 2 percent slopes |
| MW-12a | Ramona sandy loam, 0 to 2 percent slopes, MLRA 19; Domino silt loam, Ramon very fine sandy loam, 0 to 8 percent slopes, eroded; San Emigdio loam, 0 to 2 percent slopes; Greenfield sandy loam, 0 to 2 percent slopes; Domino fine sandy loam, eroded; Willow silty clay |
| MW-12b | Greenfield sandy loam, 0 to 2 percent slopes |
| MW-13a | Hanford coarse sandy loam, 0 to 2 percent slopes; Hanford fine sandy loam, 0 to 2 percent slopes; Greenfield sandy loam, 0 to 2 percent slopes; |
| MW-13b | Hanford coarse sandy loam, 0 to 2 percent slopes |
| MW-14a | Hanford coarse sandy loam, 0 to 2 percent slopes; Hanford fine sandy loam, 0 to 2 percent slopes; Greenfield sandy loam, 0 to 2 percent slopes |
| MW-14b | Hanford coarse sandy loam, 0 to 2 percent slopes; Hanford fine sandy loam, 0 to 2 percent slopes |
| MW-15a | Domino silt loam, saline-alkali; Domino fine sandy loam, eroded |
| MW-15b | Domino silt loam, saline-alkali; Chino silt loam, drained |
| MW-16 | Hanford fine sandy loam, 0 to 2 percent slopes; Greenfield sandy loam, 0 to 2 percent slopes |
| MW Opt. A-1 | Domino fine sandy loam, saline-alkali; Hanford coarse sandy loam, 0 to 2 percent slopes; Exeter sandy loam, 0 to 2 percent slopes |
| MW Opt. A-2 | Greenfield sandy loam, 0 to 2 percent slopes; Exeter sandy loam, deep, 0 to 2 percent slopes |
| MW Opt. B-1 | Grangeville sandy loam, drained, saline-alkali, 0 to 5 percent slopes; Exeter very fine sandy loam, deep, 0 to 5 percent slopes; Traver fine sandy loam, saline-alkali; Domino silt loam, saline-alkali |
| MW Opt. B-2 | Domino silt loam, saline-alkali |
| MW Opt. C-1 | Exeter sandy loam, deep, 0 to 2 percent slopes, Hanford coarse sandy loam, 0 to 2 percent slopes; Pachappa fine sandy loam, 0 to 2 percent slopes |
| MW Opt. C-2 | Exeter sandy loam, deep, 0 to 2 percent slopes; Hanford coarse sandy loam, 0 to 2 percent slopes; Pachappa fine sandy loam, 0 to 2 percent slopes; Domino silt loam |
| MW Opt. D-1 | Domino silt loam, saline-alkali |
| MW Opt. D-2 | Domino silt loam, saline-alkali |
| MW Opt. D-3 | Domino silt loam, saline-alkali |
| MW Opt. E-1 | Domino silt loam, saline-alkali; Hanford fine sandy loam, 0 to 2 percent slopes; Exeter very fine sandy loam, deep, 0 to 5 percent slopes |
| MW Opt. E-2 | Domino silt loam, saline-alkali; Exeter very fine sandy loam, deep, 0 to 5 percent slopes |

# Vegetation Communities and Land Cover Types

Two vegetation communities and two land cover types occur within the project sites (Attachment 1, Figure 4). A list of plant species observed within the project sites is included in Attachment 4.

## Cattail Marshes

The cattail marsh herbaceous alliance is typically found in semi-permanently flooded freshwater or brackish marsh habitats between 0 to 1,149 feet (0 to 350 meters) in elevation. Soils are typically clayey or silty. Narrowleaf cattail (*Typha angustifolia*) or common cattail, contributes to greater than 50 percent relative cover in the herbaceous layer; one or more cattail species may be present. The vegetation community is not considered sensitive (CDFW 2021). This vegetation alliance was observed in a small 0.24-acre patch at the southern extent of MW-09a abutting a stormwater drain along the edge of the site.

## Disturbed Habitat

Disturbed habitat is the dominant land cover type throughout the proposed project sites. Areas that have been physically disturbed (by previous legal human activity) and are no longer recognizable as a native or naturalized vegetation association but continues to retain a soil substrate. Vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance. These areas are not typically artificially irrigated but receive water from precipitation or runoff. Disturbed habitat cover is located throughout the proposed project sites and are predominately devoid of vegetation. Limited native and non-native tree species were observed along the perimeters of select project sites to include species such as Fremont's cottonwood (*Populus fremontti*), western sycamore (*Platanus racemosa*), black willow (*Salix nigra*), red ironbark (*Eucalyptus sideroxylon*), and Peruvian pepper tree (*Shinus mole*); although, trees species were not dominant to constitute their own distinct vegetation community individuals were primarily observed in study areas and not directly within project sites. Disturbed habitat land cover was dominant throughout the proposed MW locations with a total of 356.3-acres throughout the project sites.

## Urban/Developed

Developed land cover is second-most dominant land cover type found at the project sites and consists of developments 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 a total of 162.0-acres throughout the project sites.

## Non-native Annual Grassland

Non-native annual grassland was the dominant vegetation community found within the project sites. 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 sites, non-native annual grassland areas contained these annual grasses and also included non-native Russian thistle (*Salsola tragus*) and red stemmed filaree (*Erodium cicatarium)*. Native species common fiddleneck (*Amsinckia intermedia*) was also observed within this vegetation community. Non-native annual grassland was found intermittently throughout the northern project sites within vacant lots. This vegetation community consists of total of 49.7-acres throughout the project sites.

## General Wildlife

The project sites provide limited habitat for wildlife species that commonly occur within urban communities in Riverside County. Common urban-adapted avian species were observed on site during the survey, including - killdeer (*Charadrius vociferus*), red-tailed hawk (*Buteo jamaicensis*), Say's phoebe (*Sayornis saya*), black phoebe (*Sayornis nigricans*), Savannah sparrow (*Passerculus sandwichensis*), song sparrow (*Melospiza melodia*), common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), house finch (*Haemorhous mexicanus*), yellow-rumped warbler (*Setophaga coronata*), California gull (*Larus californicus*), American kestrel (*Falco sparverius*), and western meadowlark (*Sturnella neglecta*). California ground squirrel (*Otospermophilus beecheyi*) and coyote (*Canis latrans*) were the only two live mammals observed within the study area. Western fence lizard (*Sceloporus occidentalis*) was the only reptile observed within the study area.

Biologists observed fourteen California horned larks (*Eremophila alpestris actia*) (CDFW Watch List Species), foraging throughout the project site labeled as MW-10b, during the November 2 survey; nesting and/or mating behaviors were not observed. One BUOW (CDFW Species of Special Concern), observed at project site MW Opt. C-2, was flushed from its burrow during the field survey on November 3. Both of these project sites displayed signs of recent grading and are classified as disturbed habitats.

# Sensitive Biological Resources

Based on review of aerial photographs and the field reconnaissance surveys, 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 areas 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 sites (Attachment 3; Table 3). One sensitive plant community, sycamore alder riparian woodland, was identified within five miles of the sites. However, sensitive plant communities were not observed on the project sites as they typically have very specific habitat requirements that are not present on these primarily disturbed and developed sites. Rincon biologists observed one BUOW individual and 14 California horned larks during the field surveys on November 2nd and 3rd , 2021.

## Special Status Plant Species

The project sites are located within a highly developed urban area, 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, special status plant species are not expected to occur on the sites.

## Special Status Wildlife Species

The proposed project sites are located within a highly developed urban area, are highly disturbed, and surrounded by existing commercial and residential development. Because of the lack of native vegetation communities and specific habitats, as well as high levels of historic and existing disturbance and isolation from native habitats, the sites are not suitable for most special status wildlife species. The literature review identified 35 special status wildlife species recorded within five miles of the sites. 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 occurs within and adjacent to the sites. Undeveloped areas at the project sites that contain marginally suitable habitats are largely dominated by low-growing, non-native ruderal species. California horned larks were observed foraging at two locations within the MW-10b project site during the November 2 field surveys; nesting and mating behavior was not observed (although surveys were conducted outside of the nest season). In addition, burrows and California ground squirrels were present within six of the potential project sites that have potential to support BUOW: MW-03a, MW-03b, MW-09a, MW-10b, MW-13a, MW Opt. C-2 (Attachment 1, Figure 5). The remaining sites where burrows were not observed contained low quality habitat and the potential for this species to occur is low due to the site-specific locations within highly developed/urbanized areas and limited available habitat structure to form burrows which would likely deter individuals from long-term use of the project sites. One BUOW individual was observed during the reconnaissance field surveys at the MW Opt. C-2 project site (Attachment 1, Figure 5, 5 of 6). This site contained one active burrow from which the BUOW was flushed during the survey. The active BUOW burrow had a carcass on its apron as well as BUOW pellets. The BUOW immediately flew to a tire approximately 150 feet away as Rincon biologists approached the active burrow. Biologists photographed the burrow and the tire perch, which showed signs of BUOW whitewash, pictured in Attachment 2.

### Nesting Birds

Shrubs and trees found within disturbed habitats and urban/developed areas at project sites MW-01, MW-04, MW-06a, MW-09a, MW-12a, MW-15a, MW Opt. A-1, MW Opt. C-1, MW Opt. D-2, and MW Opt. D-3 could provide suitable nesting habitat for several common avian species observed during the reconnaissance surveys. Bird 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. The live BUOW and active BUOW burrow observed at project site Opt.C-2 confirms the presence of BUOW habitat. California horned larks, observed at MW-10b, are typically ground nesters and are capable of nesting on bare ground within the project sites. California horned larks did not exhibit signs of nesting behavior during the surveys; although the surveys were conducted outside of nesting bird season. Overall, project site MW-10b is considered low quality for other species of nesting birds due to lack of vegetation, recent signs of grading, and the sites proximity to heavily travelled roadways.

## Sensitive Plant Communities

No sensitive plant communities as identified by the CNDDB or local ordinances, or riparian habitat, are present on the sites. A small amount of cattail marsh vegetation was found at MW-09a but this vegetation alliance is not considered sensitive, ranked G5 and S5 under CDFW.

## Jurisdictional Waters and Wetlands

The project sites consist primarily of developed areas, disturbed habitats, and vacant lots, and are adjacent to urban roadways. The majority of surrounding land use includes streets, sidewalks, residential and commercially developed areas intermixed with isolated areas of open space and public lands. The NWI identified several potential aquatic features within or adjacent to the project sites; however, these features were mapped based on interpretations of aerial imagery from 1975.

During the field surveys Rincon biologists observed ephemeral swale features, stormwater drains, and culverts. MW-07b contained two depressions, swale features, with patches of non-native annual grassland observed beginning where the project site borders residential streets, these features did not significantly change in elevation and lacked bed/bank features. MW-09a contains a 0.24-acre patch of cattail marsh vegetation that could potentially be jurisdictional to CDFW, this area showed signs of sheet flow from adjacent urban/developed land cover which flowed toward the southern stormwater drain at the southern corner of the parcel, adjacent to this vegetation community. MW-12a contained a culvert drainage system spanning diagonally through the project site which was buried and consisted only of disturbed habitat vegetational features. MW Opt. A-1 contained a slight depression in the disturbed area west of the parking lot, the vegetation was sparse containing scattered willow trees (*Salix spp.*), Fremont cottonwood, and tamarisk (*Tamarix laevigata*); observations included evident sheet flows from adjacent non-permeable landcover vegetation, absent understory vegetation, and signs of recent mowing. Man-made stormwater drainages were also present in MW Opt. C-1, Opt. D-1, Opt. D-2, and Opt. E-2; all were observed to be lacking wetland vegetation and were not connected to an established water source.

All sites containing the swales and drainage features were dry and observed to have been man-made or influenced by urban, residential, or stormwater runoff. The topography is relatively flat throughout the proposed project site locations and vegetational features formed due to nuisance runoff and impervious

surfaces in the nearby areas. There is not a direct point source of water that feeds into any of the project sites.

Further, no hydric soils are present at the project sites. 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 were observed within the project sites during the field reconnaissance surveys, with the potential exception of the small patch of cattail marsh on MW-09a.

### 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.

The project sites and their components were assessed as required by the Western Riverside MSHCP. Based upon the findings of Rincon's reconnaissance surveys, no riparian/riverine habitats are present within the project sites, other than the cattail marsh vegetation observed at MW-09a. Sites containing swales with sparse vegetation and man-made drainage features (MW: 07b, 12a, Opt. A-1, Opt. C-1, Opt. D-1, Opt. D-2, Opt. E-2) would not be considered riparian/riverine habitat since the project sites lack hydric soils, significant hydrophytic vegetation and wetland hydrology. The remaining project sites are heavily disturbed due to past agricultural uses, urban development, and are currently either unvegetated, developed, or dominated by exotic upland species not conducive to supporting riparian/riverine habitats. Additionally, no vernal pools or fairy shrimp habitat were observed within the project sites and are all underlain by moderately to excessively well-drained soils.

## Wildlife Movement

According to the Regional Conservation Authority (RCA) MSHCP Information App, the project sites are not located within an MSHCP Criteria Area, Public-Quasi Public Reserve Lands or within a Core or Linkage (RCA 2021). The CDFW BIOS (2021b) does not include any mapped essential habitat connectivity areas in the immediate vicinity of the sites. 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 project sites are separated from these identified essential habitat connectivity areas by public roadways and residential areas, and therefore the sites are not expected to contribute to a significant wildlife migratory corridor.

## Resources Protected by Local Policies and Ordinances

The project sites are 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. The proposed project sites lack suitable grassland, coastal scrub, and sagebrush habitat to support Stephen's Kangaroo Rat and are located directly adjacent urban roadways.

## Conservation Plans

The project sites are located within the boundaries of the Western Riverside MSHCP. Portions of the sites 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. The closest Public/Quasi-Public conserved lands are located approximately 1.03 miles east of MW Opt. D-3 at the Lake Perris State Recreation Area (Riverside County 2021). As discussed in previous sections, a BUOW habitat assessment was conducted as part of this survey effort.

# 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 sites. 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 sites. Therefore, there will be no impacts to sensitive plant species.

Of the 35 sensitive wildlife species identified, 33 of these species are not expected to occur due to lack of suitable habitat (e.g., riparian, scrub, woodland). Two sensitive wildlife species were determined to be present or have a low potential to occur on some of the sites: California horned lark, CDFW Watch List, and BUOW, CDFW Species of Special Concern. There is low quality or marginal foraging and/or nesting habitat for both species on the following project sites: MW-09a, MW-10b, MW Opt. C-1, MW Opt. C-2, MW Opt. D-1, MW Opt. D-2, MW Opt. D-3. This was determined due to the observed open habitat and low vegetation but immediate proximity of these sites to urban development. The rest of the MW project sites were located within highly developed areas lacking vegetation or undergoing construction. All of the sites exhibited signs of previous disturbance, but the sites mentioned above contain a minimal amount of suitable habitat for BUOW and California Horned Lark. These species were observed during the field surveys.

California horned larks were observed foraging at two locations within the MW-10b project site during the November 2 field survey; although, no nests were observed the surveys were conducted outside of nesting bird season. One BUOW individual was observed during the November 3rd field survey at Opt.C-2. This site contained one active burrow which the BUOW was flushed from during the survey. It is recommended that the project avoid this active BUOW burrow and adequate non-disturbance buffer zone. Impacts from construction activities could potentially interfere with or deter these species from utilizing the sites for nesting or foraging. In order to avoid and minimize the potential for impacts to these species, implementation of Mitigation Measures BIO-1 and BIO-2 are recommended for project sites containing potential BUOW burrows and California horned lark habitat to avoid and minimize impacts to the species. Burrows were photographed, Attachment 2, and mapped in Attachment 1, Figure 5.

As described in the existing conditions, the project sites containing trees could provide suitable nesting habitat for several common avian species. The project sites containing trees are primarily located on the perimeter of the sites away from the potential 40 x 40-foot construction areas. The proposed project would not remove any trees; therefore, construction activities are not expected to result in direct impacts to tree nesting birds/habitat. If project activities are to take place during nesting bird season, January to August, direct impacts to ground nesting bird species would be a concern; therefore, pre-construction surveys recommended in Mitigation Measure BIO-2 should be implemented to avoid direct impacts to these species. Indirect impacts such as construction noise and increased human presence could disturb nests if they are present in adjacent trees. To ensure avoidance of direct or indirect impacts, implementation of Mitigation Measures BIO-1 and BIO-2 would require pre-construction nesting bird surveys to minimize all impacts to nesting birds to less than significant.

## Mitigation Measures

### *BIO-1 Burrowing Owl Pre-construction Clearance Survey*

A qualified wildlife biologist should conduct a pre-construction survey of proposed impact areas to confirm presence/absence of burrowing owl (BUOW) individuals no more than 14 days prior to construction. The survey methodology should be consistent with the methods outlined in the California Department of Fish and Wildlife (CDFW) *Staff Report on Burrowing Owl Mitigation* (2012). If no active breeding or wintering owls are identified, no further mitigation is required.

If BUOW is detected onsite, the following mitigation measures should be implemented in accordance with the *CDFW Staff Report on Burrowing Owl Mitigation* (2012):

- The developer should hire a qualified wildlife biologist that would be onsite during initial ground-disturbing activities in potential BUOW habitat identified the biological resources assessment.
- No ground-disturbing activities should be permitted within a buffer no less than 200 meters (656 feet) from an active burrow, depending on the level of disturbance, unless the qualified biologist determines a reduced buffer would not adversely affect the BUOW(s).
- Occupied burrows should not be disturbed during the nesting season (February 1 to August 31).
- During the nonbreeding (winter) season (September 1 to January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 50 meters (165 feet) from the burrow, depending on whether the level of disturbance is low, and if the active burrow is not directly affected by the project activity. A smaller/larger buffer may be established by the qualified biologist following monitoring and assessments of the project's effects on the burrowing owls. If active winter burrows are found that would be directly affected by ground-disturbing activities, owls can be excluded from winter burrows according to recommendations made in the *Staff Report on Burrowing Owl Mitigation* (2012). Additionally, if burrowing owls are found on-site, a qualified biologist should prepare and submit a passive relocation program in accordance with Appendix E (i.e., Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the CDFW's Staff Report on Burrowing Owl Mitigation (2012) for CDFW review and approval prior to the commencement of disturbance activities on-site.
- BUOWs should not be excluded from burrows until a Burrowing Owl Exclusion Plan is developed based on the recommendations made in Appendix E (i.e., Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the CDFW *Staff Report on Burrowing Owl Mitigation* (2012).

The Burrowing Owl Exclusion Plan would be submitted to CDFW for review and approval prior to the commencement of disturbance activities on-site.

- Prior to passive relocation, the Developer would be responsible for acquiring compensatory mitigation at a ratio of 1:1 for lost breeding and/or wintering habitat should be implemented on- or off-site including permanent conservation and management of burrowing owl habitat through the recordation of a conservation easement, funding of a non-wasting endowment, and implementation of a Mitigation Land Management Plan based on the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) and CDFW guidance. Mitigation lands would be identified through coordination with CDFW and on, adjacent, or proximate to the impact site where possible and where habitat is suitable to support BUOW. If required, compensatory mitigation should be completed prior to passive relocation of owls and completion of construction.
- When a qualified biologist determines that BUOW are no longer occupying the project site and passive relocation is complete, construction activities may begin. A final letter would be prepared by the qualified biologist documenting the results of the passive relocation. The letter would be submitted to CDFW.
- Mitigation lands should be on, adjacent, or proximate to the impact site where possible and where habitat is sufficient to support BUOW present.

### *BIO-2 Pre-construction Nesting Bird Surveys*

Migratory or other common nesting birds are protected by the California Fish and Game Code (CFGC) Sections 3503 and 3503.5, and the Migratory Bird Treaty Act (MBTA), and may nest in ornamental trees, grass, bare ground, burrows/cavities, man-made structures, and shrubs on-site. Construction of the project thus has the potential to directly (by destroying a nest) or indirectly (construction noise, dust, and other human disturbances that may cause a nest to fail) impact nesting birds protected under the CFGC and MBTA. The following measure is recommended to maintain compliance with the CFGC Sections 3503 and 3503.5 and the MBTA with respect to nesting birds:

- If construction activities take place during the bird nesting season (generally February 1 through August 31, but variable based on seasonal and annual climatic conditions), as determined by a qualified biologist, nesting bird surveys should be performed by a qualified biologist within three days prior to project activities to determine the presence/absence, location, and status of any active nests on-site and within 100 feet of the site. Prior to issuance of grading or other construction permits, the biologist should provide a written memorandum of results and findings.
- If nesting birds are found on site, a construction buffer of appropriate size (as determined by the qualified biologist) should be implemented around the active nests and demarcated with fencing or flagging. If ground/burrow nesting birds are identified, demarcation materials that will not provide perching habitat for predatory bird species should be used. Nests should be monitored at a minimum of once per week by the qualified biologist until it has been determined that the nest is no longer being used by either the young or adults. No ground disturbance should occur within this buffer until the qualified biologist confirms that the breeding/nesting is complete, and all the young have fledged and are capable of surviving independently of the nest. If project activities must occur within the buffer, they should be conducted at a distance that will prevent project-related disturbances, as determined by the qualified biologist.
- If no nesting birds are observed during pre-construction surveys, no further actions would be necessary.

With implementation of the above mitigation measures, impacts to biological resources would be less than significant.

## Sensitive Plant Communities

The sites do not contain riparian habitat or other sensitive natural communities, with the exception of the southern extent of project site MW-09a, where cattail marsh vegetation is present. The existing dominant species, common cattail, in this vegetation alliance is not considered sensitive under CDFW; construction should avoid the defined area at this project location to avoid potential impacts.

## Jurisdictional Waters and Wetlands

The proposed monitoring well sites do not contain any jurisdictional drainages or wetlands. The project sites do contain vegetational features which are all likely due to anthropogenic induced causes.

All of the project sites have alternative locations, and the developer has provided additional optional areas to ensure that the construction of the 20 groundwater MWs would have the capability to avoid any potential jurisdictional waters or wetlands, as noted for MW-09a. 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 sites. The construction footprints of the groundwater MWs would be confined to the identified project sites primarily consisting of parks, disturbed lots, developed areas, and sites undergoing residential and industrial development. No riparian/riverine habitat occurs within the proposed project sites, with the exception of MW-09a; and therefore, no further actions related to riparian/riverine habitat are required pursuant to the MSHCP. Additionally, no jurisdictional features 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 sites. The project sites are underlain by moderately to excessively well-drained soils. The only evidence of standing water was observed at MW-09a on the southern extent of the parcel near a stormwater drain, this location is entirely disturbed and developed. In addition, project sties overall 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 near the perimeters of the identified sites for ease of access and final placement shall be modified to avoid drainages or disturbed wetland features identified in this assessment. No vernal pool or fairy shrimp habitat occurs within the proposed project sites; 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 2021). In addition, CDFW BIOS (2021b) does not include any mapped essential habitat connectivity areas within the immediate vicinity of the sites. 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 sites are 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 are therefore, not expected to contribute to a significant migratory wildlife corridor. Therefore, no impacts to wildlife movement are expected.

## Local Policies and Ordinances

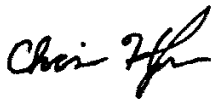
The proposed project is located within the County of Riverside Stephen's Kangaroo Rat Plan and Fee Area. County of Riverside Ordinance No. 663 (Stephen's Kangaroo Rat Mitigation Fee Ordinance) requires that all proposed development projects located within the fee area are reviewed to determine the most 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 sites lack suitable grassland, coastal scrub, and sagebrush habitat to support Stephen's Kangaroo Rat and are located directly adjacent urban roadways. In addition, vacant areas at the project sites 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 sites.

## Conservation Plans

The proposed project is located within the boundaries of the Western Riverside MSHCP. Portions of the sites 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. The closest Public/Quasi-Public conserved lands are located approximately 1.03 miles east of MW Opt. D-3 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, one occurrence of BUOW was observed during the reconnaissance-level biological resources field survey on November 3, 2021 at MW Opt. C-2. Burrows were photographed, Attachment 2, and mapped in Attachment 1, Figure 5. Throughout the project sites the potential for BUOW to occur is low given that the sites are located within highly disturbed areas surrounded by urban development which would normally deter individuals from long-term use of the site. The project includes alternative locations for MW placement and the construction activities would not encroach upon BUOW active burrows or MSHCP covered areas with the implementation of BIO-1 Burrowing Owl Pre-construction Clearance Survey and BIO-2 Pre-construction Nesting Bird Surveys. Indirect impacts are not expected with the implementation of the mitigation measures proposed; additionally, any project related disturbances would not rise above current existing levels found at the project sites as the adjacent areas contain streets, sidewalks, residential and commercially developed areas.

Thank you for the opportunity to provide this Biological Resources Assessment. Please contact the undersigned with any questions.

Sincerely,
**Rincon Consultants, Inc.**



Christopher Hughes
Biologist IV/Marine Scientist

Angie Harbin
Natural Resources Director

## Attachments

Attachment 1 Figures

Attachment 2 Project Site Photographs

Attachment 3 Special Status Species Potential for Occurrence

Attachment 4 Observed Plant Species List

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# Attachment 1

Figures

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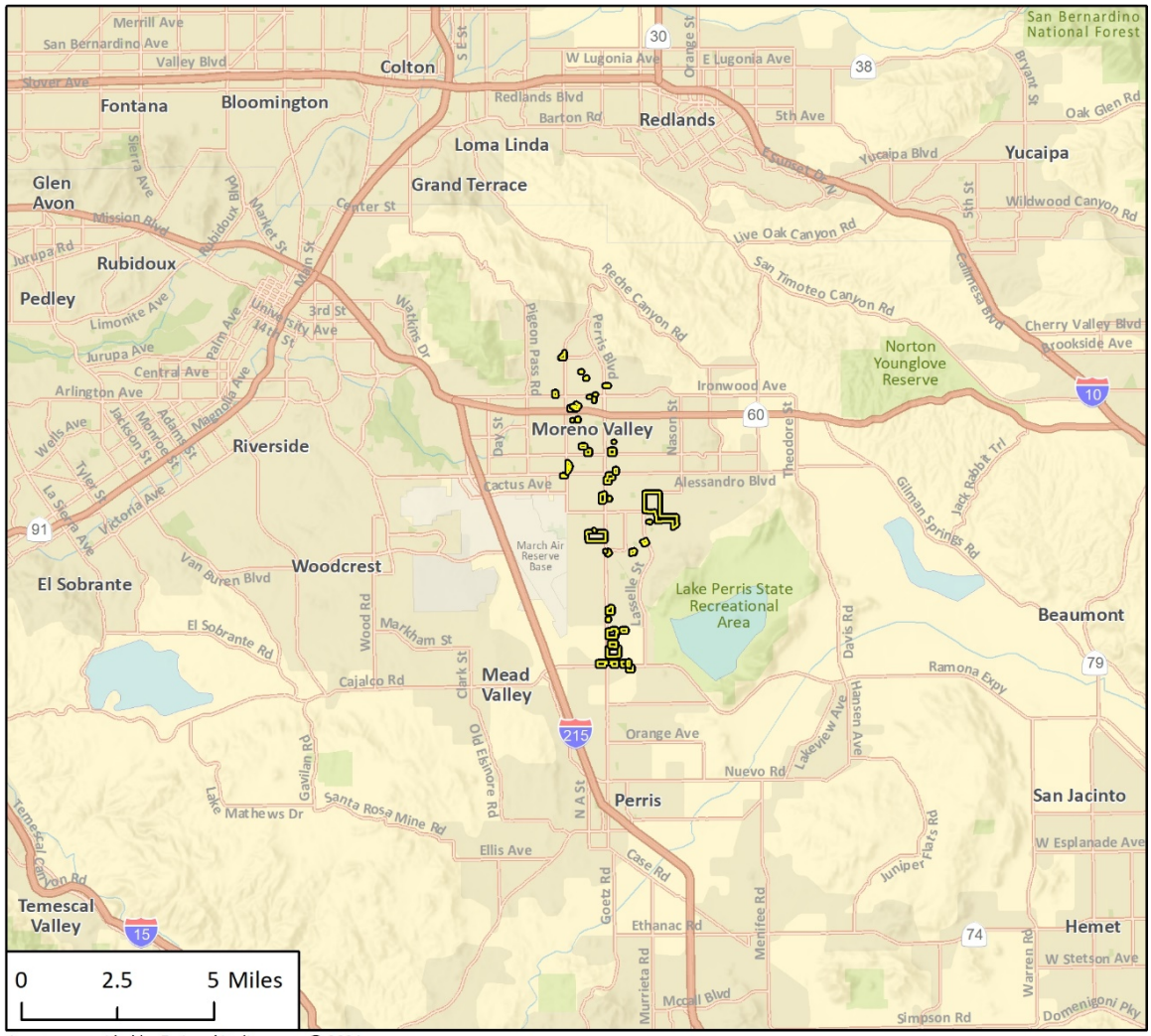
## Figure 1 Regional Location

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Project Location

N

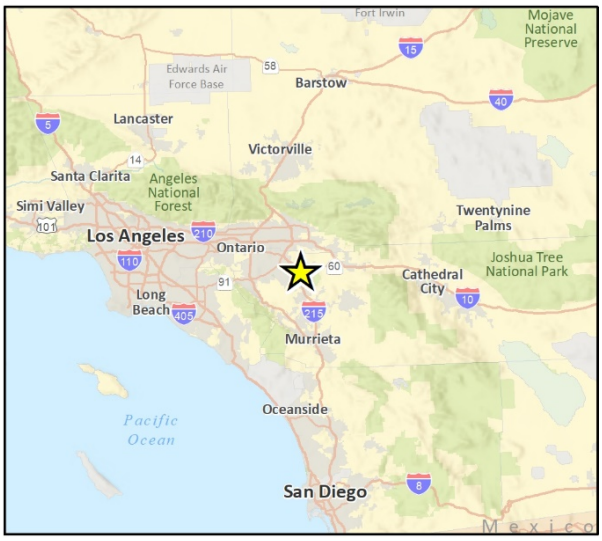

**Figure 2 Project Locations (1 of 4)**

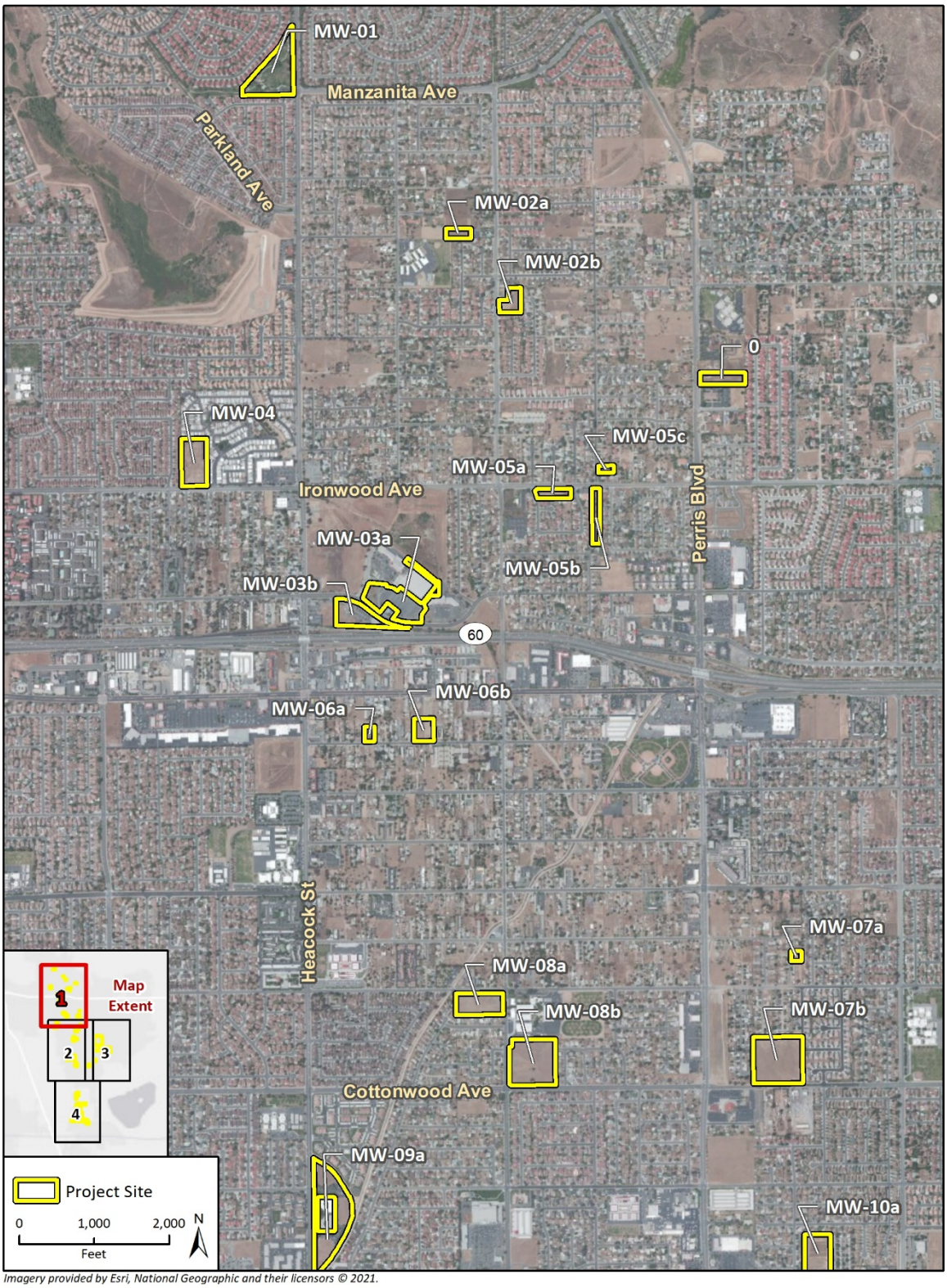


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**Figure 3 Project Location (2 of 4)**

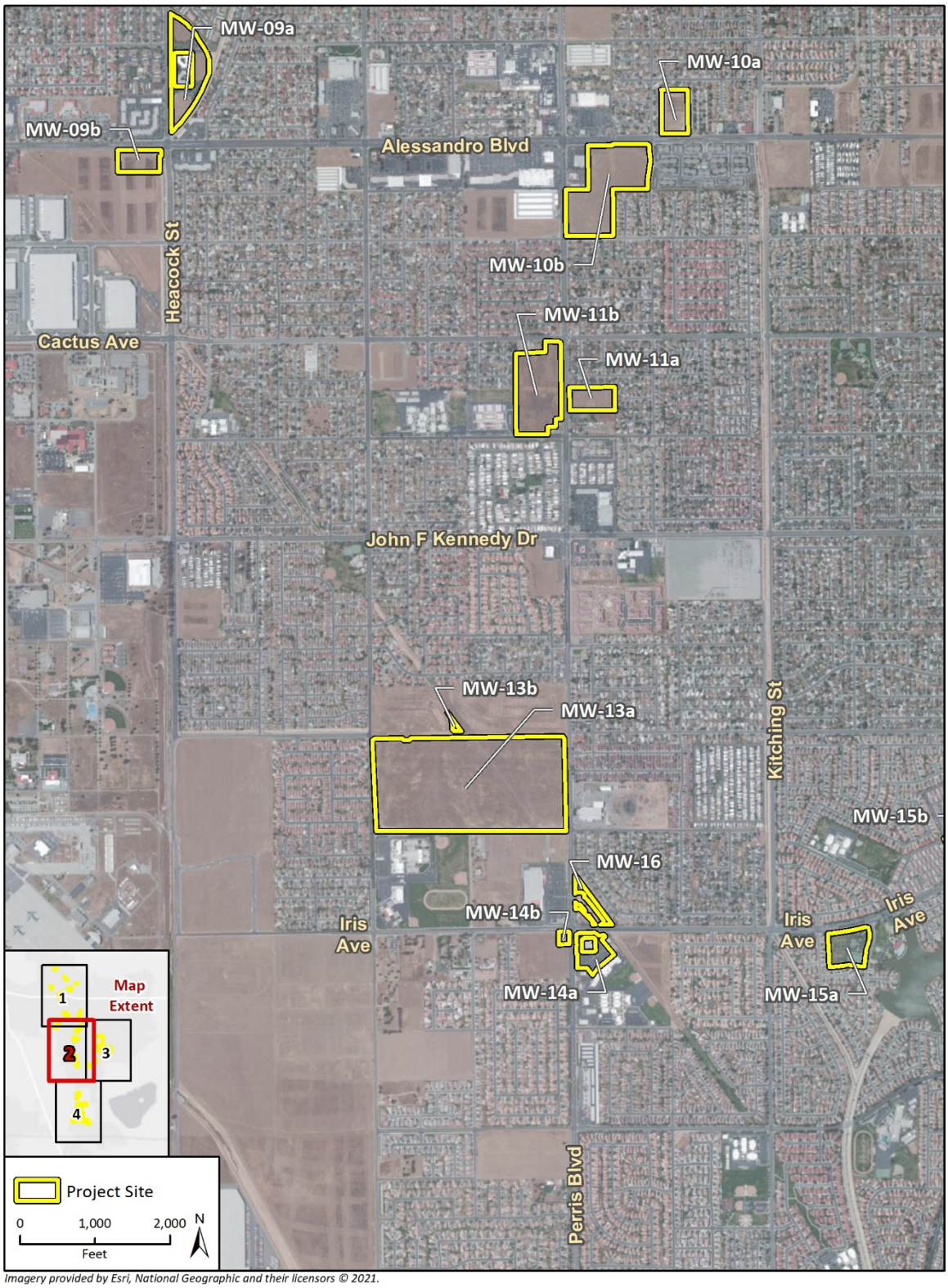


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**Figure 4 Project Location (3 of 4)**

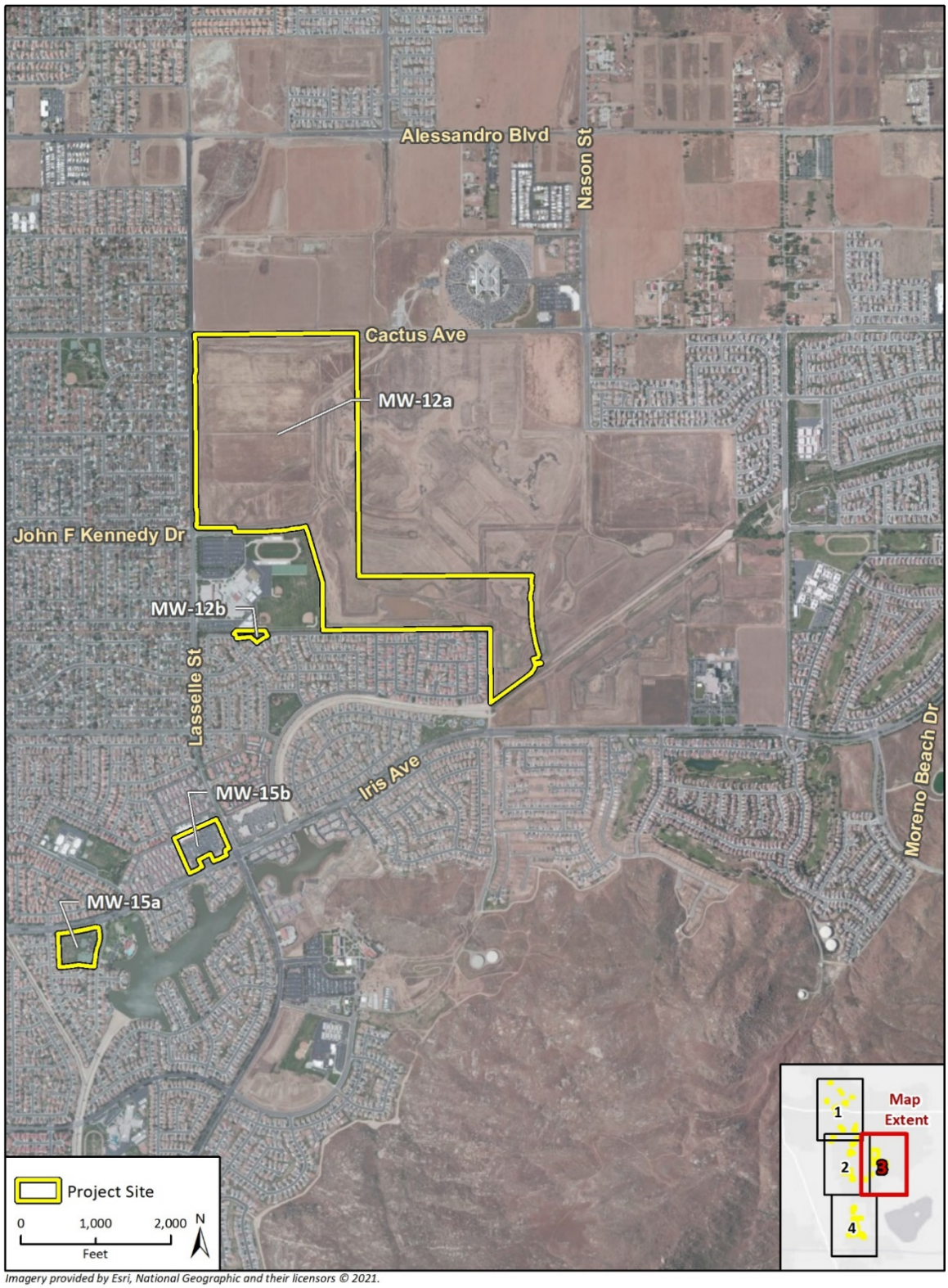


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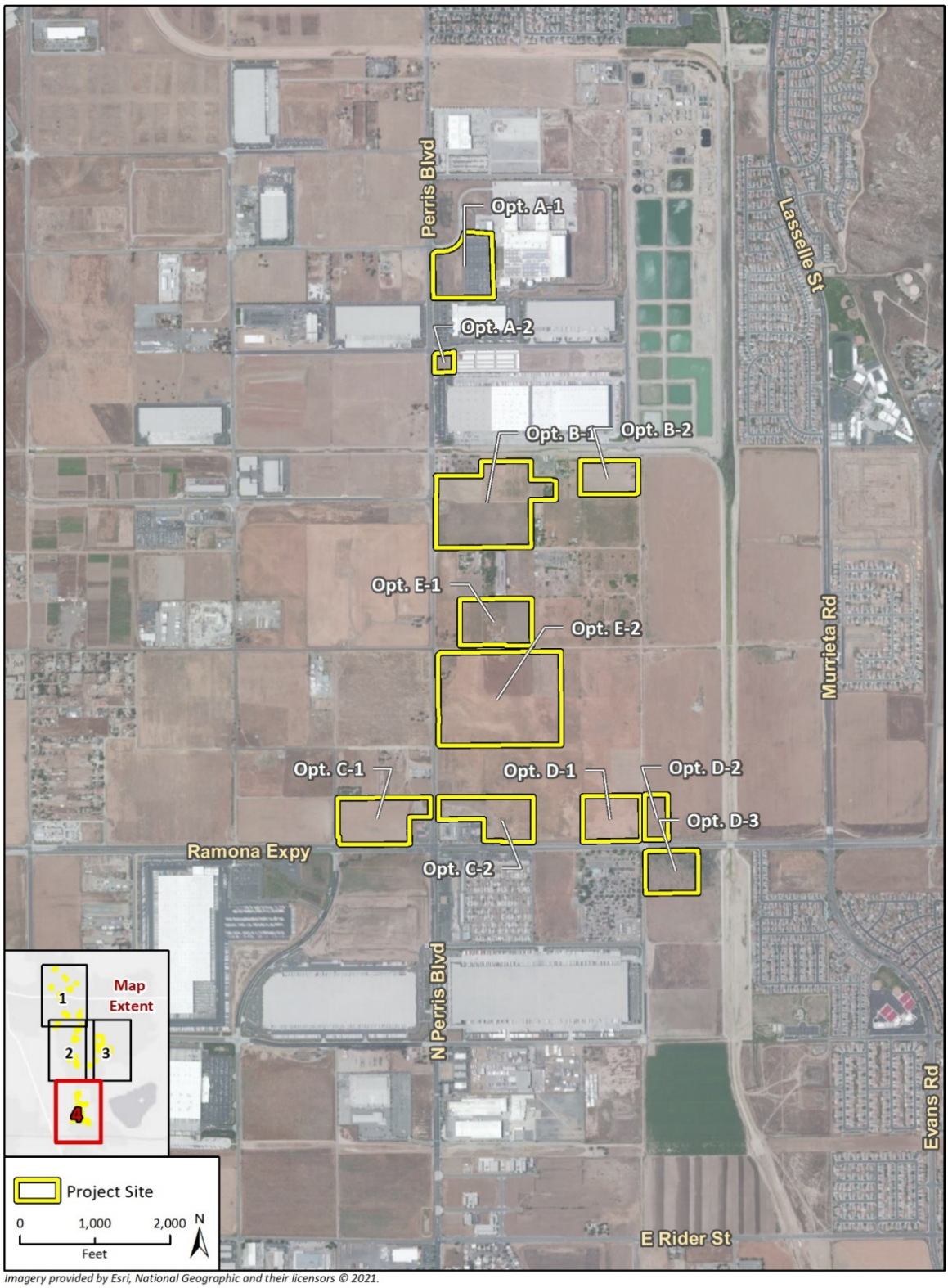
**Figure 5 Project Location (4 of 4)**

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## Figure 6 USDA NRCS Soils Map (1 of 19)

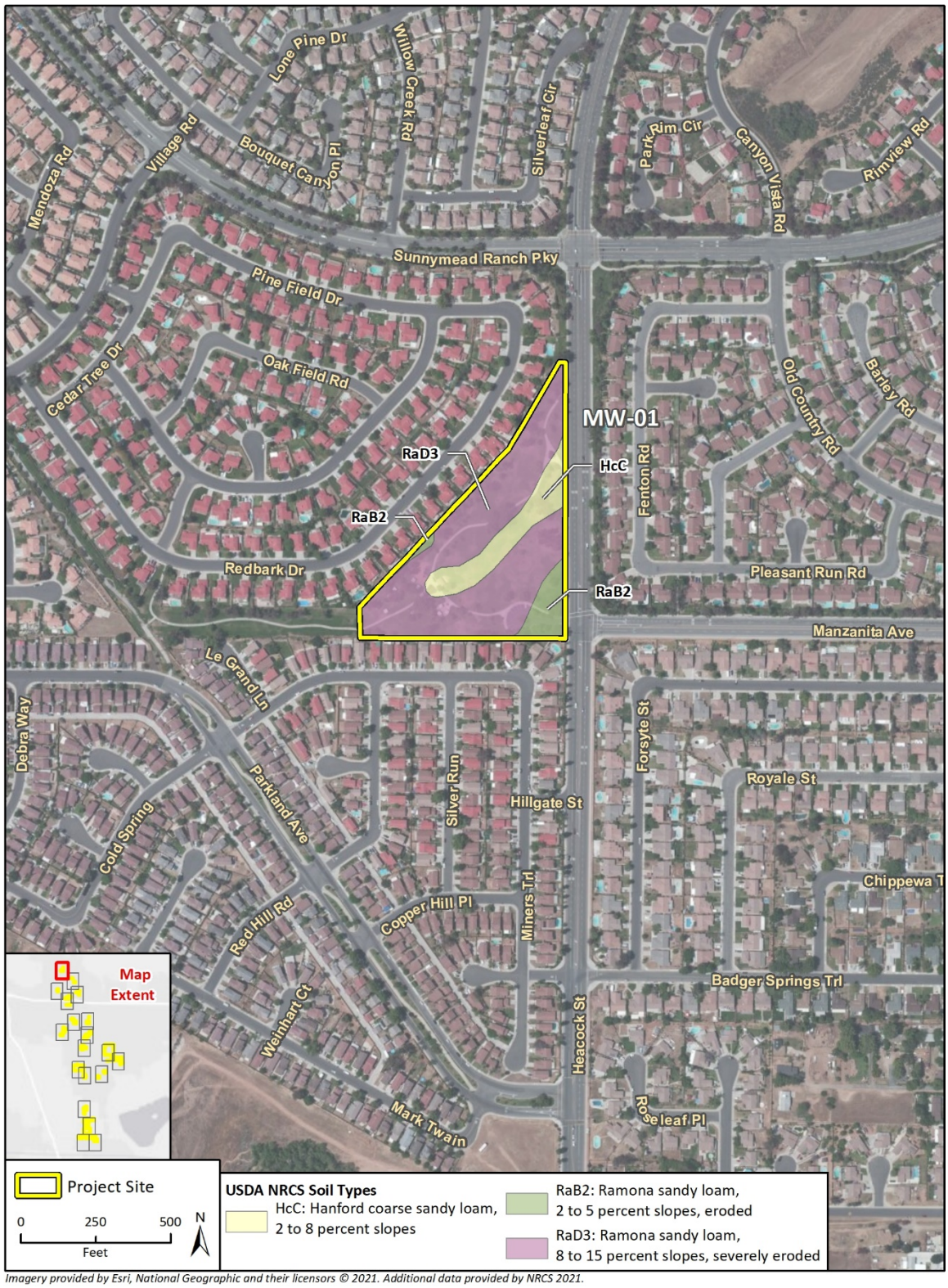


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**Figure 3 USDA NRCS Soils Map (2 of 19)**

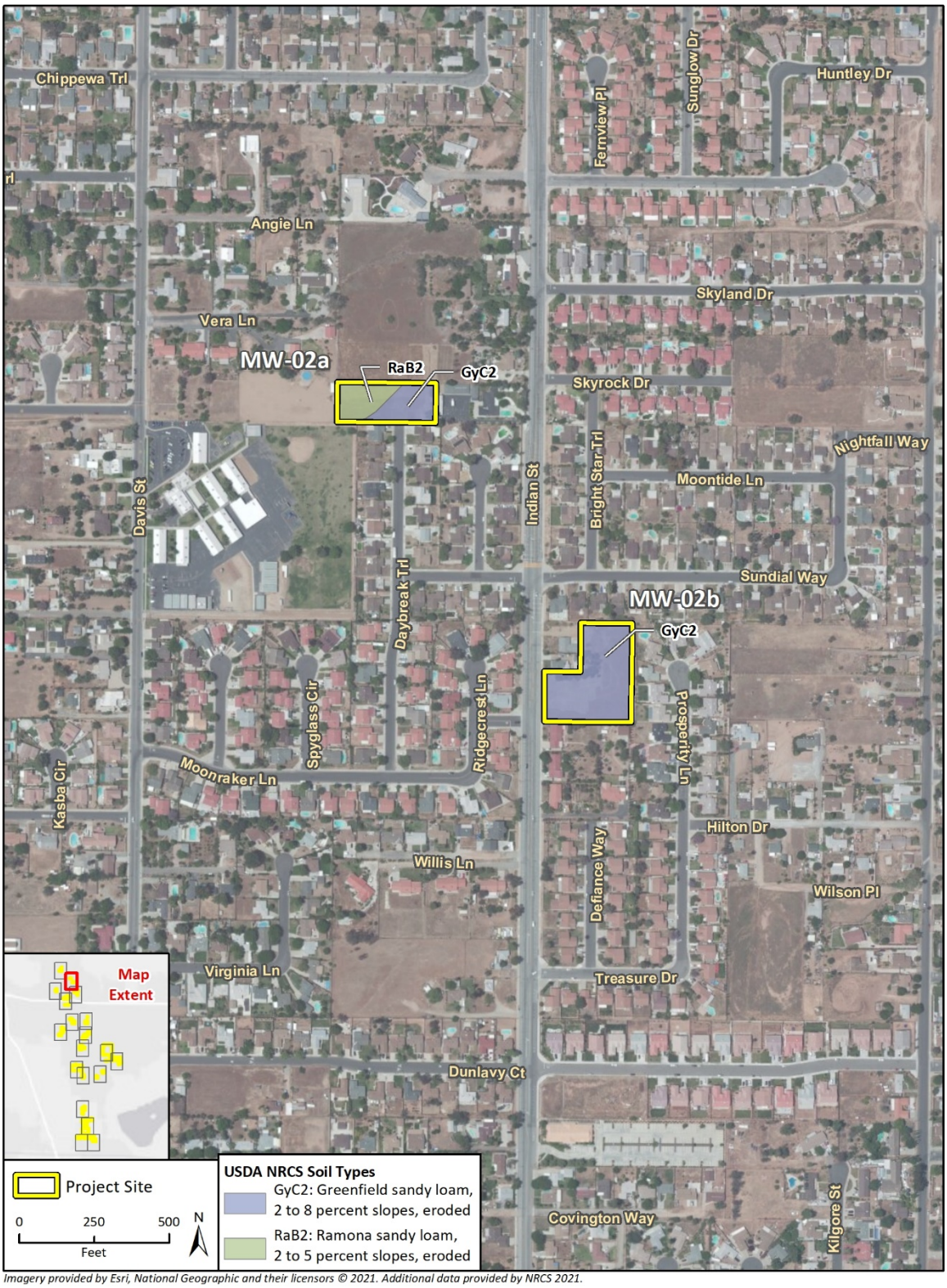


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**Figure 3 USDA NRCS Soils Map (3 of 19)**

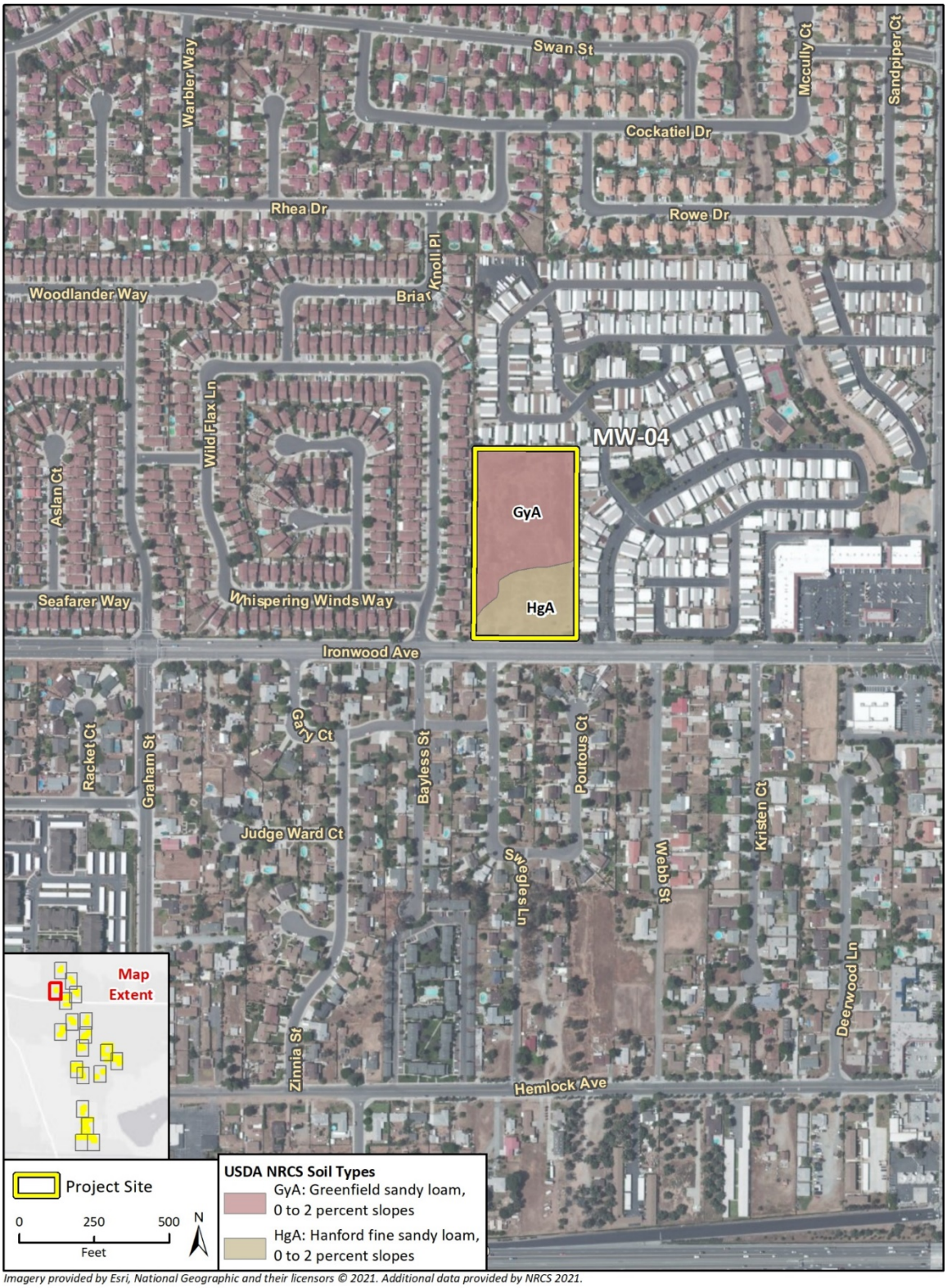


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**Figure 3 USDA NRCS Soils Map (4 of 19)**


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**Figure 3 USDA NRCS Soils Map (5 of 19)**

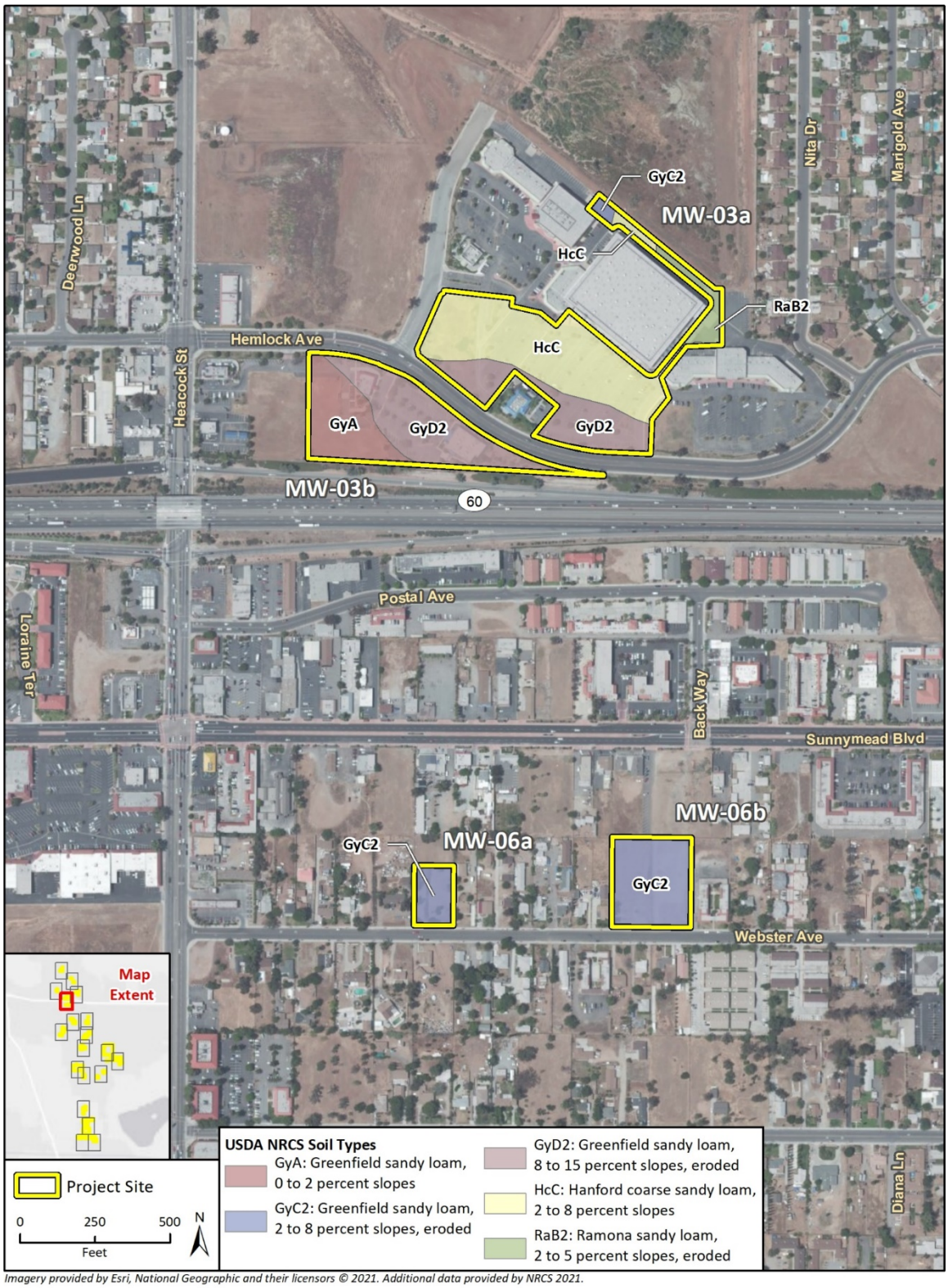


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**Figure 3 USDA NRCS Soils Map (6 of 19)**

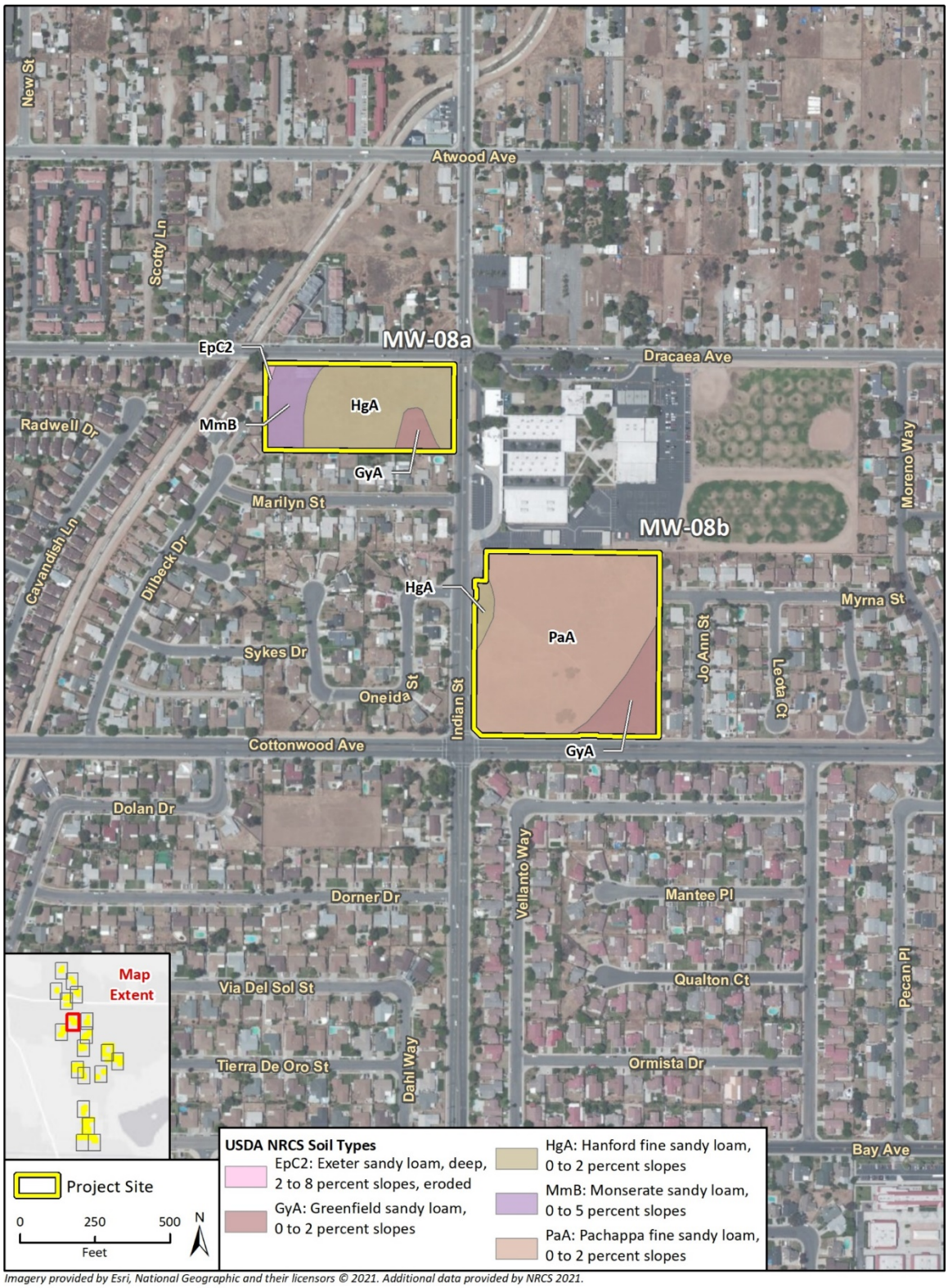


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**Figure 3 USDA NRCS Soils Map (7 of 19)**

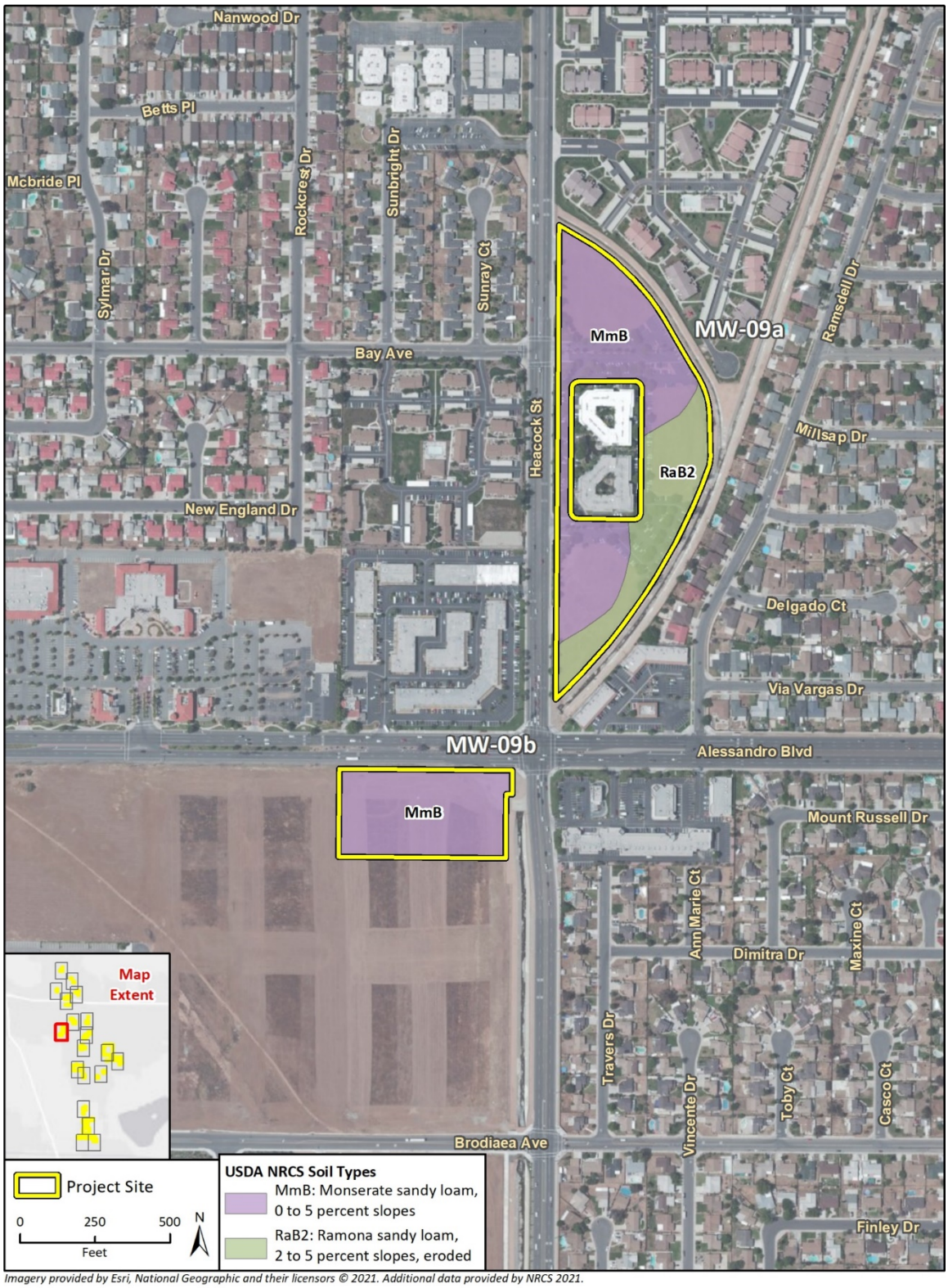


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**Figure 3 USDA NRCS Soils Map (8 of 19)**

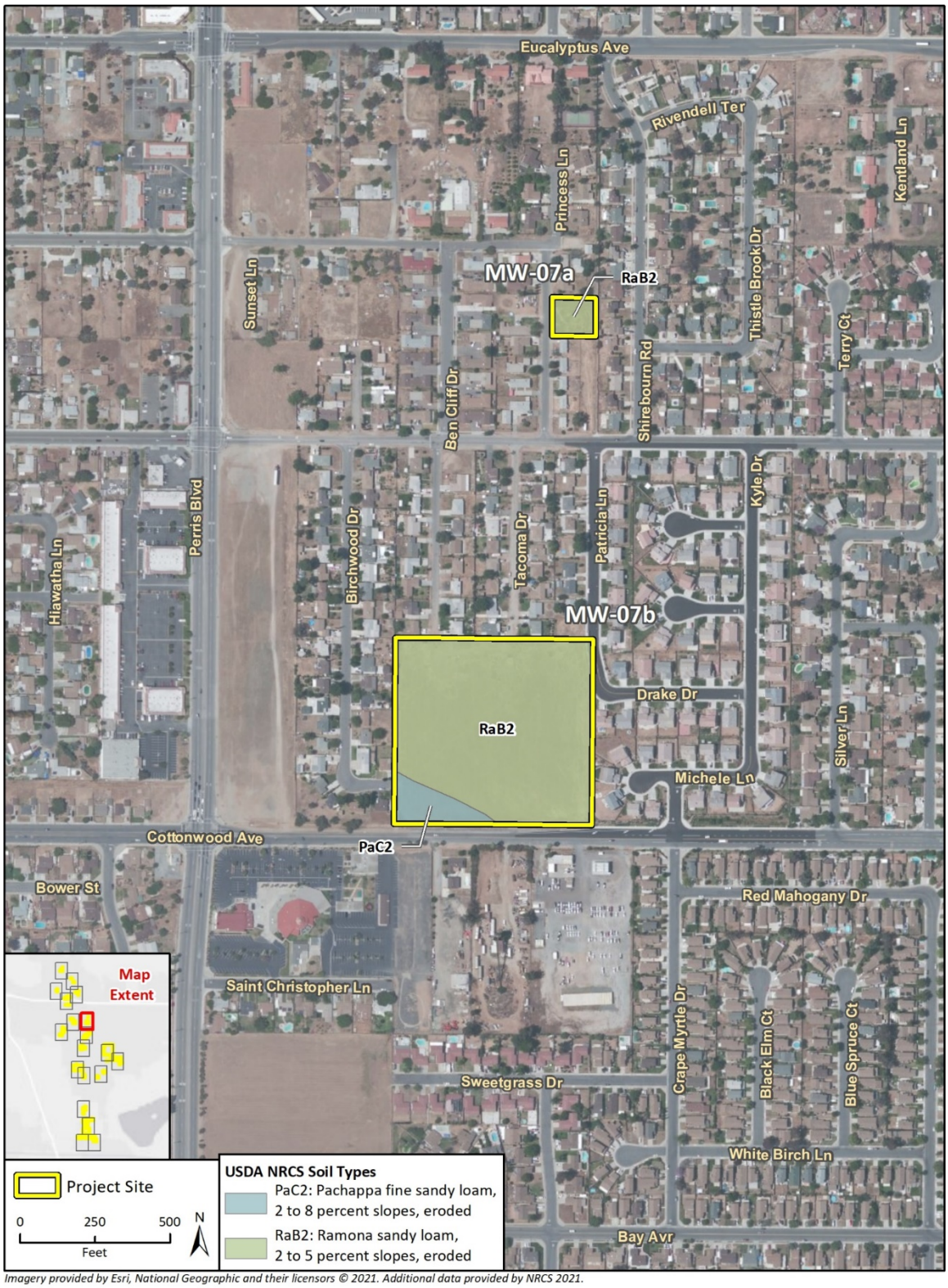


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**Figure 3 USDA NRCS Soils Map (9 of 19)**

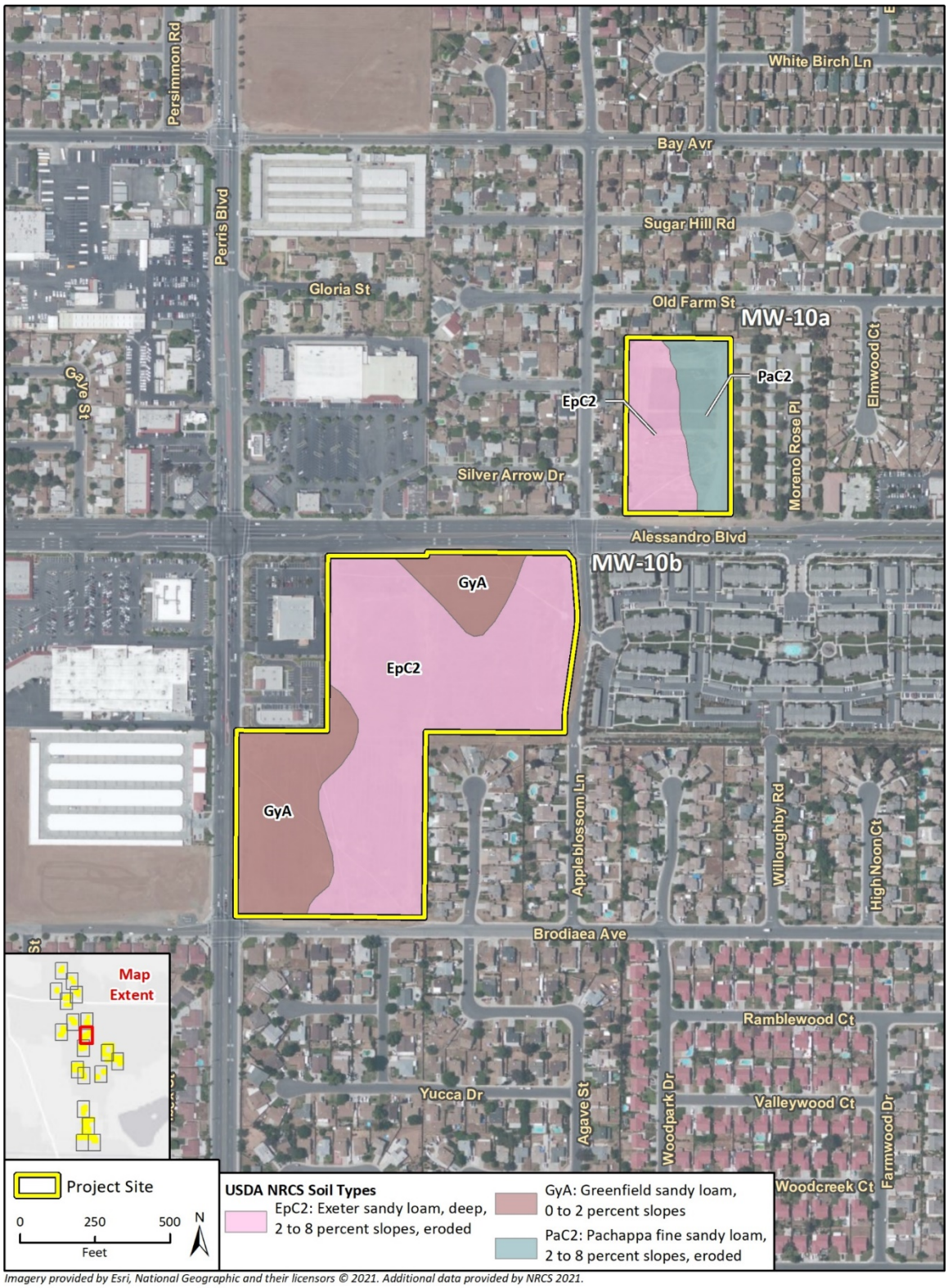


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**Figure 3 USDA NRCS Soils Map (10 of 19)**

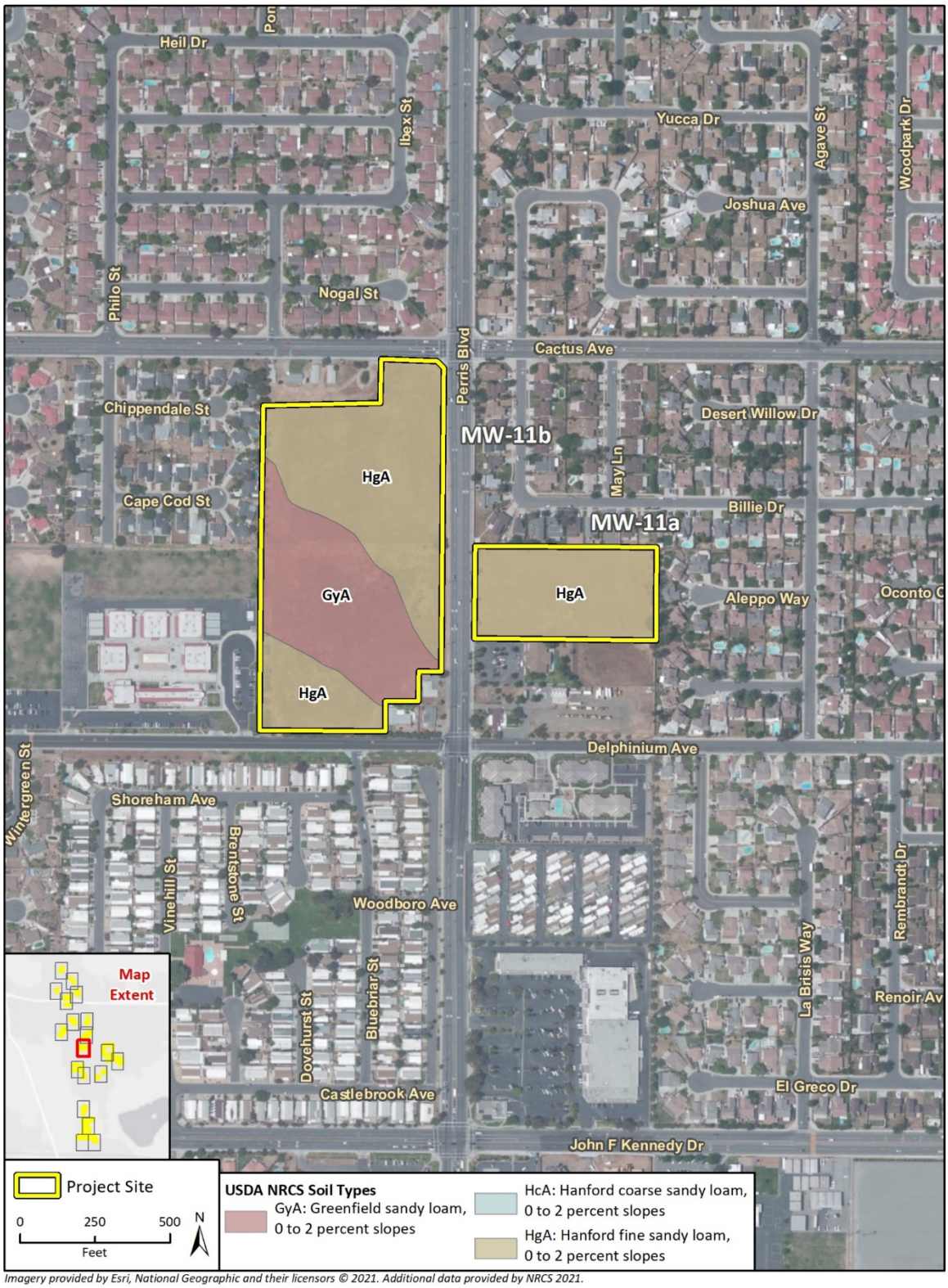


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**Figure 3 USDA NRCS Soils Map (11 of 19)**

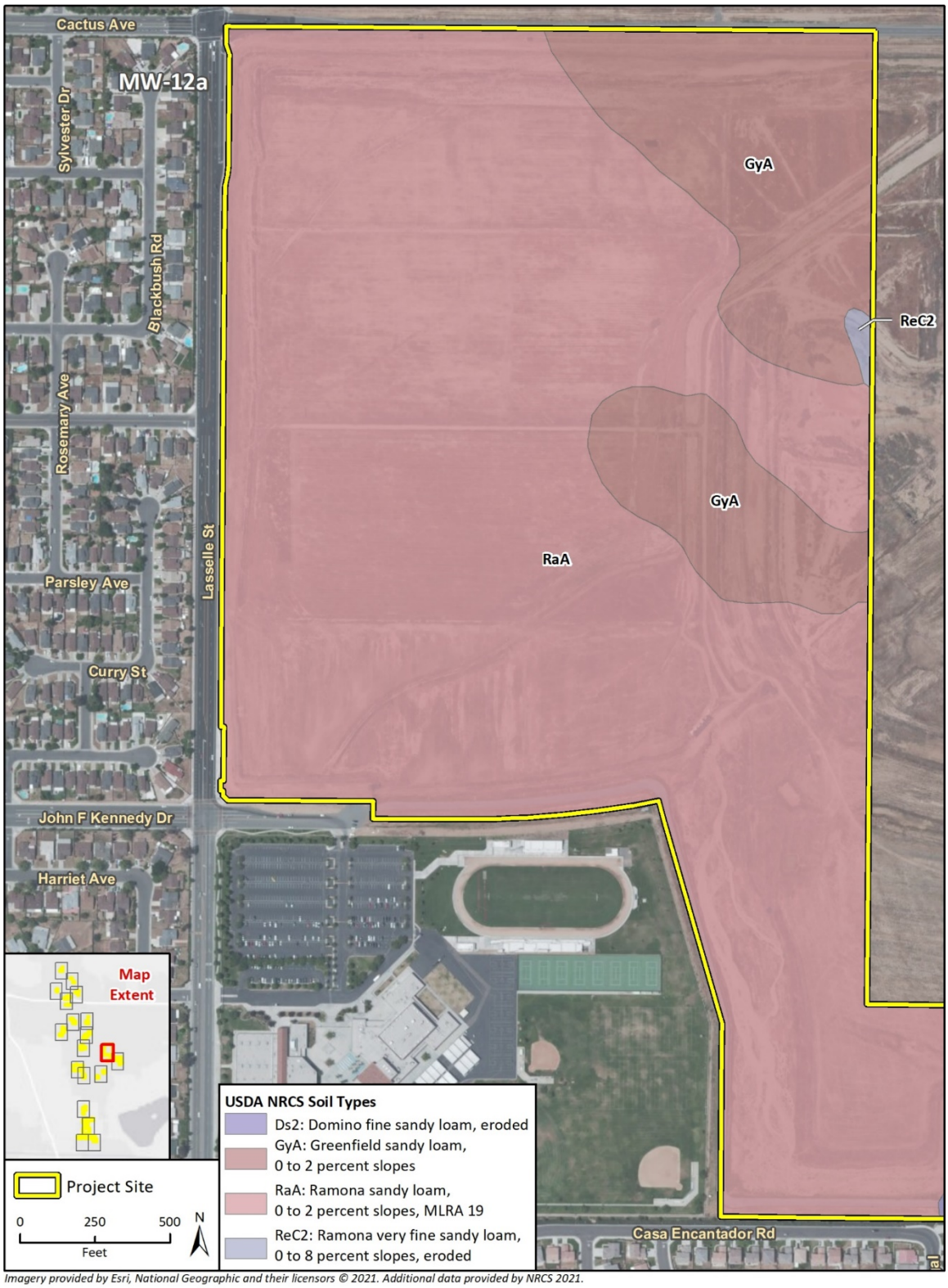


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**Figure 3 USDA NRCS Soils Map (12 of 19)**

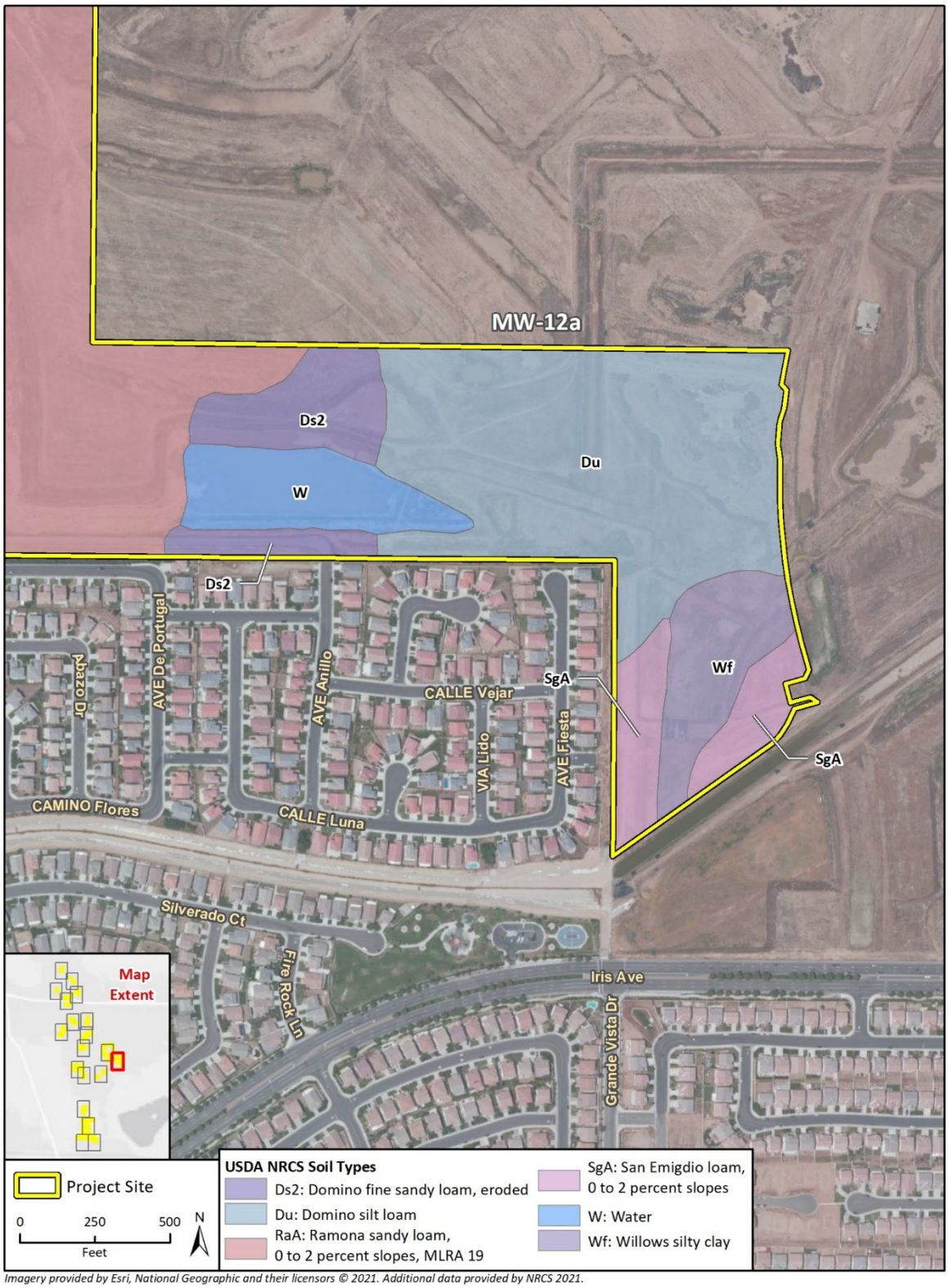


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**Figure 3 USDA NRCS Soils Map (13 of 19)**

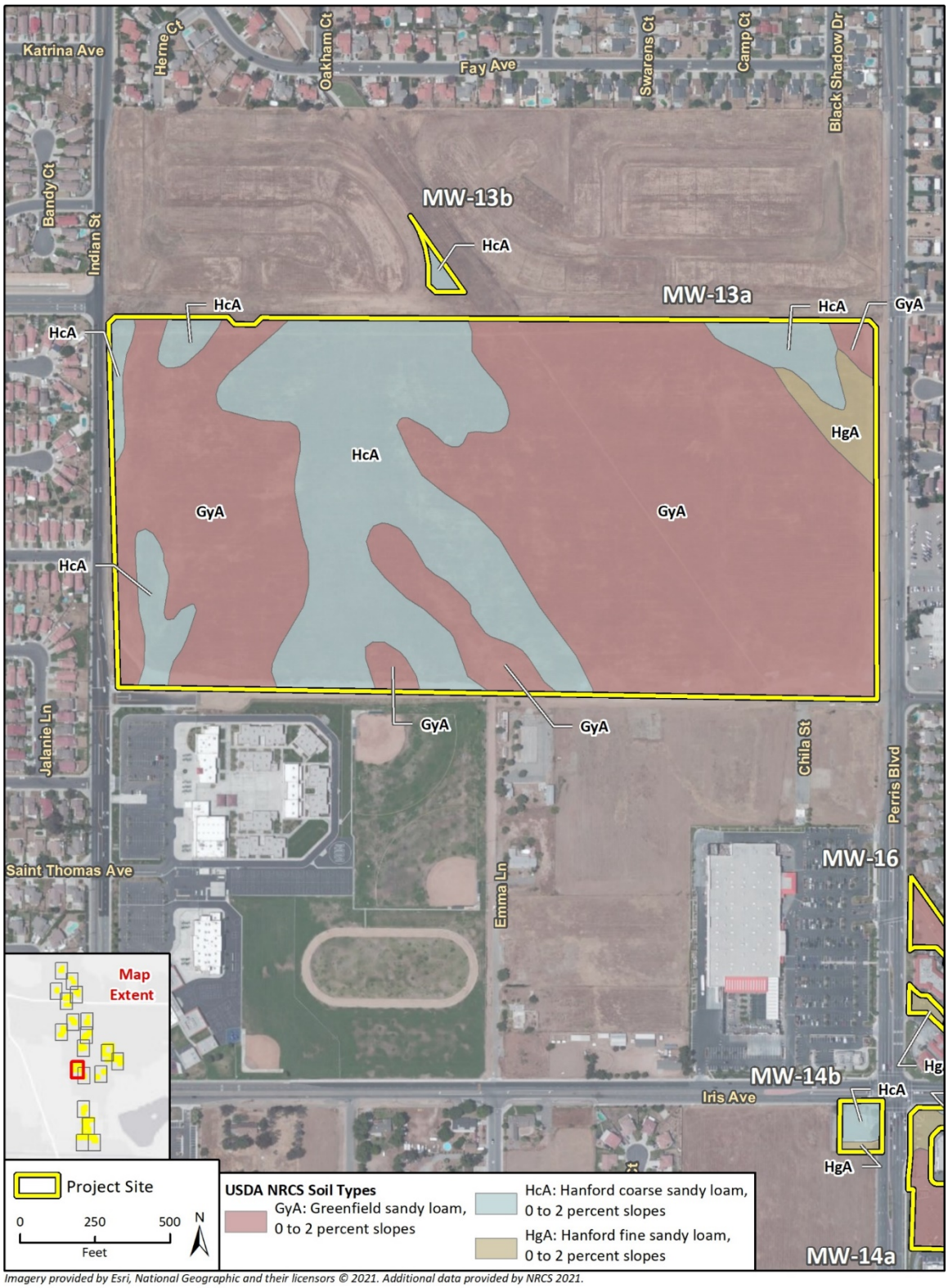


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**Figure 3 USDA NRCS Soils Map (14 of 19)**


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**Figure 3 USDA NRCS Soils Map (15 of 19)**


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**Figure 3 USDA NRCS Soils Map (16 of 19)**

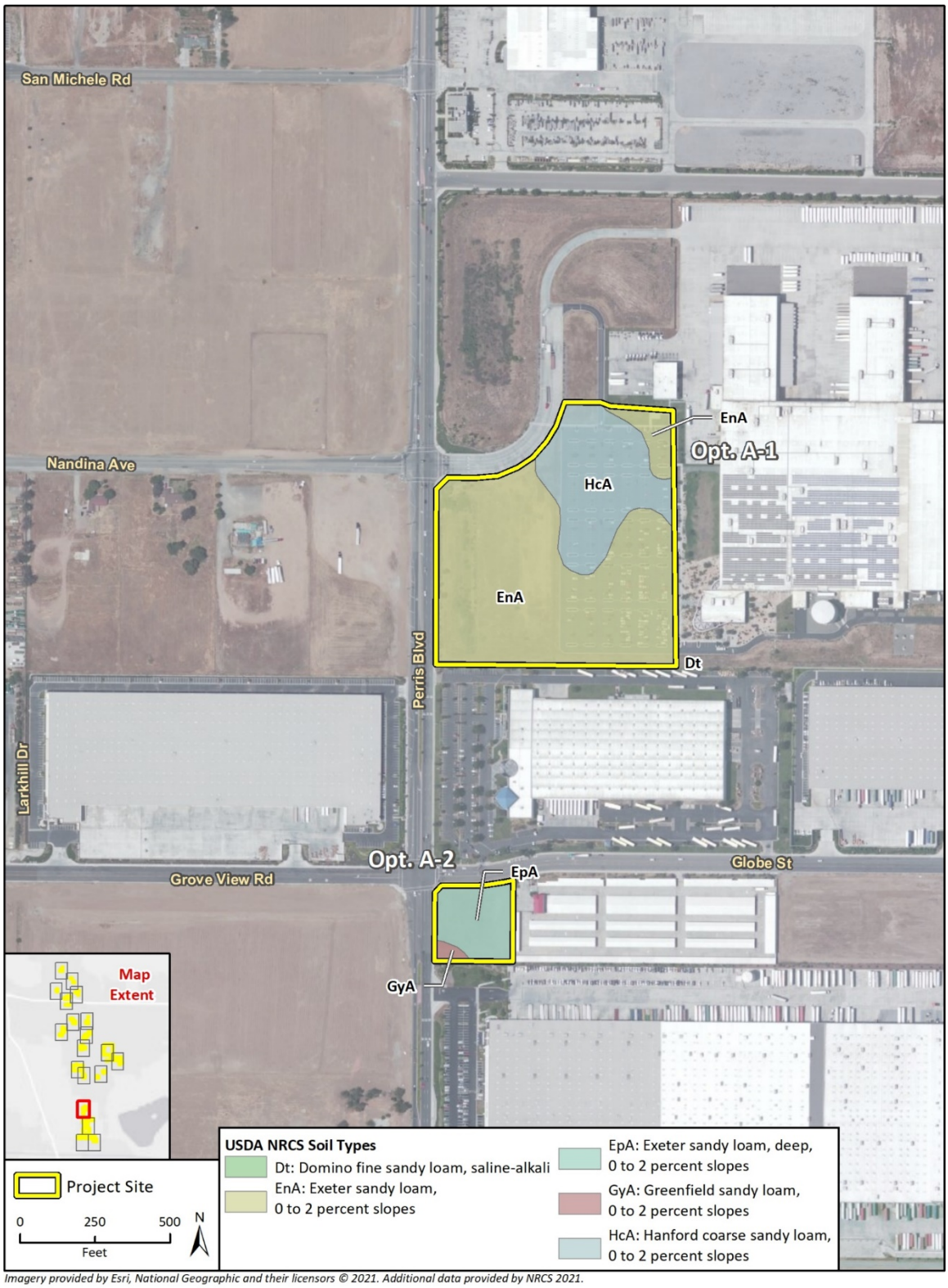


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**Figure 3 USDA NRCS Soils Map (17 of 19)**

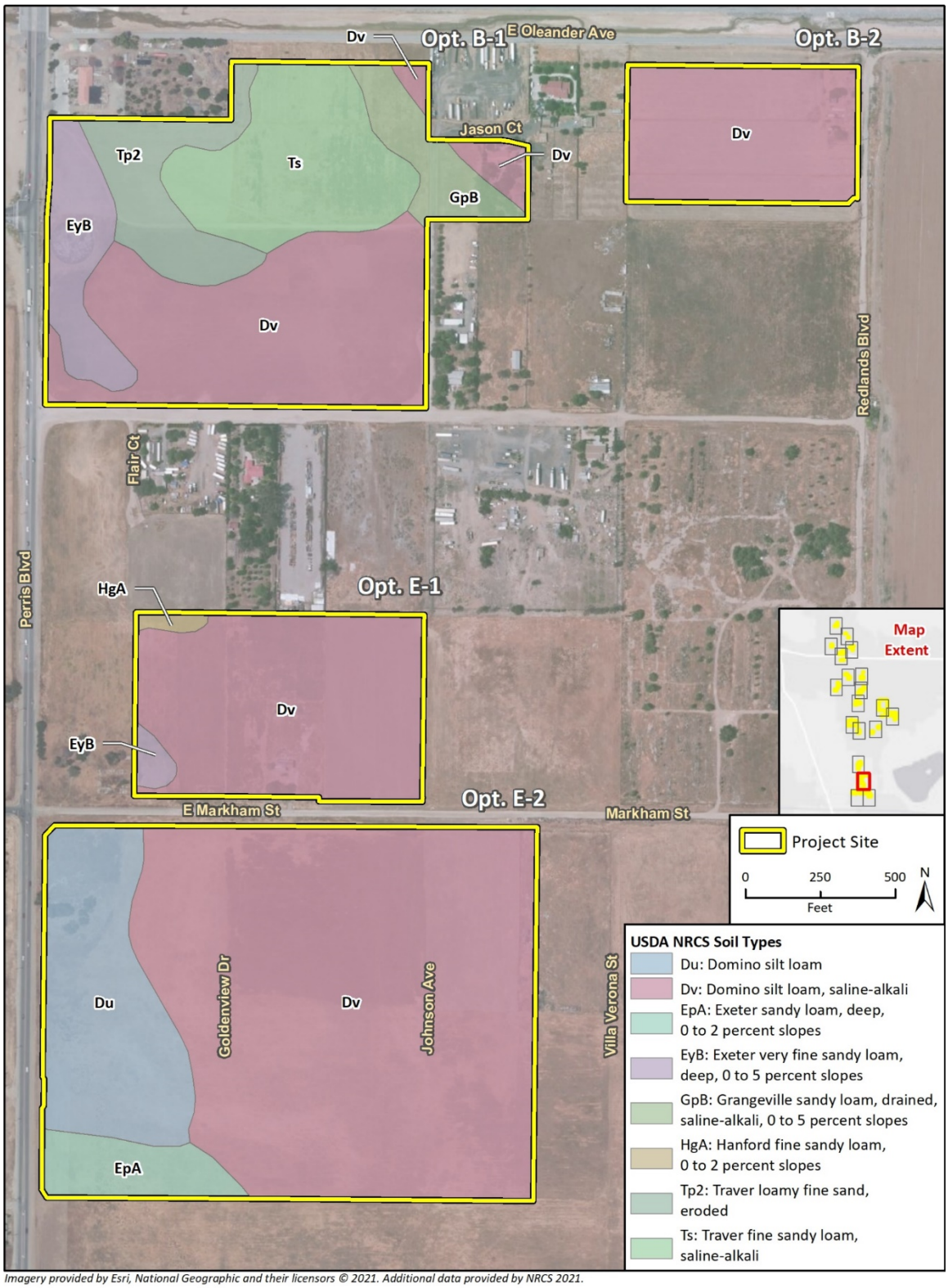


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**Figure 3 USDA NRCS Soils Map (18 of 19)**

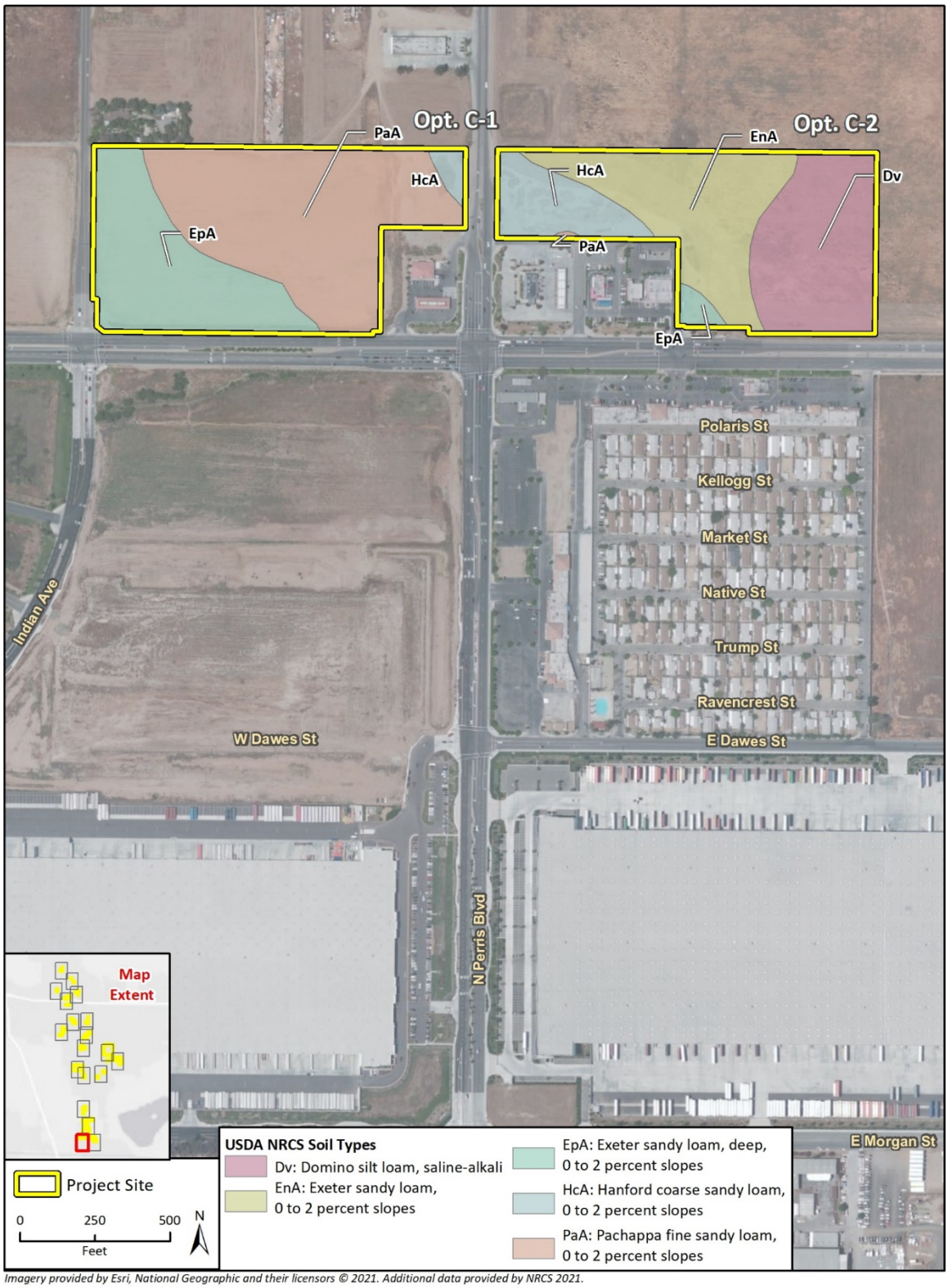


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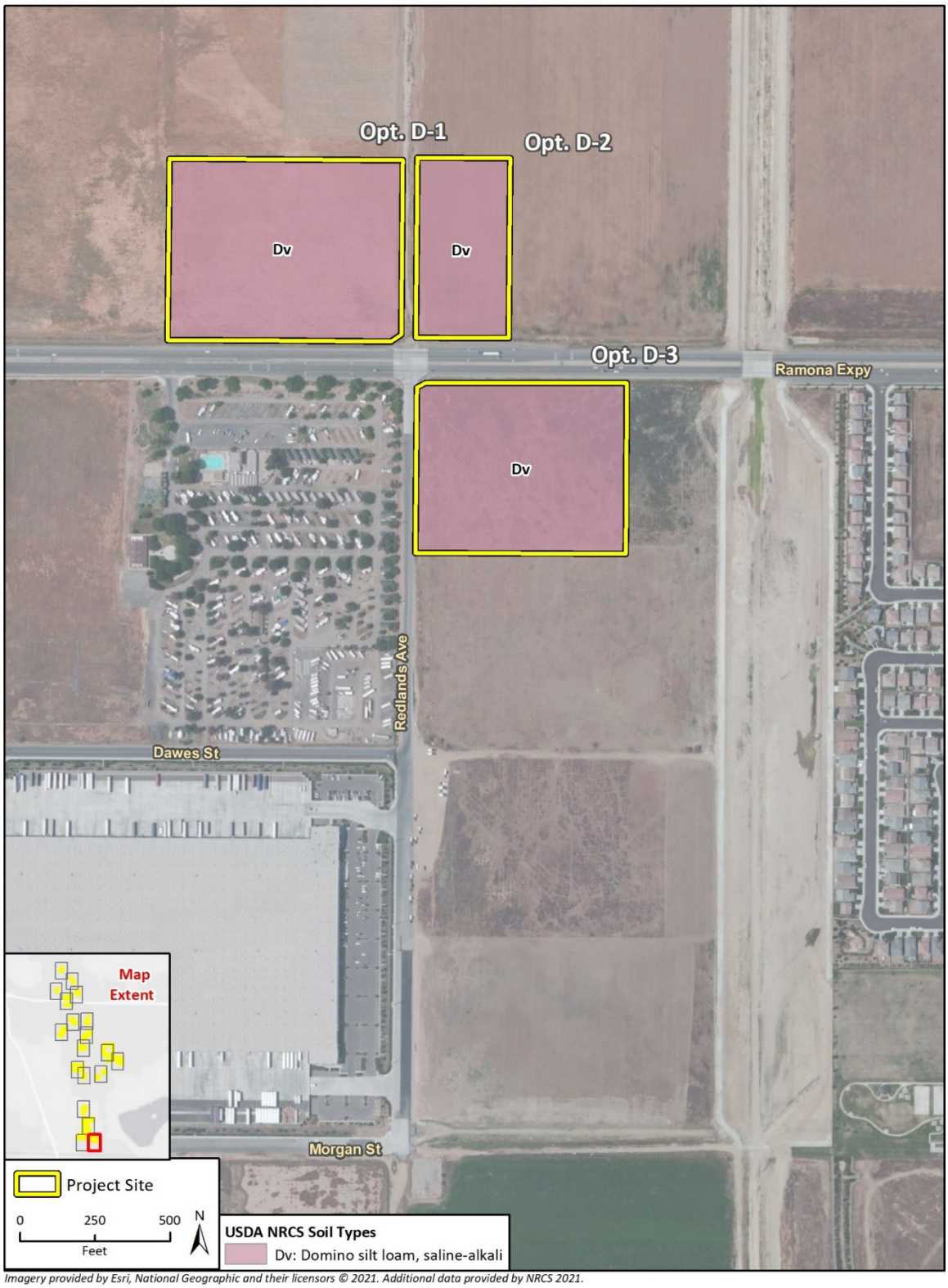
**Figure 3 USDA NRCS Soils Map (19 of 19)**

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## Figure 7 Vegetation Communities and Land Cover Types (1 of 19)


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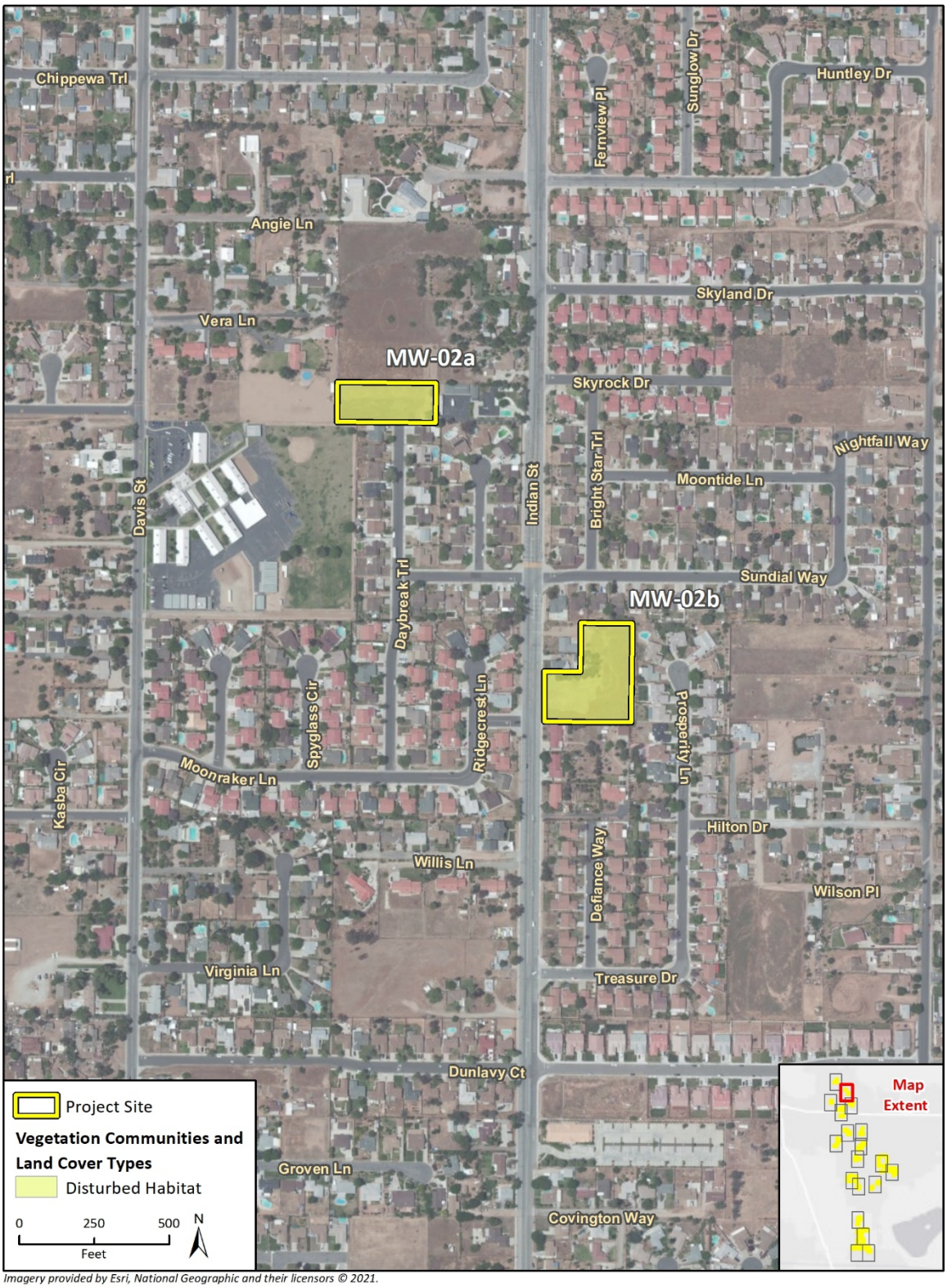
## Figure 4 Vegetation Communities and Land Cover Types Map (2 of 19)

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## Figure 4 Vegetation Communities and Land Cover Types Map (3 of 19)

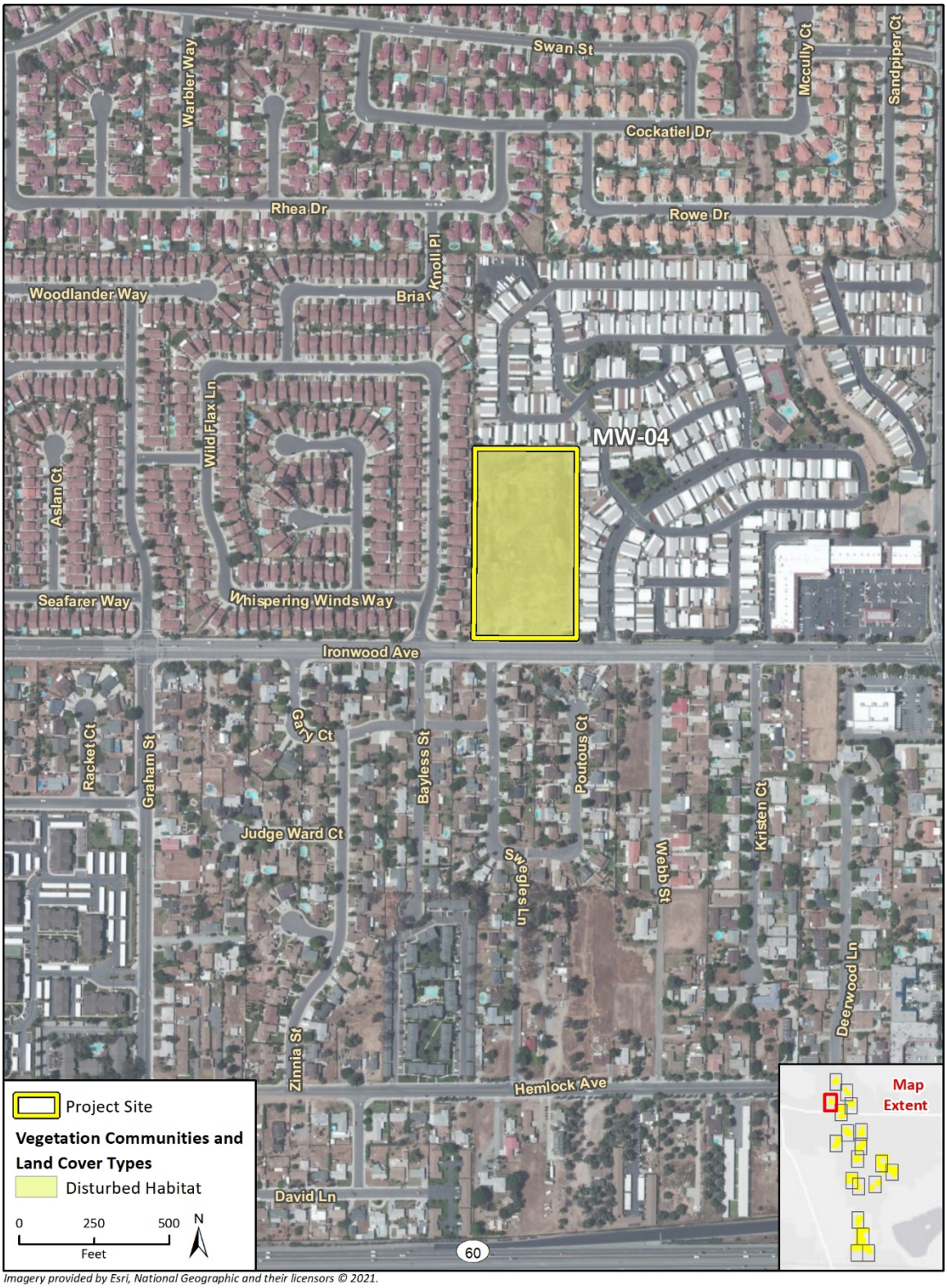


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**Figure 4 Vegetation Communities and Land Cover Types Map (4 of 19)**


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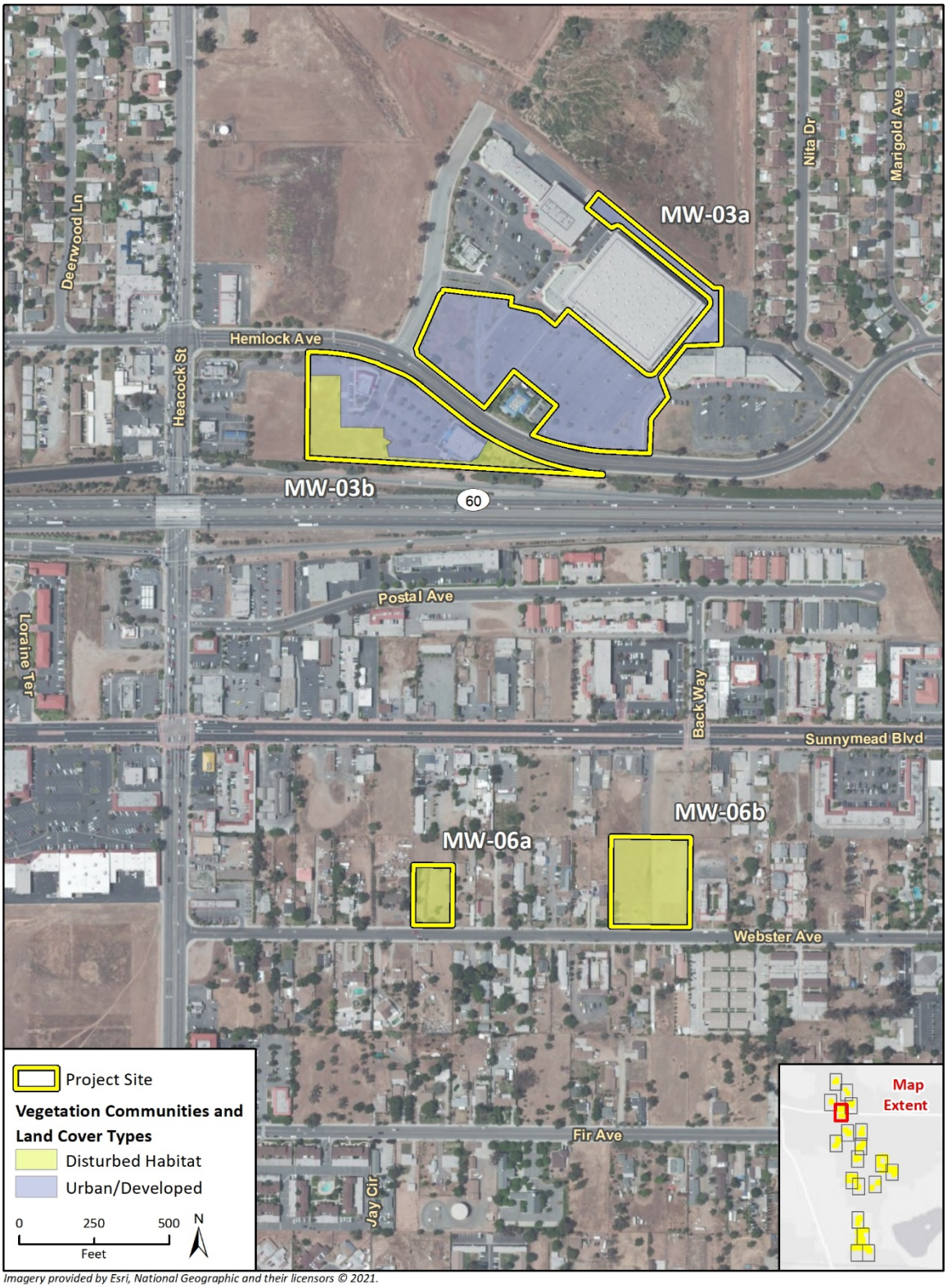
**Figure 4 Vegetation Communities and Land Cover Types Map (5 of 19)**

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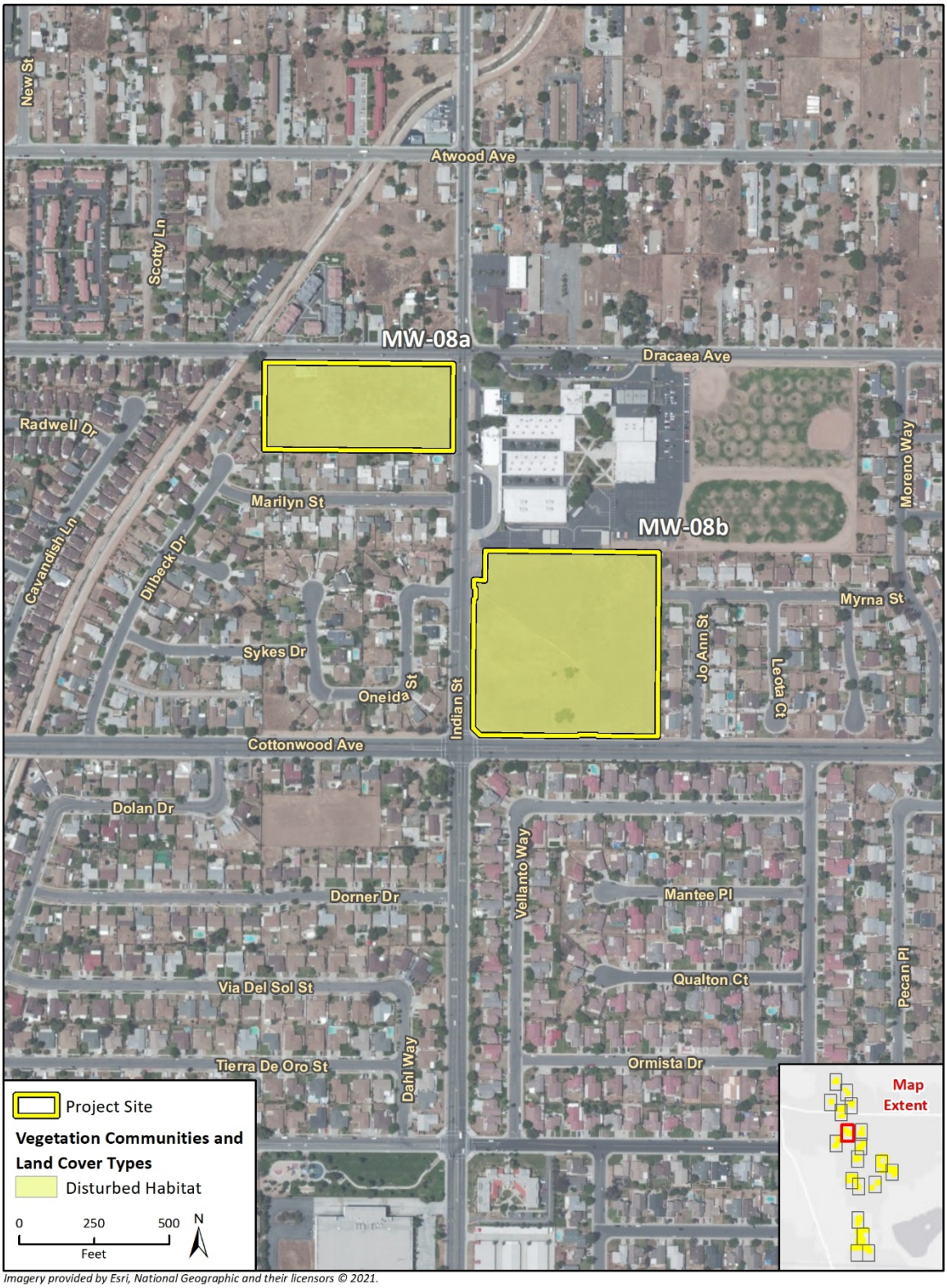
## Figure 4 Vegetation Communities and Land Cover Types Map (6 of 19)

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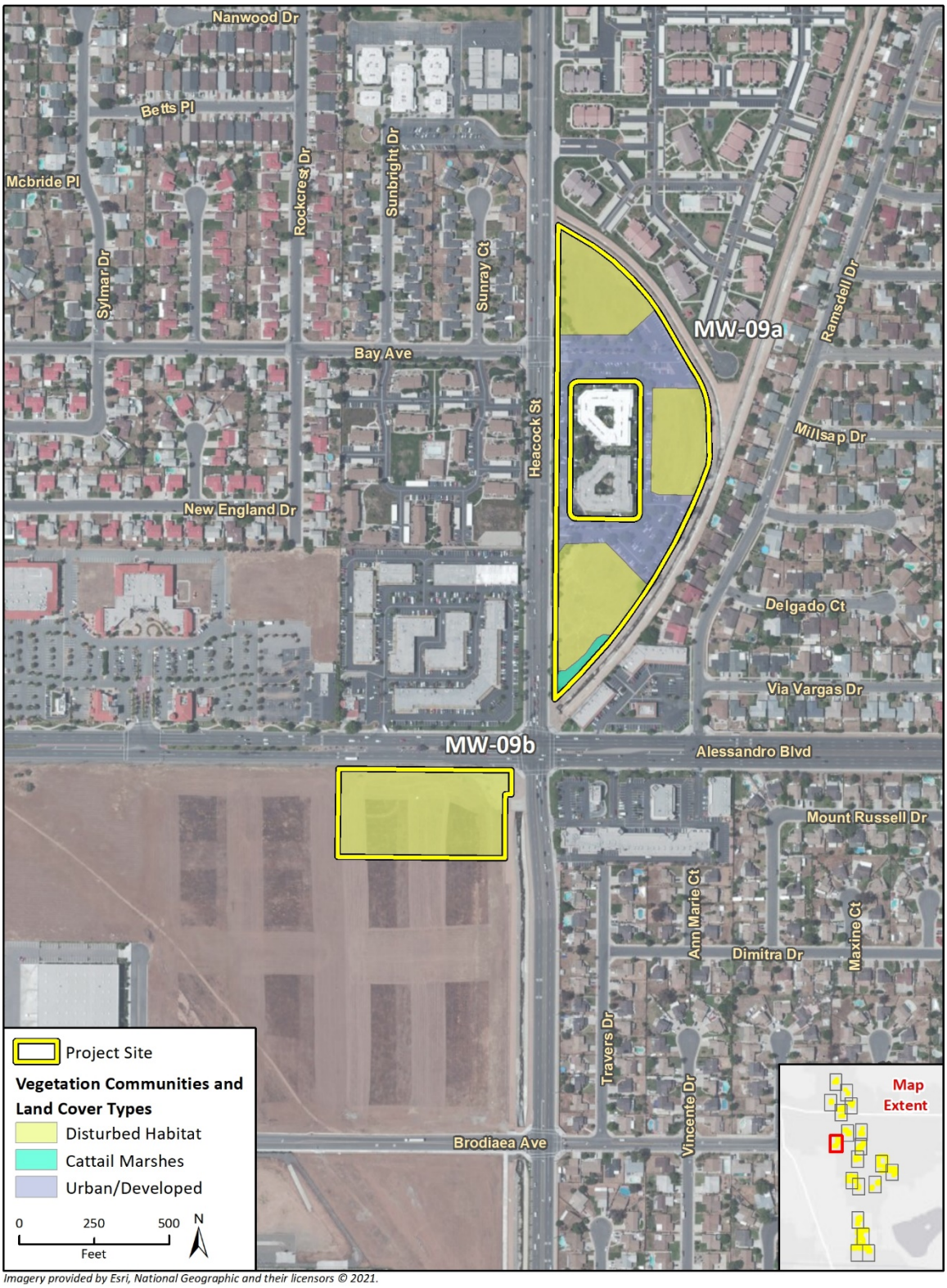
## Figure 4 Vegetation Communities and Land Cover Types Map (7 of 19)

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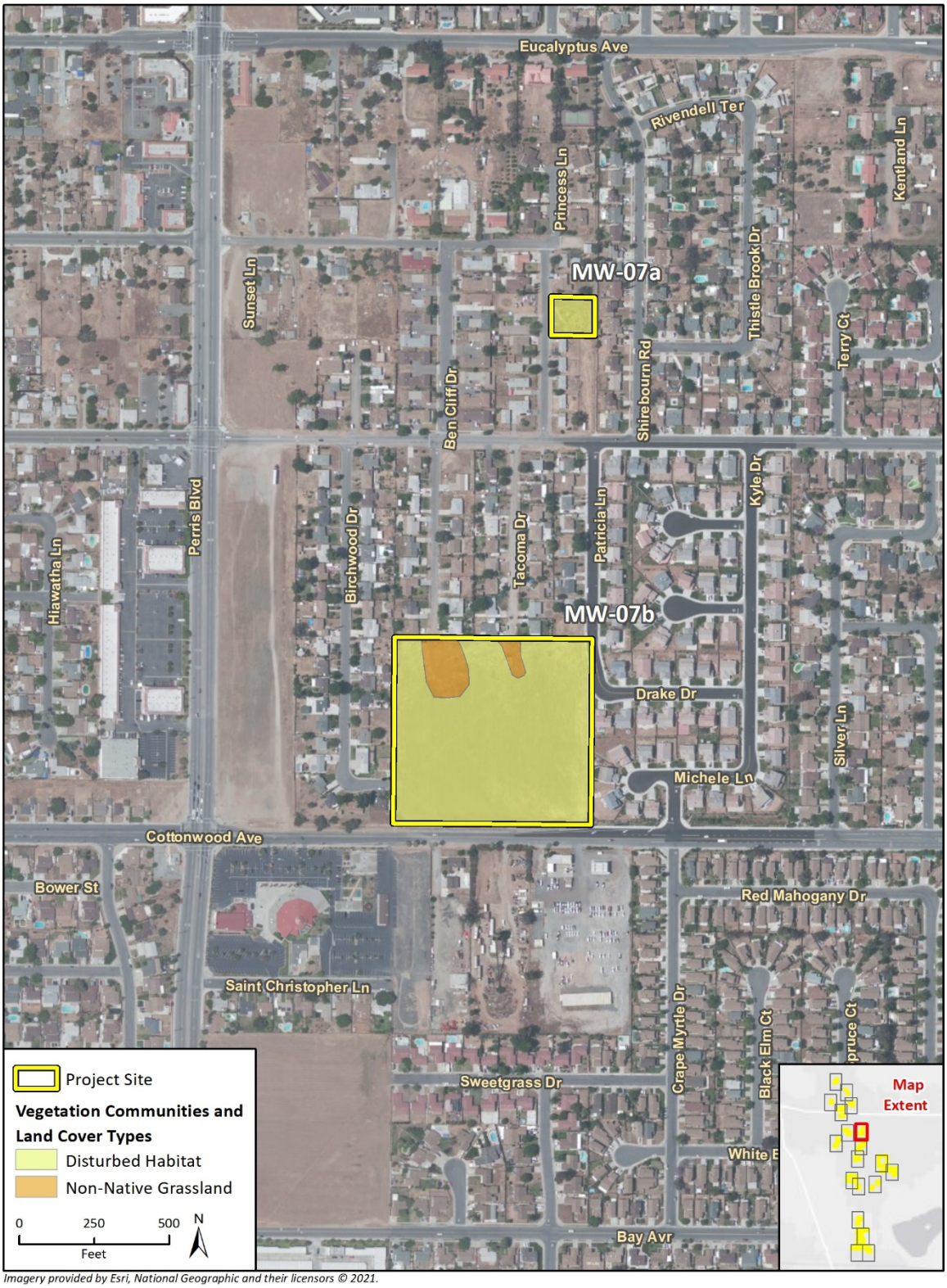
## Figure 4 Vegetation Communities and Land Cover Types Map (8 of 19)

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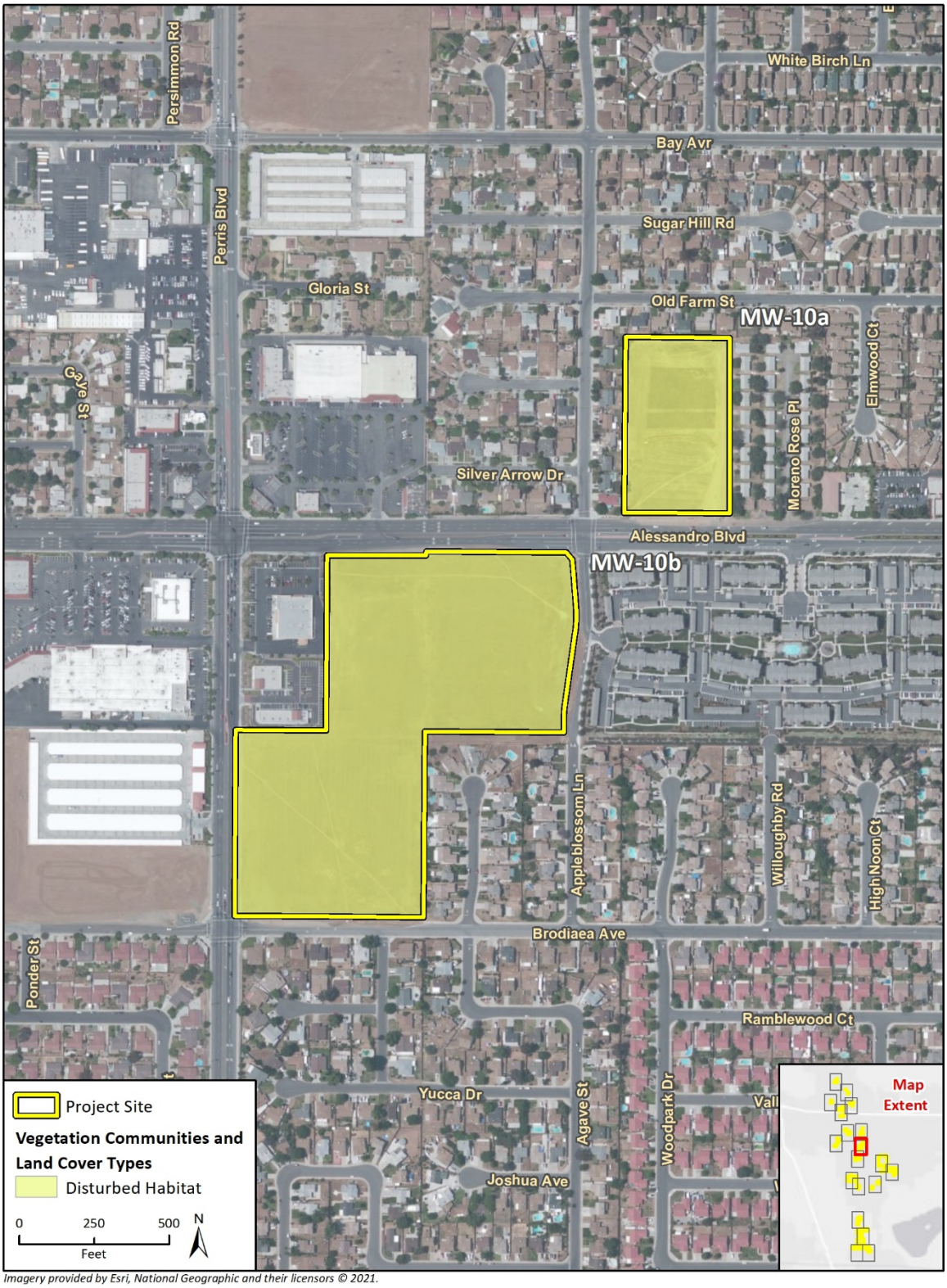
## Figure 4 Vegetation Communities and Land Cover Types Map (9 of 19)



## Figure 4 Vegetation Communities and Land Cover Types Map (10 of 19)


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**Figure 4 Vegetation Communities and Land Cover Types Map (11 of 19)**

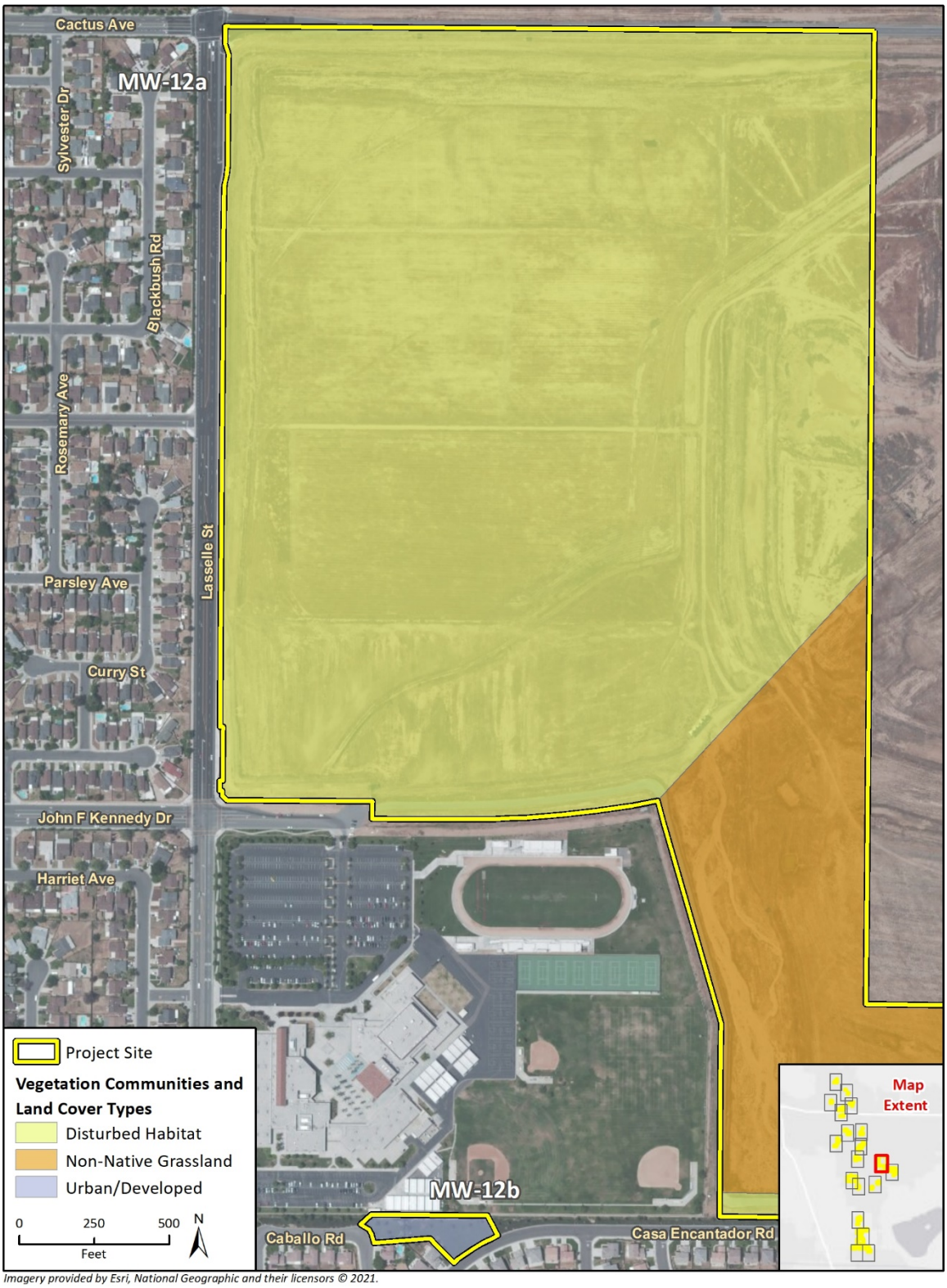


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**Figure 4 Vegetation Communities and Land Cover Types Map (12 of 19)**

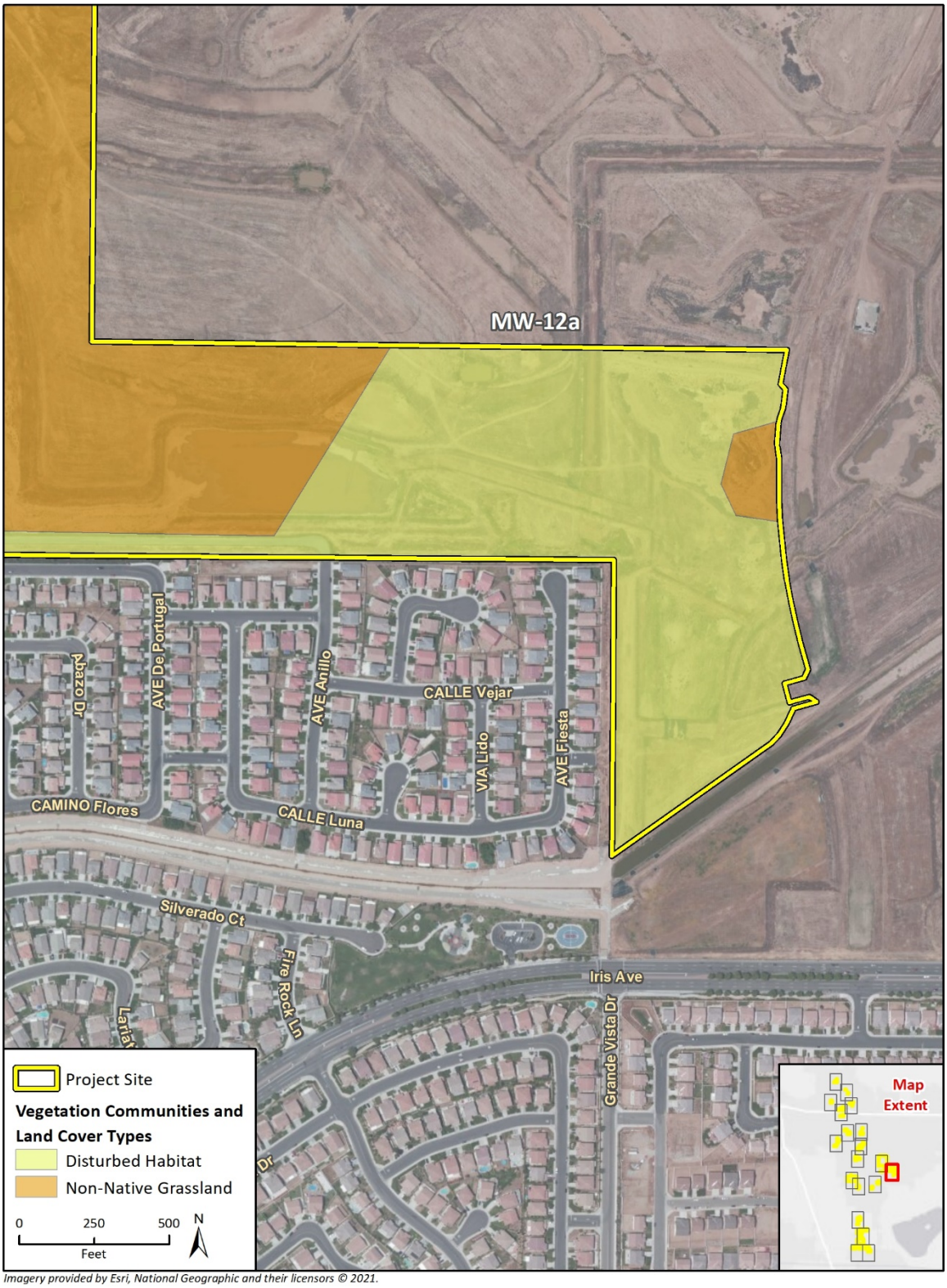

**Figure 4 Vegetation Communities and Land Cover Types Map (13 of 19)**

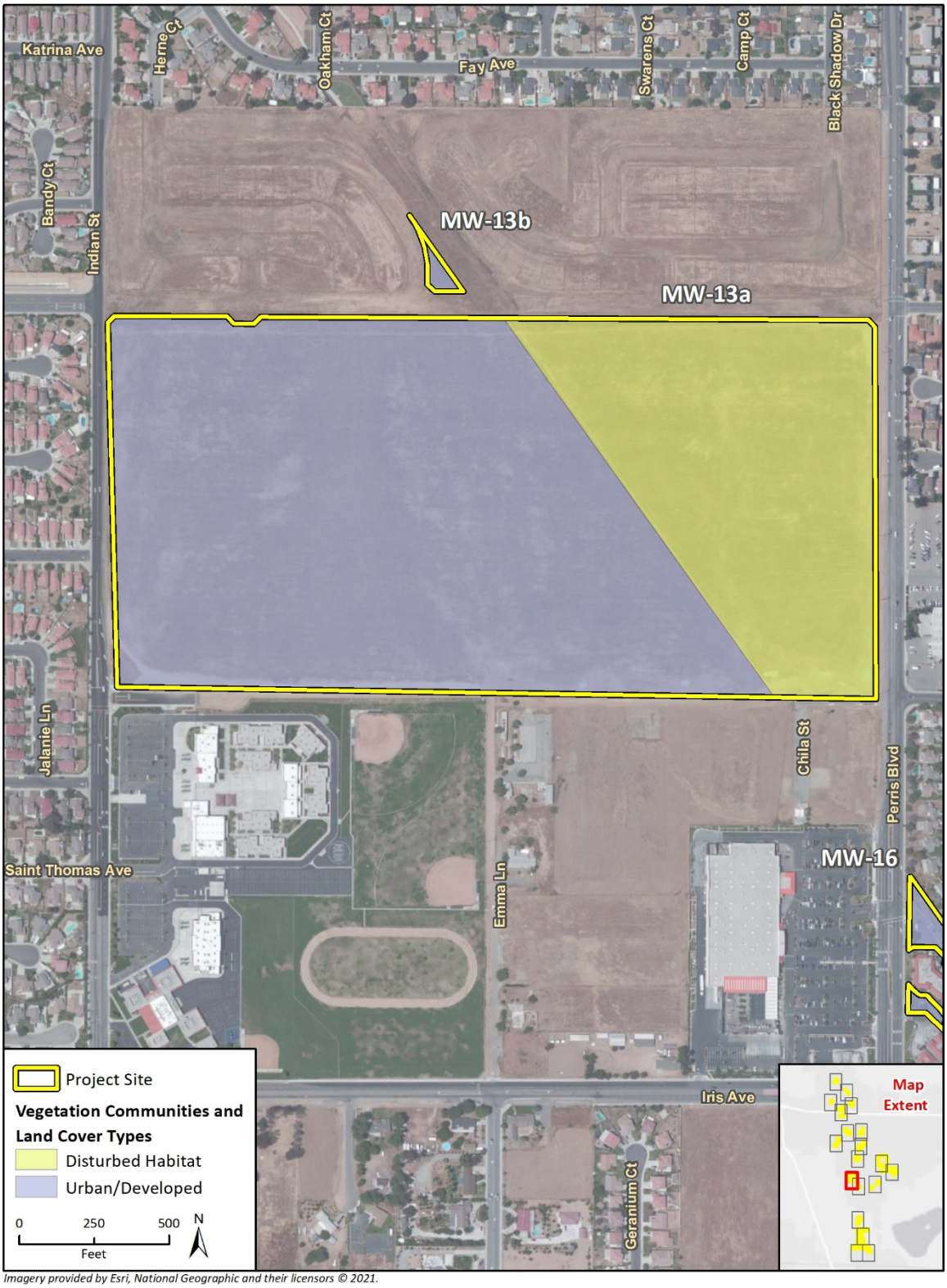

**Figure 4 Vegetation Communities and Land Cover Types Map (14 of 19)**

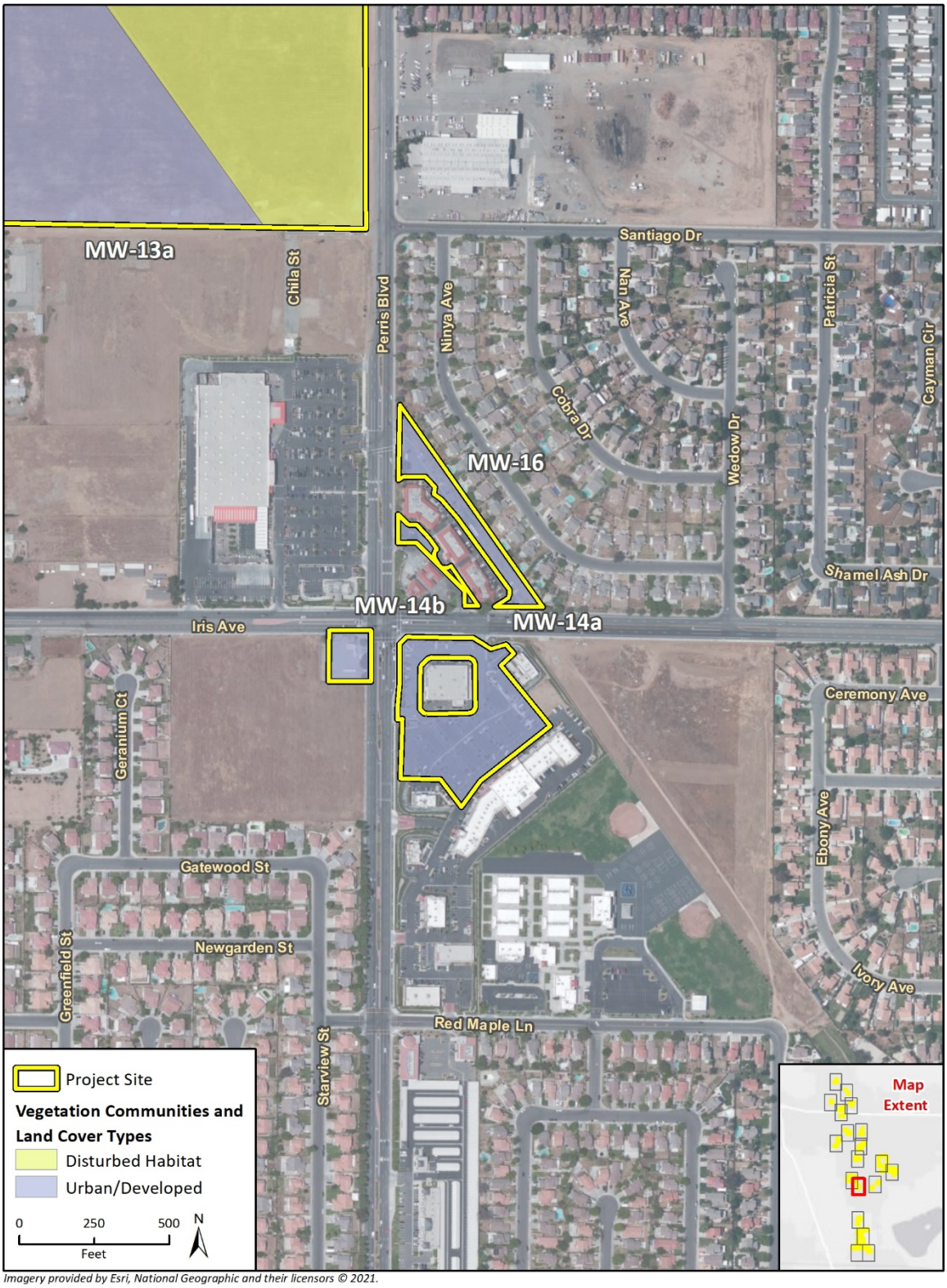

**Figure 4 Vegetation Communities and Land Cover Types Map (15 of 19)**


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## Figure 4 Vegetation Communities Map and Land Cover Types (16 of 19)

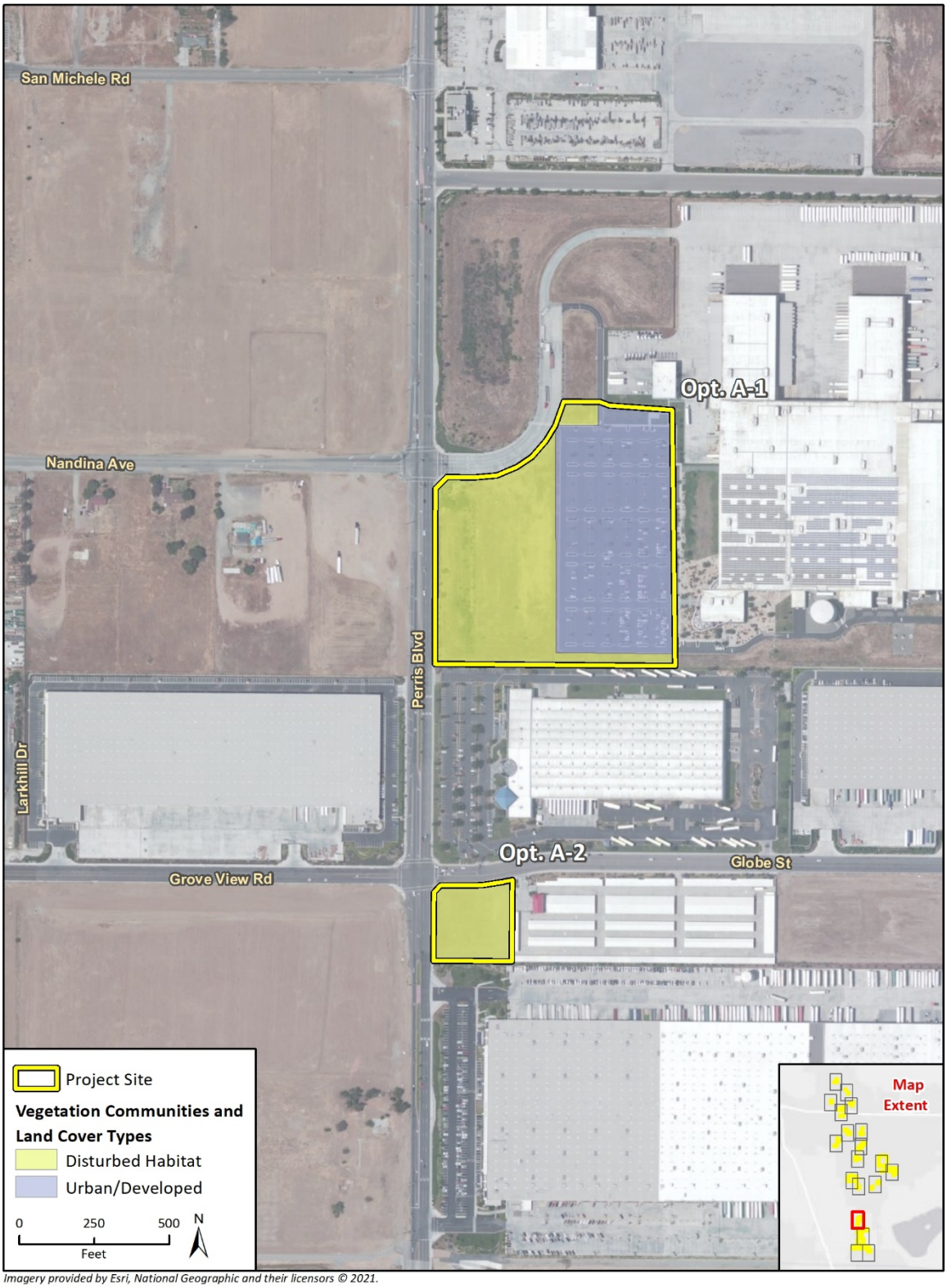


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**Figure 4 Vegetation Communities and Land Cover Types Map (17 of 19)**

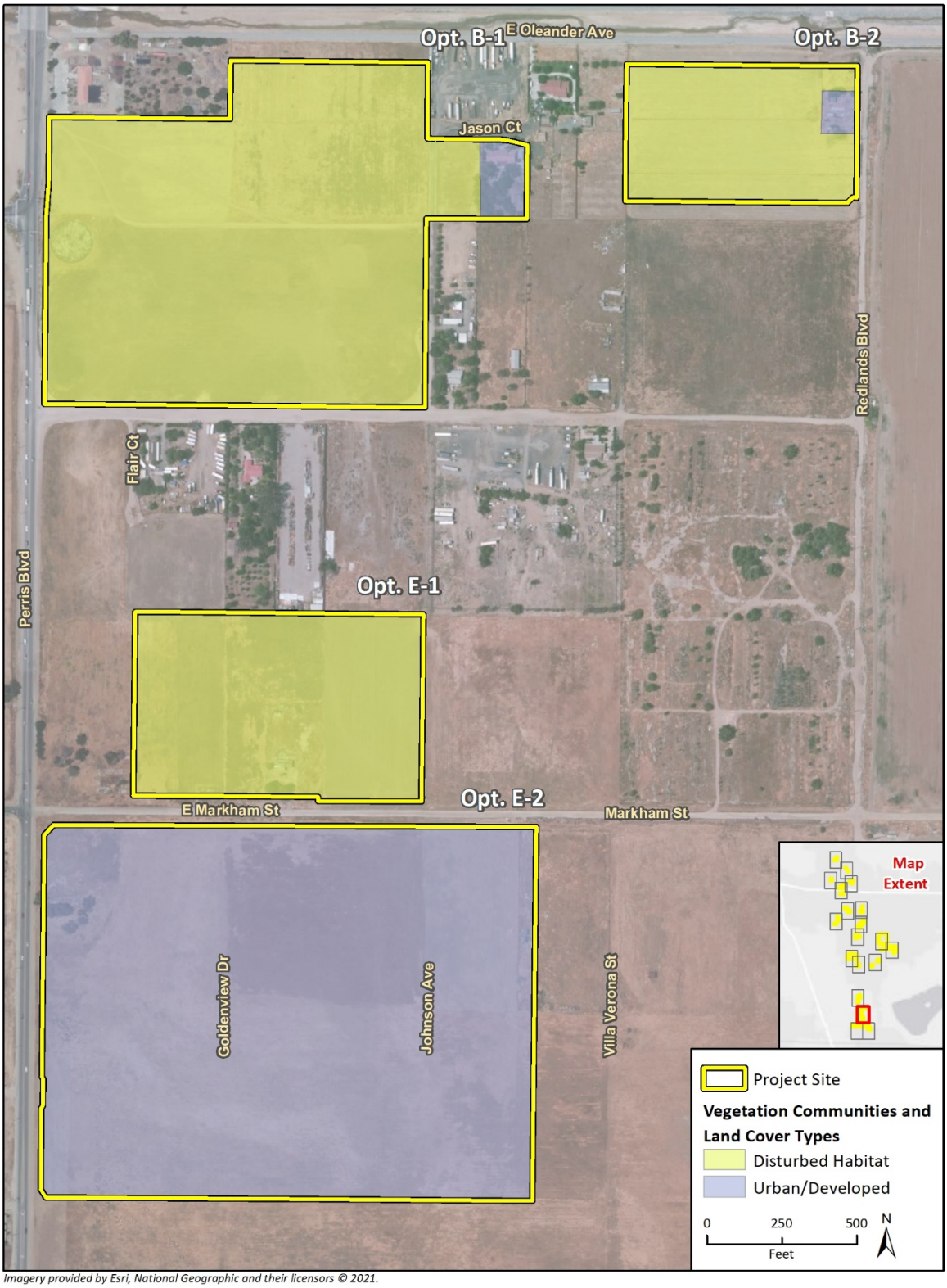

**Figure 4 Vegetation Communities and Land Cover Types Map (18 of 19)**

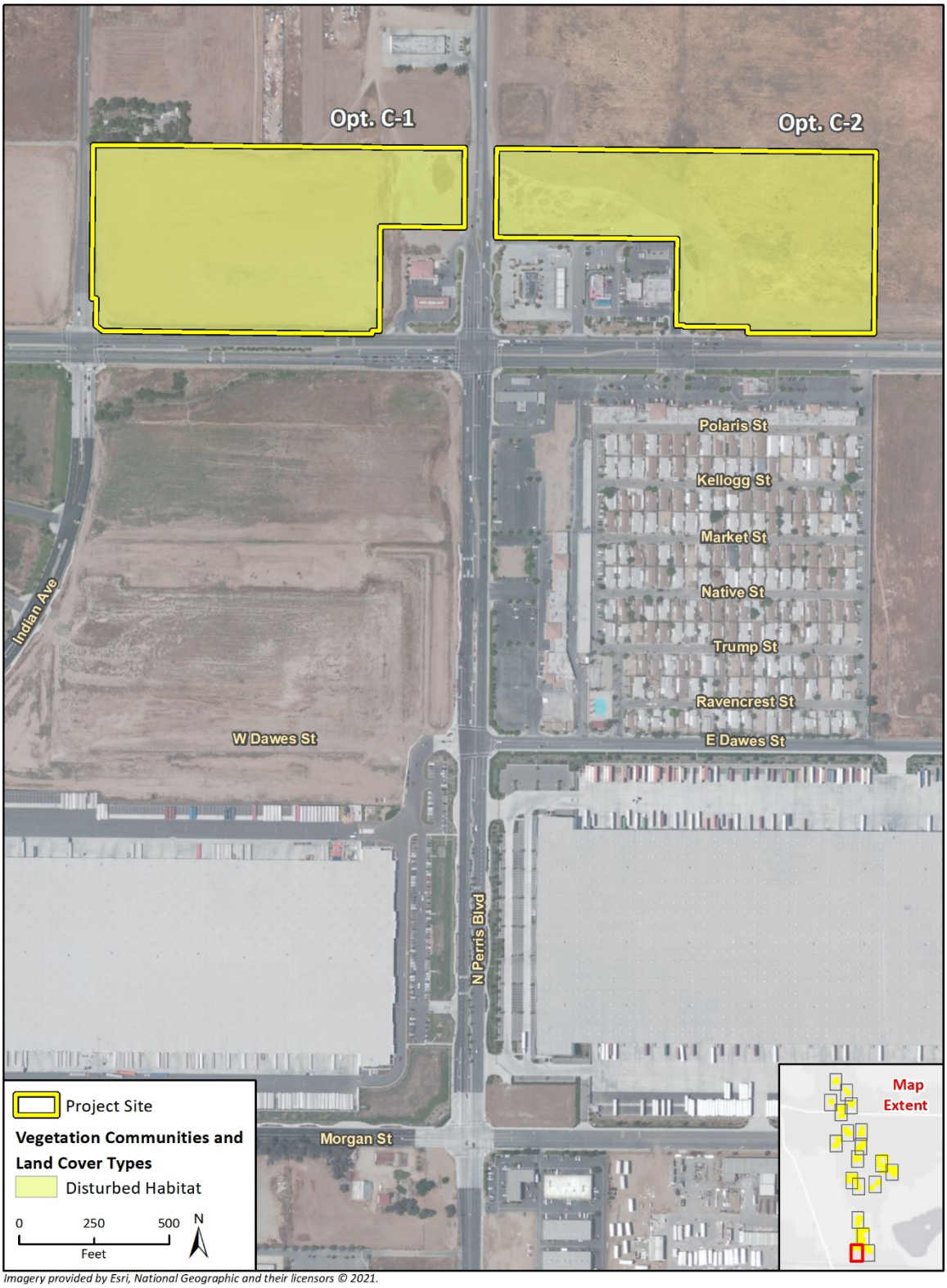


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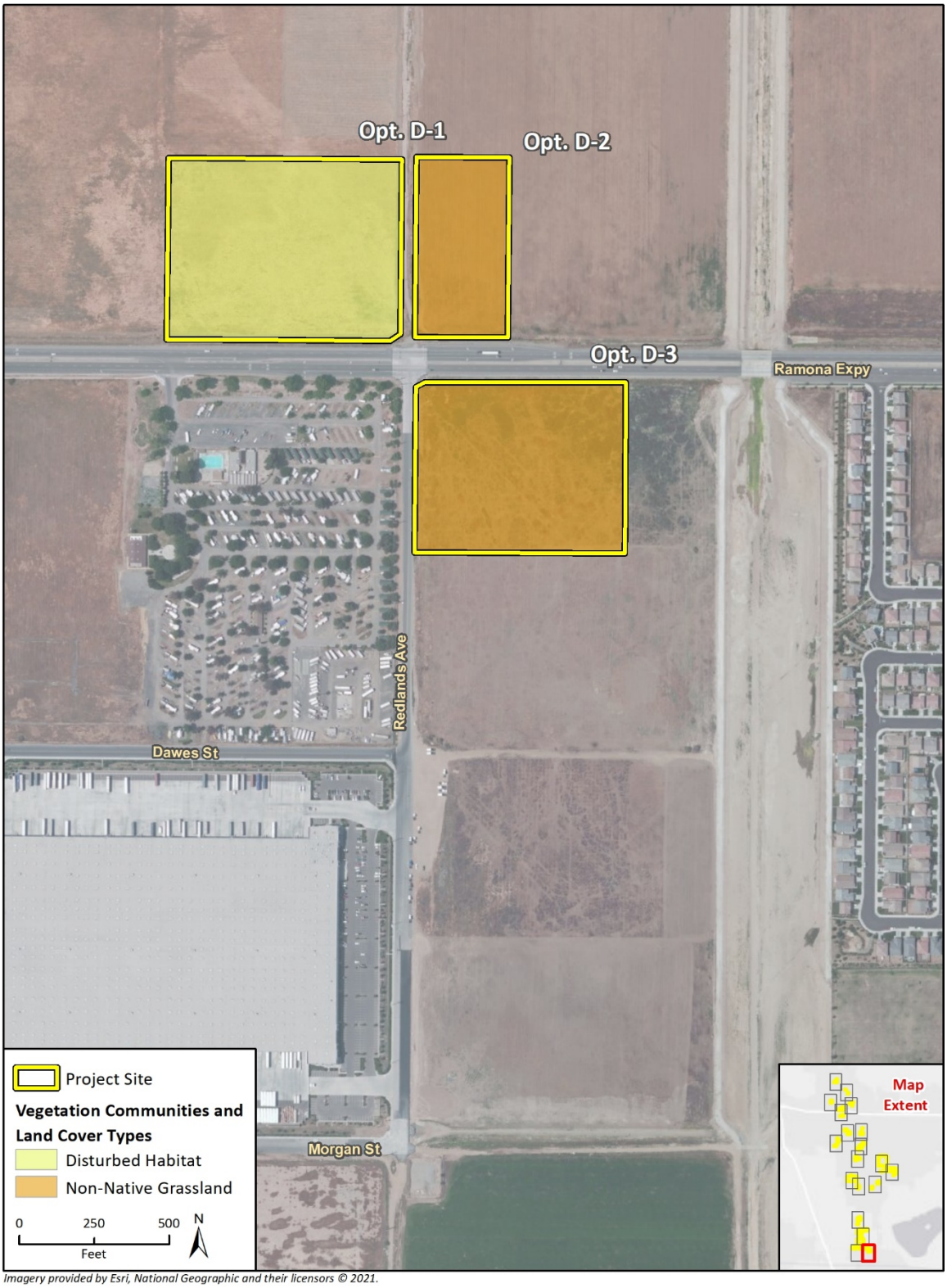
**Figure 4 Vegetation Communities and Land Cover Types Map (19 of 19)**

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## Figure 8 Potential BUOW Burrows (1 of 6)


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**Figure 5 Potential BUOW Burrows (2 of 6)**

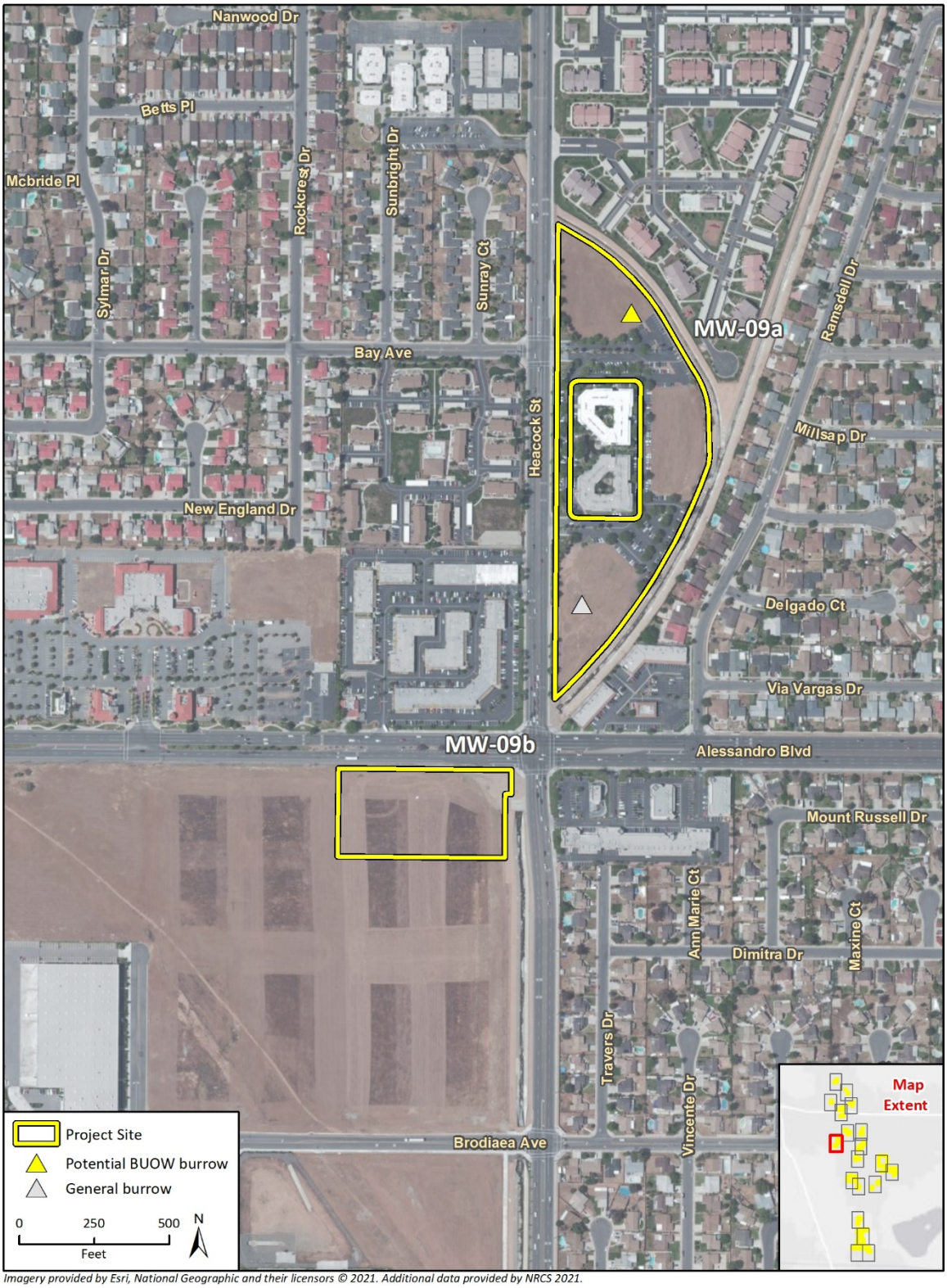


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**Figure 5 Potential BUOW Burrows (3 of 6)**

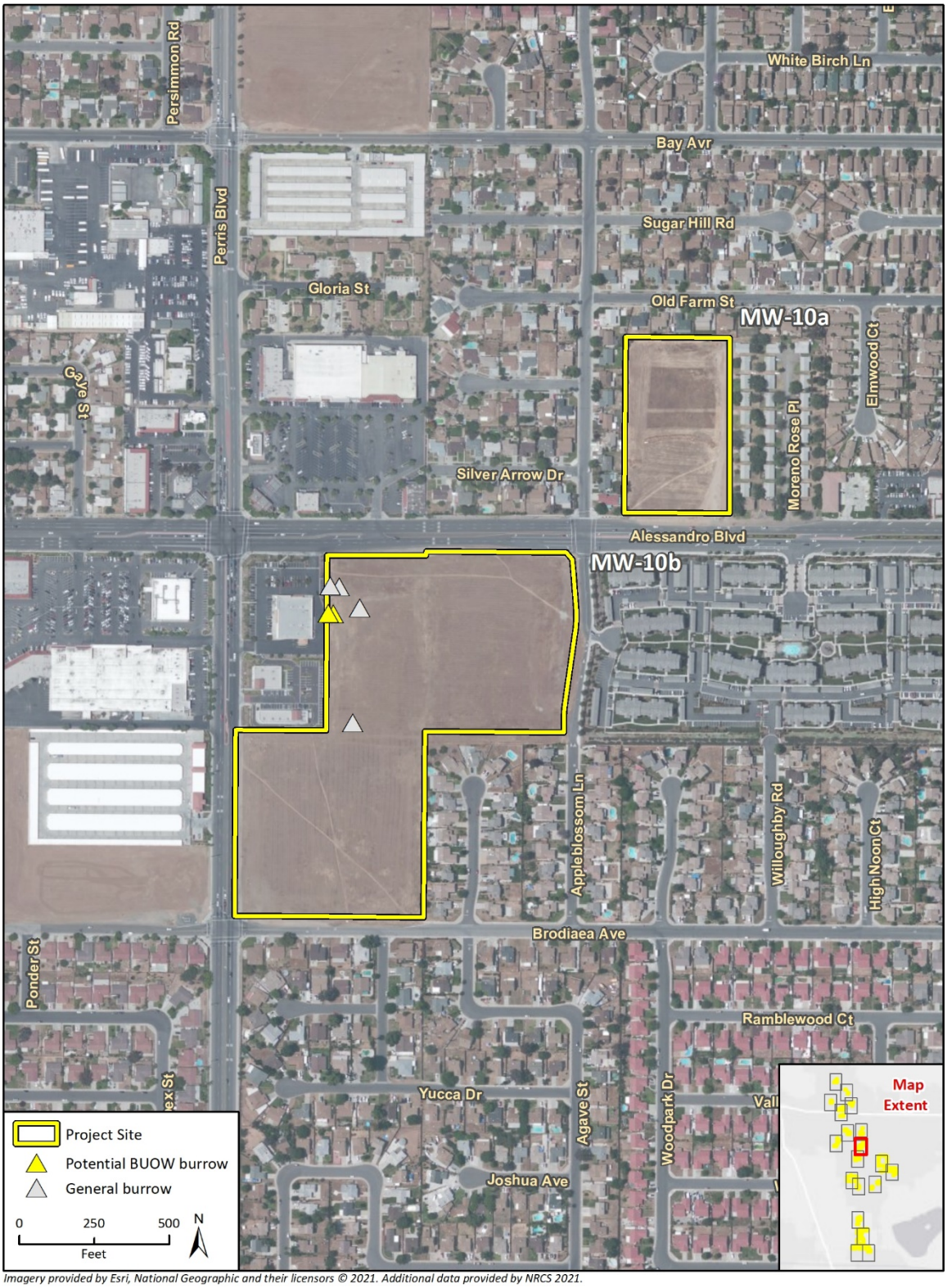

**Figure 5 Potential BUOW Burrows (4 of 6)**

**Figure 5 Potential BUOW Burrows (5 of 6)**

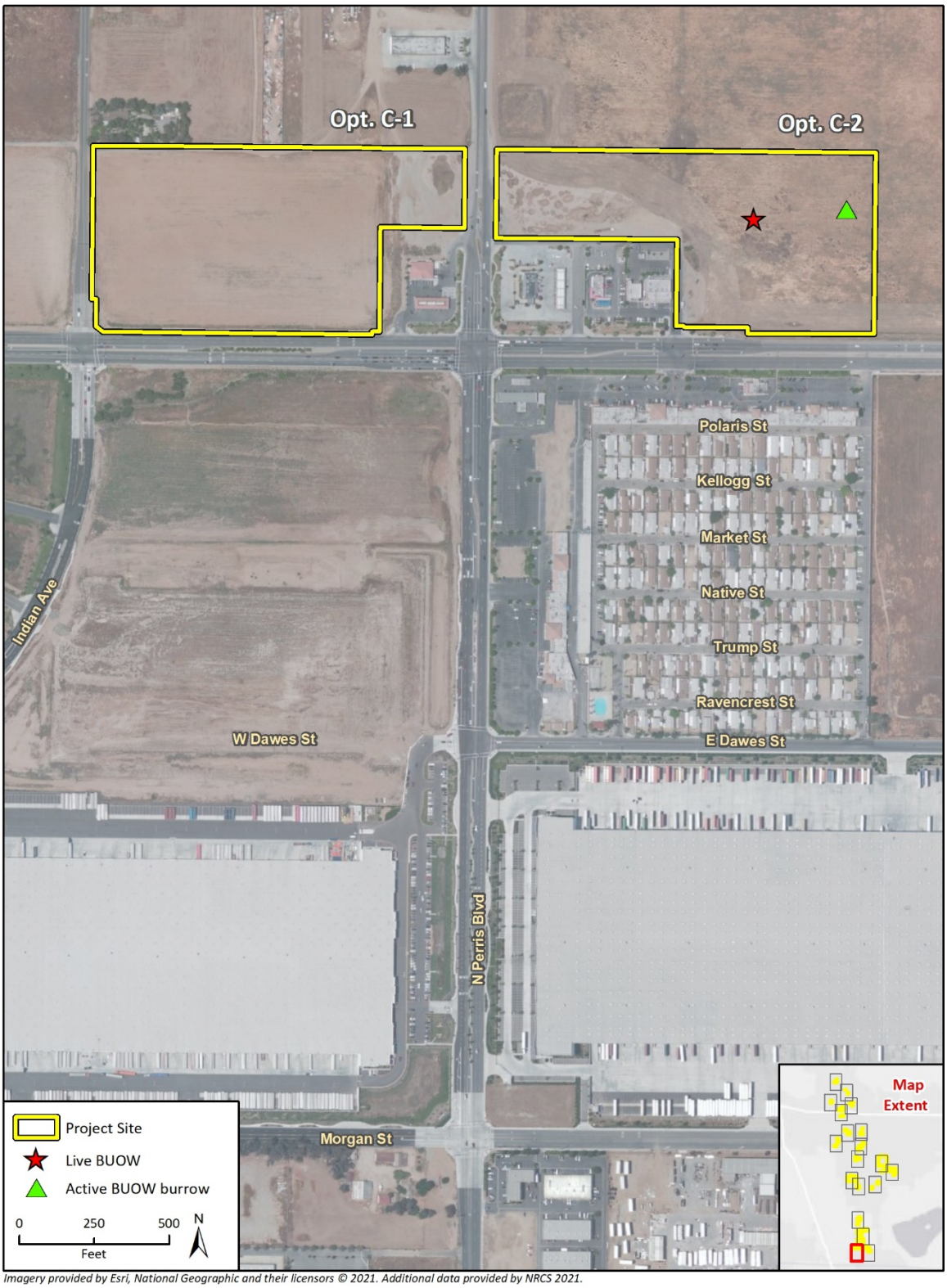


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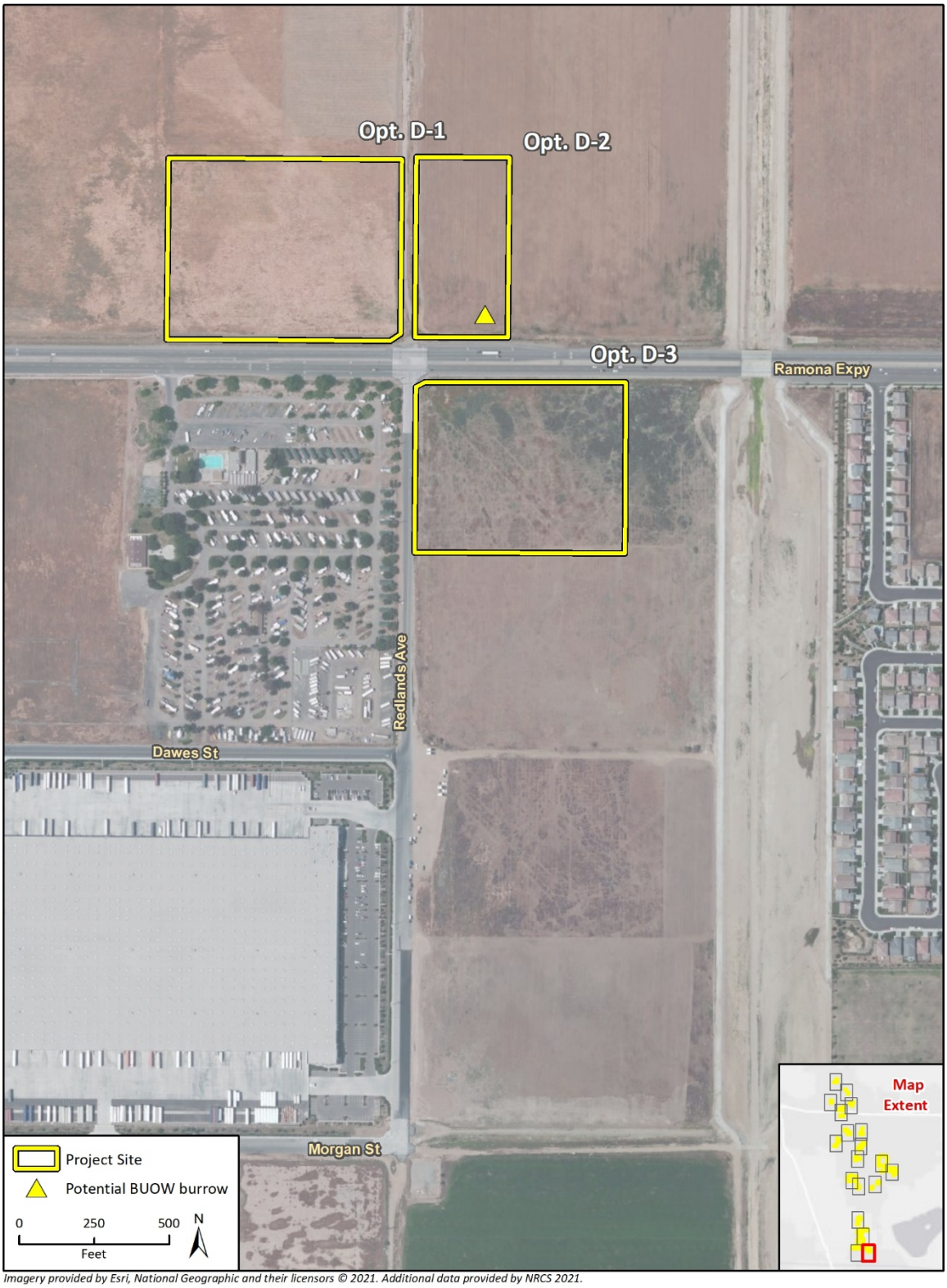
**Figure 5 Potential BUOW Burrows (6 of 6)**

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# Attachment 2

Project Site Photographs

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**Photograph 1.** MW-01, at northern extent of project site i.e., Gateway Park. View to the southwest, site is completely developed with ornamental trees and grass.

**Photograph 2.** MW-02a, inactive nest located on western perimeter of site, in western sycamore (*Platanus racemosa*), the remainder of the site is completely disturbed.

**Photograph 3.** MW-02-b, southwest corner of site facing west northwest towards silk oaks (*Grevillea robusta*) and Peruvian pepper trees (*Schinus mole*) containing two inactive nests.

**Photograph 4.** MW-03, northwest portion of project site facing northeast, displaying disturbed lot toward shopping center, dispersed burrows within lot not suitable for BUOW.

**Photograph 5.** MW-04, standing at south center perimeter of site facing north. Vacant lot showed recent signs of disturbance.

**Photograph 6.** MW-05a, eastern extent of project site facing west, entire location was under construction upon arrival.

**Photograph 7.** MW-05b, photo at northern extent of site facing south southwest, completely disturbed containing ornamental trees.

**Photograph 8.** MW-05c, photo taken from northwest corner of site facing east southeast, displaying the disturbed project site lacking native vegetation with residential homes along the perimeter.

**Photograph 9.** MW-06a, southwest corner of site facing northeast, disturbed lot with non-native trees dispersed throughout.

**Photograph 10.** MW-06b, northwest corner of site facing southeast, disturbed lot lacking vegetation.

**Photograph 11.** MW-07a, northwest corner of site facing south, disturbed lot with residential street to the right.

**Photograph 12.** MW-07b, photo taken from north middle of lot facing north toward non-native grassland vegetation; likely due to residential and stormwater runoff.

**Photograph 13.** MW-08a, view of disturbed habitat showing signs of recent tilling. View from northwest side of site facing east southeast.

**Photograph 14.** MW-08b, entire parcel currently undergoing development during the time of surveys. View from southeast corner facing north.

**Photograph 15.** MW-09a, view of potential active burrow, BUOW was not observed. Photo is taken from northern portion of disturbed habitat.

**Photograph 16.** MW-09a, disturbed habitat viewing cattail marsh vegetation leading to a man-made drainage. Taken from southern extent of parcel facing west southwest.

**Photograph 17.** MW-09b, view of disturbed habitat showing signs of recent tilling/grading. View from northwest corner of site facing southeast.

**Photograph 18.** MW-10a, two killdeers (*Charadrius vociferus*) observed on site resting, one individual featured in center frame. No nesting or mating behavior was observed. View from southeast corner facing west.

**Photograph 19.** MW-10b, California horned larks were observed foraging in disturbed habitat on the left of frame and again in southern portion of the project site. View western most corner of site facing east.

**Photograph 20.** MW-10b, observed multiple burrows in northeastern corner of project site, BUOW signs were not observed (i.e., whitewash, pellets).

**Photograph 21.** MW-11a, view of disturbed habitat showing signs of recent tilling. View from northeast side corner of site facing west.


**Photograph 22.** MW-11b, entire project site is developed. View from southeast corner facing north.

**Photograph 23.** MW-12a, four coyotes observed foraging in non-native grassland vegetation, disturbed habitat is apparent throughout project site (i.e., access roads and drainages). View from southern most border facing northeast.

**Photograph 24.** MW-12a, red-tailed hawk observed foraging in northern portion of project site consisting of disturbed habitat. View from north corner facing west.

**Photograph 25.** MW-12b, project site is entirely developed, serving as an urban park space. Site is surrounded by streets and residential housing.

**Photograph 26.** MW-13 (N), project site is entirely developed, serving as an urban park space. Site is surrounded by streets and residential housing.

**Photograph 27.** MW-13 (S), west half of project site is under construction and east half is disturbed habitat lacking vegetation. View from south facing northeast.

**Photograph 28.** MW-14a and MW-14b, both locations were completely developed. View from MW-14b, maintenance development, facing southeast towards MW-14a, shopping center.

**Photograph 29.** MW-15a, developed open park space consisting of ornamental vegetation and trees. View from south of site facing east.

**Photograph 30.** MW-15b, developed lot containing a shopping center. View from south facing north.

**Photograph 31.** MW-16, urban/developed project site with shopping center to west. View from north corner facing southeast.

**Photograph 32.** MW Opt.A-1, western portion of site containing disturbed vegetation. Observed willow trees, Fremont cottonwoods, and tamarisk. View from northwest facing southeast.

**Photograph 33.** MW Opt.A-2, site consists of completely disturbed habitat. View from southeast facing northwest.

**Photograph 34.** MW Opt.B-1, highly disturbed site with sparse vegetation. Site contained a truck storage on eastern half of site. View from southwest corner facing northeast.

**Photograph 35.** MW Opt.B-2, disturbed site with a developed area on eastern edge, dominated by Russian thistle throughout. View from northwest corner facing east.

**Photograph 36.** MW Opt.C-1, stormwater/roadway run-off drainage on right of frame. Site was completely disturbed and had a homelessness encampment on eastern extent behind gas station. View from southwest corner facing east.

**Photograph 37.** MW Opt.C-2, active BUOW nest half of project site is under construction and east half is disturbed habitat lacking vegetation. View from northeast side of burrow.

**Photograph 38.** MW Opt.C-2, perching location where BUOW fled to after being flushed from den, whitewash seen on sides of tire. View from north facing south.

**Photograph 39.** MW Opt.D-1, view from southeast corner of project site facing northwest; project site is completely disturbed showing signs of recent grading.

**Photograph 40.** MW Opt.D-2, portion of man-made drainage going through non-native grassland. View from west side facing east.

**Photograph 41.** MW Opt.E-1, view of fence running north to south through disturbed project site. View from north facing southwest.


**Photograph 42.** MW Opt.E-2, project site was completely developed i.e., Amazon Distribution Center. View from north facing south.

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# Attachment 3

Special Status Species Potential for Occurrence

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## Table 3 Special Status Species Potential for Occurrence

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| **Plants** | | | | |
| *Senecio aphanactis*<br>chaparral ragwort | None/None<br>G3/S2<br>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 sites. Project sites are highly developed/disturbed. |
| *Lasthenia glabrata* ssp. *coulteri*<br>Coulter's goldfields | None/None<br>G4T2/S2<br>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 sites. Suitable alkaline soils do not occur on site. Project sites are highly developed/ disturbed. |
| *Centromadia pungens* ssp. *laevis*<br>smooth tarplant | None/None<br>G3G4T2/S2<br>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 sites. Alkali soils and vegetation absent. Project sites are highly developed/ disturbed. |
| *Chorizanthe parryi* var. *parryi*<br>Parry's spineflower | None/None<br>G3T2/S2<br>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 sites. Project sites are highly developed/disturbed. |
| *Calochortus plummerae*<br>Plummer's mariposa-lily | None/None<br>G4/S4<br>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 sites. Project sites are highly developed/ disturbed. |
| *Lepidium virginicum* var. *robinsonii*<br>Robinson's pepper-grass | None/None<br>G5T3/S3<br>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 sites. Project sites are highly developed/ disturbed. |
| *Chloropyron maritimum* ssp. *maritimum*<br>salt marsh bird's-beak | Endangered/<br>Endangered<br>G4?T1/S1<br>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 sites. Project sites are highly developed/disturbed. |

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| *Trichocoronis wrightii* var. *wrightii*<br>Wright's trichocoronis | None/None<br>G4T3/S1<br>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. Project sites are highly developed/ disturbed. |
| *Atriplex coronata* var. *notatior*<br>San Jacinto Valley crownscale | Endangered/<br>None<br>G4T1/S1<br>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. Project sites are highly developed/ disturbed. |
| *Abronia villosa* var. *aurita*<br>chaparral sand-verbena | None/None<br>G5T2?/S2<br>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. Project sites are developed/disturbed. |
| *Atriplex serenana* var. *davidsonii*<br>Davidson's saltscale | None/None<br>G5T1/S1<br>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. Project sites are highly developed/ disturbed. |
| *Chorizanthe polygonoides* var. *longispina*<br>long-spined spineflower | None/None<br>G5T3/S3<br>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. Project sites are highly developed/ disturbed. |
| *Arenaria paludicola*<br>marsh sandwort | FE/SE<br>G1/S1<br>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. Project sites are highly developed/ disturbed. |
| *Berberis nevinii*<br>Nevin's barberry | FE/SE<br>G1/S1<br>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. Project sites are highly developed/ disturbed. |
| *Atriplex parishii*<br>Parish's brittlescale | None/None<br>G1G2/S1<br>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. Project sites are highly developed/disturbed. |

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| *Navarretia fossalis*<br>spreading navarretia | FT/None<br>G2/S2<br>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. Project sites are highly developed/ disturbed. |
| *Brodiaea filifolia*<br>thread-leaved brodiaea | FT/SE<br>G2/S2<br>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. Project sites are highly developed/ disturbed. |
| **Invertebrates** | | | | |
| *Streptocephalus woottoni*<br>Riverside fairy shrimp | Endangered/None<br>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 sites. Project sites are highly developed/ disturbed. |
| *Bombus crotchii*<br>Crotch bumble bee | None/SCE<br>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 sites. Project sites are highly developed/disturbed. |
| *Rhaphiomidas terminatus abdominalis*<br>Delhi Sands flower-loving fly | FE/None<br>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 sites. Project sites are highly developed/ disturbed. |

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| **Amphibians** | | | | |
| *Spea hammondii*<br>western spadefoot | None/None<br>G3/S3<br>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 sites. Project sites are highly developed/disturbed. |
| **Reptiles** | | | | |
| *Arizona elegans occidentalis*<br>California glossy snake | None/None<br>G5T2/S2<br>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 sites. Grassland habitat present on sites consists of highly disturbed, ornamental, or fragmented areas surrounded by development. Project sites are highly developed/ disturbed. |
| *Aspidoscelis tigris stejnegeri*<br>coastal whiptail | None/None<br>G5T5/S3<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Crotalus ruber*<br>red-diamond rattlesnake | None/None<br>G4/S3<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Phrynosoma blainvillii*<br>coast horned lizard | None/None<br>G3G4/S3S4<br>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 sites. Project sites are highly developed/disturbed and surrounded by existing development. |

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| *Anniella stebbinsi*<br>southern California legless lizard | None/None<br>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 present on sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Aspidoscelis hyperythra*<br>orange-throated whiptail | None/None<br>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 sites due to absence of scrub, chaparral, and woodland habitat. No sandy areas or washes on site. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Emys marmorata*<br>western pond turtle | None/None<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Diadophis punctatus modestus*<br>San Bernardino ringneck snake | None/None<br>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. Project sites are highly developed/disturbed. |

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| **Birds** | | | | |
| *Accipiter cooperii*<br>Cooper's hawk | None/None<br>G5/S4<br>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 sites. Project sites are highly developed/disturbed and surrounded by existing development. |
| *Agelaius tricolor*<br>tricolored blackbird | None/<br>Threatened<br>G2G3/S1S2<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Aimophila ruficeps canescens*<br>southern California rufous-crowned sparrow | None/None<br>G5T3/S3<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Artemisiospiza belli*<br>Bell's sage sparrow | None/None<br>G5T2T4/S3<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Athene cunicularia*<br>burrowing owl | None/None<br>G4/S3<br>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. | Present | Portions of the project sites 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 sites location surrounded by existing development. |
| *Coccyzus americanus occidentalis*<br>western yellow-billed cuckoo | Threatened/<br>Endangered<br>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 is present. Project sites are highly developed/ disturbed and surrounded by existing development. |

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| *Eremophila alpestris actia*<br>California horned lark | None/None<br>G5T4Q/S4<br>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. | Present | Portions of the project sites 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 sites location surrounded by existing development. |
| *Icteria virens*<br>yellow-breasted chat | None/None<br>G5/S3<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Lanius ludovicianus*<br>loggerhead shrike | None/None<br>G4/S4<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Polioptila californica*<br>coastal California gnatcatcher | Threatened/<br>None<br>G4G5T2Q/S2<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Spinus lawrencei*<br>Lawrence's goldfinch | None/None<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Vireo bellii pusillus*<br>least Bell's vireo | Endangered/<br>Endangered<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Buteo regalis*<br>ferruginous hawk | None/None<br>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 sites are highly disturbed/ developed and surrounded by existing development. |

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| **Mammals** | | | | |
| *Chaetodipus fallax*<br>northwestern San Diego pocket mouse | None/None<br>G5T3T4/S3S4<br>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*<br>Stephens' kangaroo rat | Endangered/<br>Threatened<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Eumops perotis californicus*<br>western mastiff bat | None/None<br>G5T4/S3S4<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Lasiurus xanthinus*<br>western yellow bat | None/None<br>G5/S3<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Lepus californicus bennettii*<br>San Diego black-tailed jackrabbit | None/None<br>G5T3T4/S3S4<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Nyctinomops femorosaccus*<br>pocketed free-tailed bat | None/None<br>G4/S3<br>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 sites. Project sites are highly developed/disturbed and surrounded by existing development. |

| Scientific Name<br>Common Name | Status | Habitat Requirements | Potential to Occur in Study Area | Habitat Suitability/Observations |
|---|---|---|---|---|
| *Onychomys torridus ramona*<br>southern grasshopper mouse | None/None<br>G5T3/S3<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Perognathus longimembris brevinasus*<br>Los Angeles pocket mouse | None/None<br>G5T1T2/S1S2<br>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 sites. Project sites are highly developed/ disturbed and surrounded by existing development. |
| *Taxidea taxus*<br>American badger | None/None<br>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. Project sites are highly developed/ disturbed. |
| *Dipodomys merriami parvus*<br>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. Project sites are 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<br>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 | | | | |

# Attachment 4

Observed Plant Species List

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## 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 |
| *Brassica nigra* | black mustard | NL (UPL) |
| *Bromus madritensis* ssp. *rubens* | red brome | UPL |
| *Convolvulus arvensis* | field blindweed | NL (UPL) |
| *Croton setiger* | turkey-mullein | NL (UPL) |
| *Cupressus sempervirens* | Mediterranean cypress | NL (UPL) |
| *Datura wrightii* | sacred datura | NL (UPL) |
| *Eucalyptus sideroxylon* | red ironbark | NL (UPL) |
| *Erodium cicatarium* | red stemmed filaree | NL (UPL) |
| *Fraxinus uhdei* | shamel ash | NL (UPL) |
| *Grevillea robusta* | silk oak | 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 |
| *Platanus racemosa* | western sycamore | NL (UPL) |
| *Populus fremontii* | Fremont's cottonwood | NL (UPL) |
| *Punica granatum* | pomegranate | NL (UPL) |
| *Salix laevigata* | red willow | FAC |
| *Salix nigra* | black willow | FAC |
| *Salsola tragus* | Russian thistle | FACU |
| *Schinus molle* | Peruvian pepper tree | FACU |
| *Schismus barbatus* | Mediterranean schismus | NL (UPL) |
| *Tamarix aphylla* | tamarix | FAC |
| *Tribulus terrestris* | puncture vine | NL (UPL) |
| *Washingtonia robusta* | Mexican fan palm | FAC |

[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 Wells Project

## Cultural Resources Assessment Report

*prepared for*

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**November 2021**

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## Confidentiality

The following document contains sensitive and confidential information concerning archaeological sites. This report should be held confidential and is not for public distribution. Archaeological site locations are exempt from the California Public Records Act, as specified in Government Code 6254.10, and from the Freedom of Information Act (Exemption 3), under the legal authority of both the National Historic Preservation Act (PL 102-574, Section 304[a]) and the Archaeological Resources Protection Act (PL 96-95, Section 9[a]). Sections of this report contain maps and other sensitive information. Distribution should be restricted appropriately.

Please cite this report as follows:

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2021 *Perris North Basin Groundwater Wells Project, Cultural Resources Assessment, Riverside County, California*. Rincon Consultants Project No. 19-009026. Report on file at the Eastern Information Center, University of California, Riverside.

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# Executive Summary

Woodard & Curran retained Rincon Consultants, Inc. (Rincon) to perform a cultural resources assessment for the Eastern Municipal Water District's Perris North Groundwater Wells Project (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 22 monitoring wells in various locations throughout Perris North Groundwater Management Zone.

This cultural resources assessment includes a cultural resources records search of the California Historical Resources Information System (CHRIS), a Sacred Lands File (SLF) search, a pedestrian field survey, and the preparation of this report. The proposed project is subject to the California Environmental Quality Act (CEQA). The Eastern Municipal Water District (EMWD) is the lead agency under CEQA.

The CHRIS records search conducted by the Eastern Information Center (EIC) identified 36 previously recorded cultural resources within 0.5 miles of the project area. The recorded boundaries of four resources (P-33-011604, P-33-016078, P-33-019865, and P-33-023936) are within the project area, and the recorded boundary of one (P-33-008699) is directly adjacent.

No new archaeological or built environment resources were identified as a result of the pedestrian field survey of the project site. Rincon archaeologists attempted to relocate the four previously recorded resources documented within the project site but were only able to positively identify one of the resources (P-33-016078). Two of the resources (P-33-011604 and P-33-019865) have been destroyed due to development. One of the resources (P-33-023936) could not be directly accessed during the survey, but evidence suggests it has been destroyed as a result of pre-construction blading. As these sites are no longer extant, the resources require no management consideration. Site P-33-016078 was revisited by Rincon archaeologists but was not evaluated as part of this study because it will not be impacted by the project. No historic-period built environment resources are extant within the area proposed for construction, therefore Rincon recommends a finding of ***no impact to historical resources*** under CEQA.

The SLF search was returned with negative results, and no Native American cultural resources were identified within the project area as a result of the records search. Given the level of previous ground disturbance within the project area (i.e., demolition of buildings, grading, and construction activities) the project site is considered to have low archaeological sensitivity. However, unanticipated discoveries during construction remain a possibility. Therefore, with the implementation of the recommended mitigation (below), Rincon recommends a finding of ***less than significant impact to archaeological resources*** under CEQA.

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 Groundwater Wells Project (project) located 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, a SLF search, Native American outreach, local historical group outreach, historical imagery review, and a pedestrian field survey. Rincon understands the project is subject to the California Environmental Quality Act (CEQA) and that EMWD is serving as the lead agency.

## 1.1 Project Location

The project site includes 569 acres spread across 41 separate parcels and lies within the cities of Moreno Valley and Perris in western Riverside County, California (Figure 1, and Figures 2a-d). 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, 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 of *Riverside East, California; Sunnymead, California; and Perris, California* 7.5-minute topographic quadrangles. 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 22 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. Maps showing the proposed locations of each of the monitoring wells can be found in Appendix A.

### 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

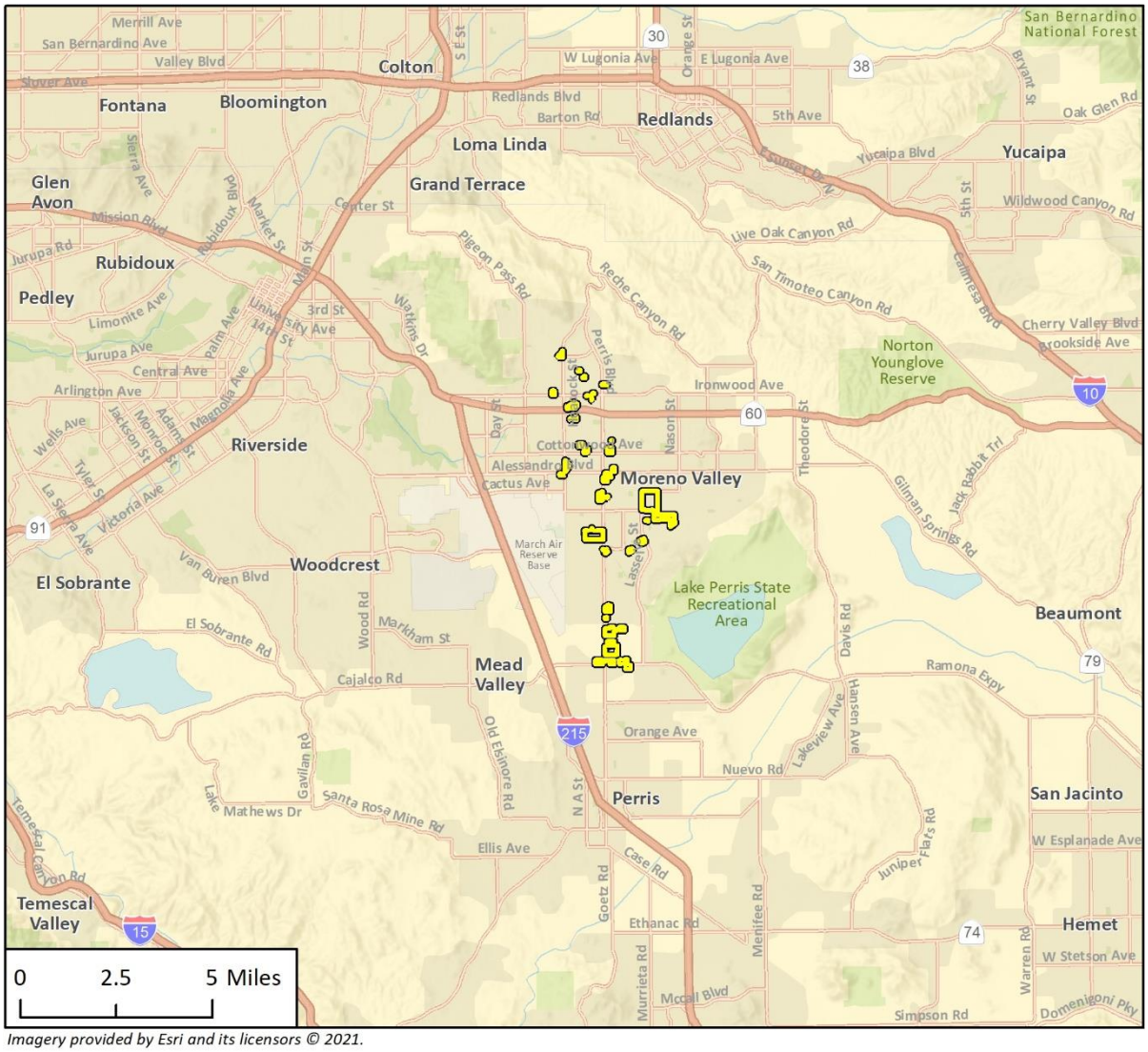
Monitoring well construction would involve asphalt removal in roadway rights-of-way or site clearing and grading on vacant parcels, well drilling and installation, and restoration of the site to pre-construction conditions. Each well would have an 18-inch borehole, and a 6-inch maximum casing. Construction 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 Project Personnel

Rincon Principal Andrew Pulcheon, MA, RPA, AICP, reviewed this report for quality control. Mr. Pulcheon meets the Secretary of the Interior's (SOI) Professional Qualifications Standards for historic and prehistoric archaeology (National Park Service 1983). Rincon Senior Architectural Historian Steven Treffers, MHP, provided management oversight for the built-environment portion of this study. Mr. Treffers meets the SOI's Professional Qualifications Standards for history and architectural history. Rincon Cultural Resources Program Manager and Senior Archaeologist Hannah Haas, MA, Registered Professional Archaeologist (RPA), provided management oversight and reviewed the project for archaeological resources. Rincon Archaeologist and Cultural Resources Project Manager Leanna Flaherty, MA, RPA, provided project management, conducted the Native American and historical group outreach, and is a contributing author of this report. Both Ms. Haas and Ms. Flaherty meet the SOI's Professional Qualifications Standards for prehistoric and historic archaeology. Architectural Historian Ashley Losco, MHP, conducted the built environmental review for the project and is a contributing author of this report. Ms. Losco meets the SOI's Professional Qualifications Standards for history and architectural history. Mark Strothers MA, RPA, was a contributing author to this report. John C. Bergner IV, MA, RPA, was the field lead for this project and is also a contributing author to this report. Mr. Strothers and Mr. Bergner meet the SOI's Professional Qualifications Standards for historic and prehistoric archaeology. Geographic Information Systems Analyst Allysen Valencia prepared the figures found in this report.

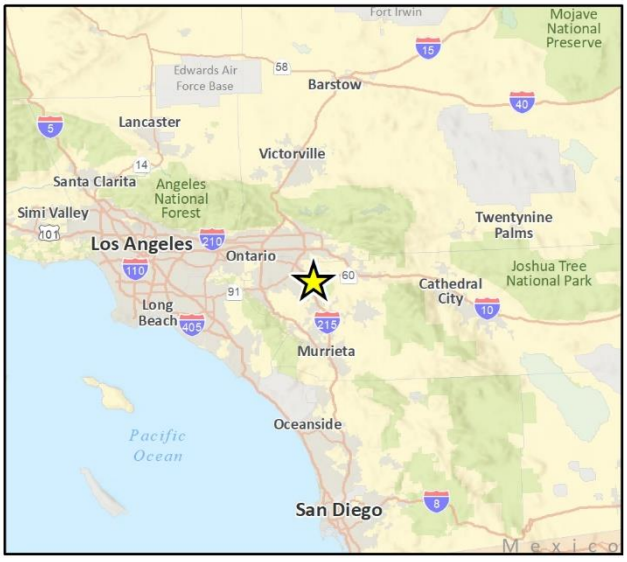
**Figure 1 Regional Location Map**



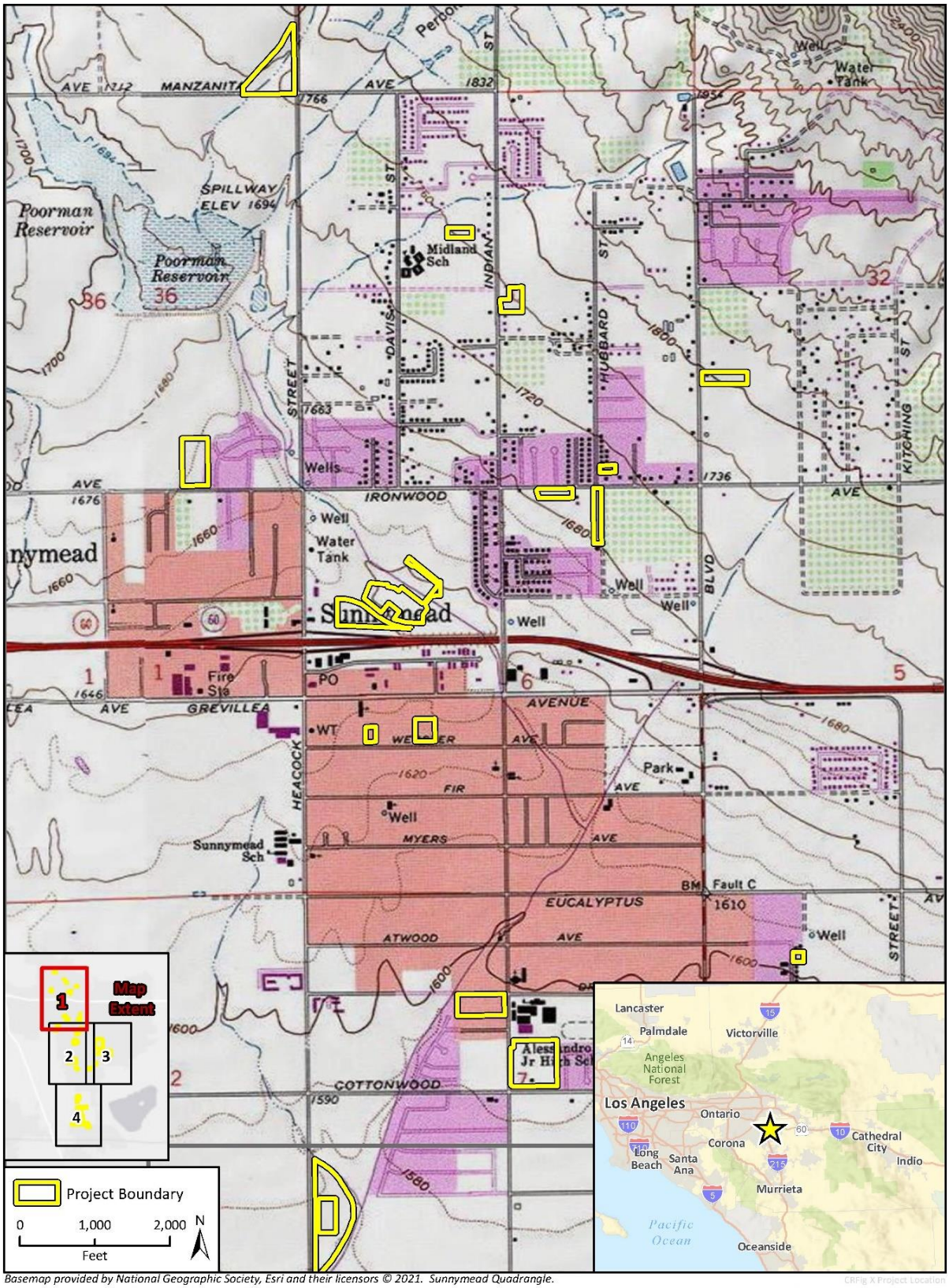

*Imagery provided by Esri and its licensors © 2021.*

Project Location

N

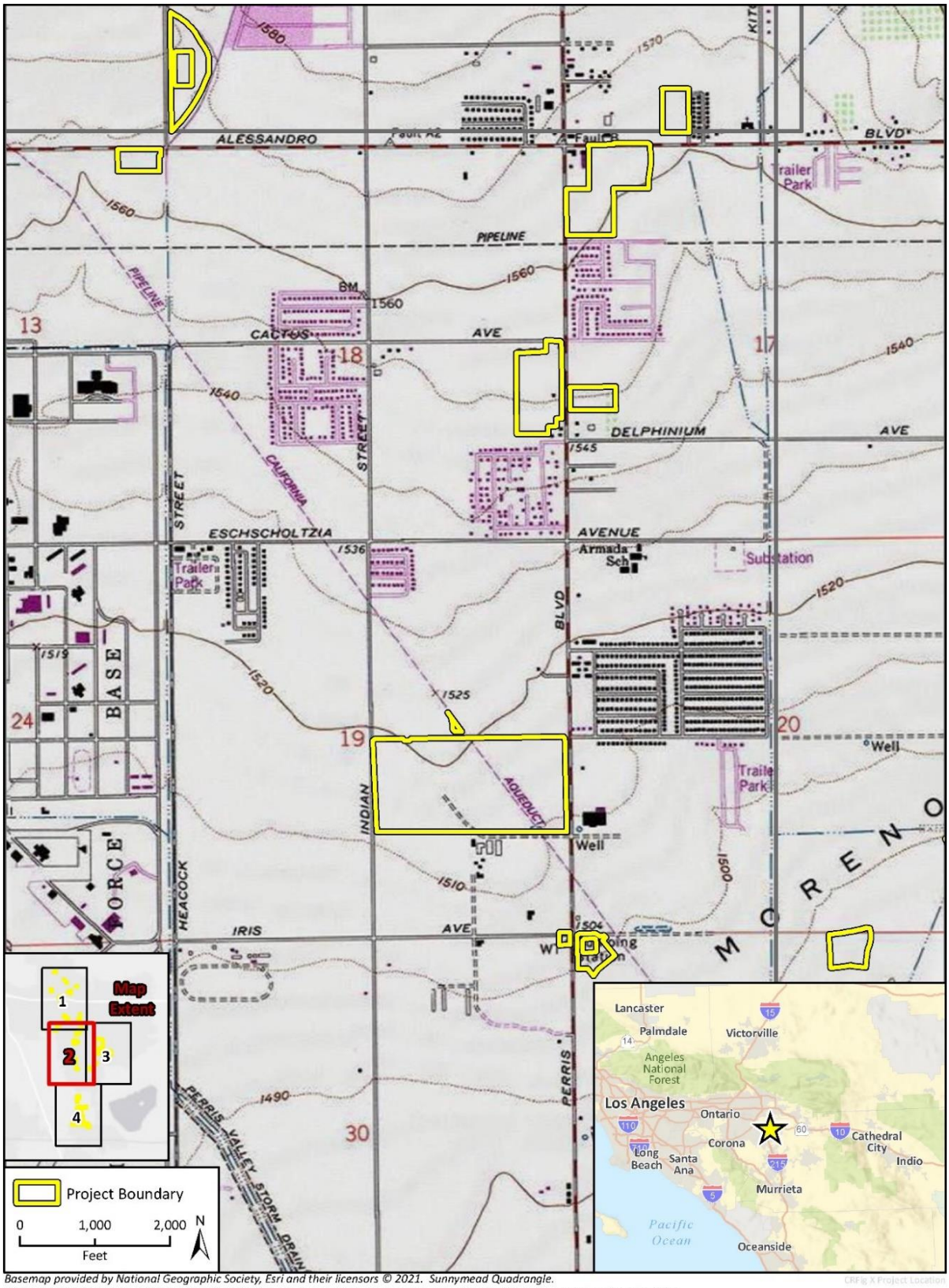


## Figure 2a Project Location Map



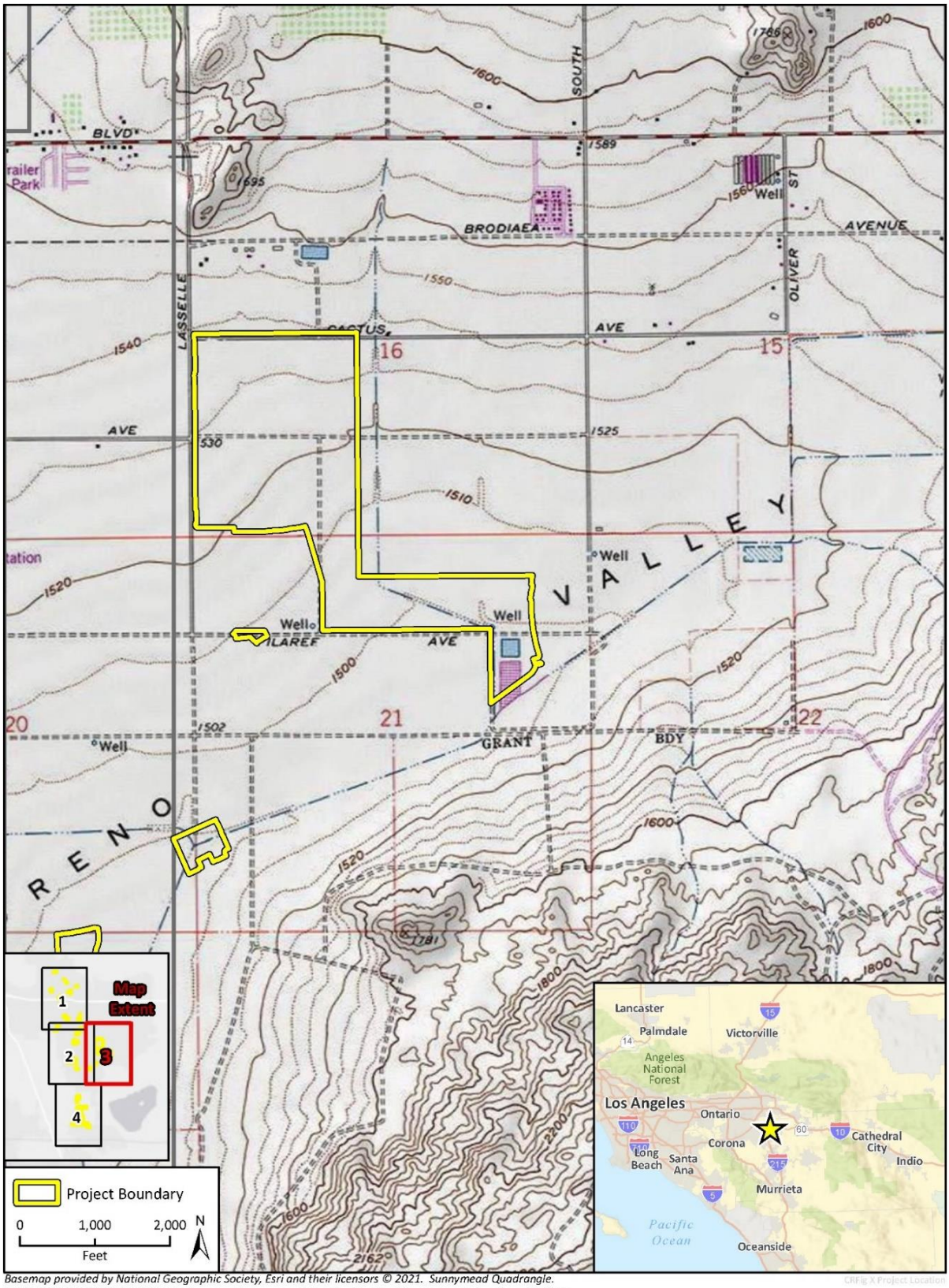

*Basemap provided by National Geographic Society, Esri and their licensors © 2021. Sunnymead Quadrangle.*
*T02S R03W S31,32 & T03S R03W S06-08 & T02S R04W S25,36 & T03S R04W S12. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may havechanged since the original topographic map was assembled.*

**Figure 2b Project Location Map**



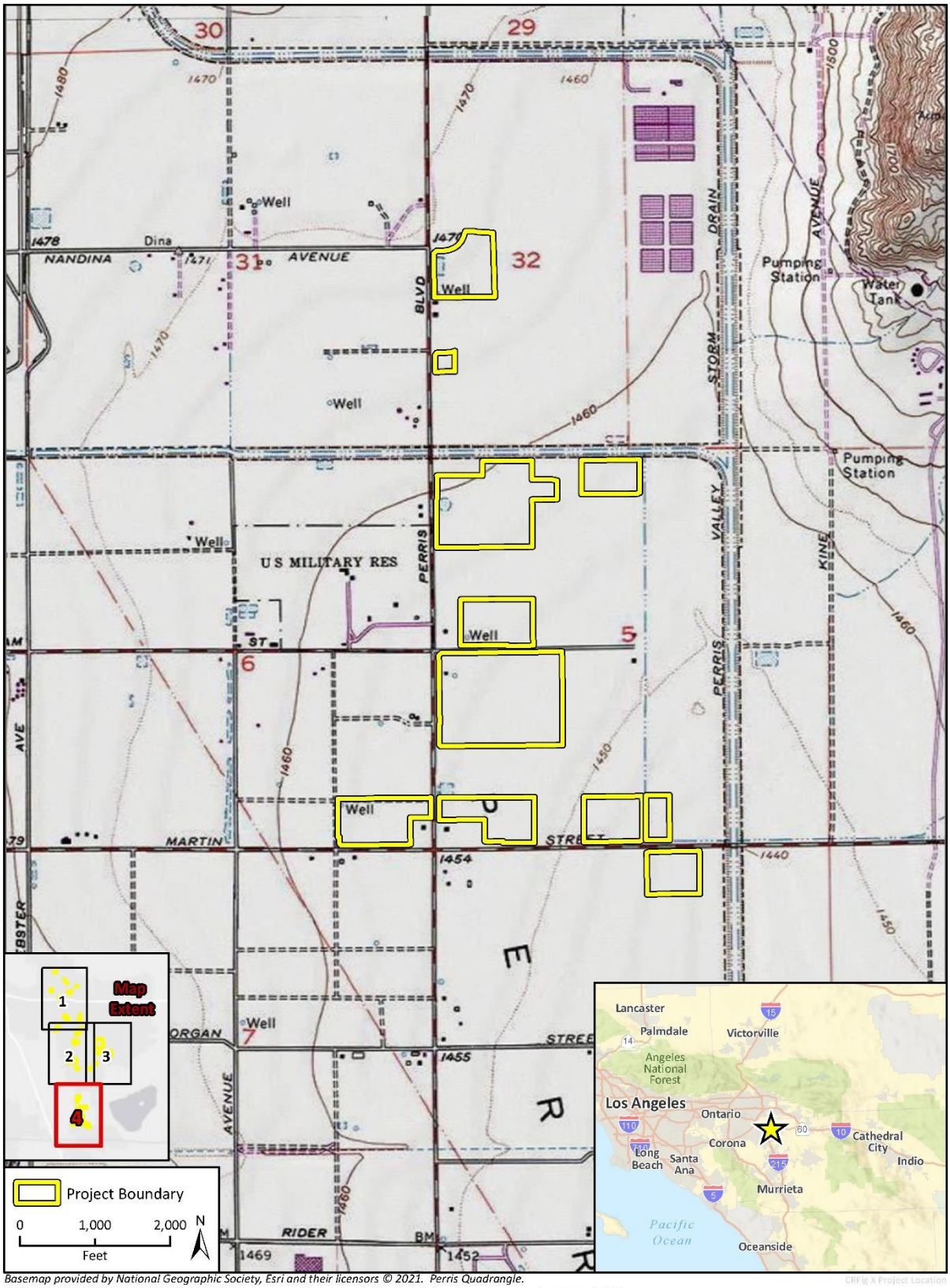

*Basemap provided by National Geographic Society, Esri and their licensors © 2021. Sunnymead Quadrangle. T03S R03W S07,08,17-20,29,30 & T03S R04W S12,13. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may havechanged since the original topographic map was assembled.*

## Figure 2c Project Location Map




*Basemap provided by National Geographic Society, Esri and their licensors © 2021. Sunnymead Quadrangle. T03S R03W S16,17,20,21,28,29. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may havechanged since the original topographic map was assembled.*

**Figure 2d Project Location Map**




*Basemap provided by National Geographic Society, Esri and their licensors © 2021. Perris Quadrangle.*
*T03S R03W S31,32 & T04S R03W S05,06,08. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may havechanged since the original topographic map was assembled.*

# 2 Regulatory Setting

This section includes a discussion of the applicable state, and local laws, ordinances, regulations, and standards governing cultural resources, to which the proposed project should adhere before and during implementation.

## 2.1 California Environmental Quality Act

California Public Resources Code (PRC) Section 21804.1 requires lead agencies determine if a project could have a significant impact on historical or unique archaeological resources. As defined in PRC Section 21084.1, a historical resource is a resource listed in, or determined eligible for listing in, the California Register of Historical Resources (CRHR), a resource included in a local register of historical resources or identified in a historical resources survey pursuant to PRC Section 5024.1(g), or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant. PRC Section 21084.1 also states resources meeting the above criteria are presumed to be historically or cultural significant unless the preponderance of evidence demonstrates otherwise. Resources listed in the National Register of Historic Places (NRHP) are automatically listed in the CRHR and are, therefore, historical resources under CEQA. Historical resources may include eligible built-environment resources and archaeological resources of the precontact or historic periods.

CEQA Guidelines Section 15064.5(c) provides further guidance on the consideration of archaeological resources. If an archaeological resource does not qualify as a historical resource, it may meet the definition of a "unique archaeological resource" as identified in PRC Section 21083.2. PRC Section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: 1) it 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, or 3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological resource does not qualify as a historical or unique archaeological resource, the impacts of a project on those resources will be less than significant and need not be considered further (CEQA Guidelines Section 15064.5[c][4]). CEQA Guidelines Section 15064.5 also provides guidance for addressing the potential presence of human remains, including those discovered during the implementation of a project.

According to CEQA, an impact that results in a substantial adverse change in the significance of a historical resource is considered a significant impact on the environment. A substantial adverse change could result from physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired (CEQA Guidelines §15064.5 [b][1]). Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR or a local register (CEQA Guidelines §15064.5[b][2][A]).

If it can be demonstrated that 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 §21083.2[a][b]).

Section 15126.4 of the CEQA Guidelines stipulates an EIR shall describe feasible measures to minimize significant adverse impacts. In addition to being fully enforceable, mitigation measures must be completed within a defined time period and be roughly proportional to the impacts of the project. Generally, a project which is found to comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (the Standards) is considered to be mitigated below a level of significance (CEQA Guidelines Section 15126.4 [b][1]). For historical resources of an archaeological nature, lead agencies should also seek to avoid damaging effects where feasible. Preservation in place is the preferred manner to mitigate impacts to archaeological sites; however, data recovery through excavation may be the only option in certain instances (CEQA Guidelines Section 15126.4[b][3]).

## National Register of Historic Places

Although the project does not have a federal nexus, properties which are listed in or have been formally determined eligible for listing in the NRHP are automatically listed in the CRHR. The following is therefore presented to provide applicable regulatory context. The NRHP was authorized by Section 101 of the National Historic Preservation Act and is the nation's official list of cultural resources worthy of preservation. The NRHP recognizes the quality of significance in American, state, and local history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects. Per 36 CFR Part 60.4, a property is eligible for listing in the NRHP if it meets one or more of the following criteria:

**Criterion A:** Are associated with events that have made a significant contribution to the broad patterns of our history

**Criterion B:** Are associated with the lives of persons significant in our past

**Criterion 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

**Criterion D:** Have yielded, or may be likely to yield, information important in prehistory or history

In addition to meeting at least one of the above designation criteria, resources must also retain integrity. The National Park Service recognizes seven aspects or qualities that, considered together, define historic integrity. To retain integrity, a property must possess several, if not all, of these seven qualities, defined as follows:

**Location:** The place where the historic property was constructed or the place where the historic event occurred

**Design:** The combination of elements that create the form, plan, space, structure, and style of a property

**Setting:** The physical environment of a historic property

**Materials:** The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property

**Workmanship:** The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory

**Feeling:** A property's expression of the aesthetic or historic sense of a particular period of time

**Association:** The direct link between an important historic event or person and a historic property

Certain properties are generally considered ineligible for listing in the NRHP, including cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions, relocated structures, or commemorative properties. Additionally, a property must be at least 50 years of age to be eligible for listing in the NRHP. The National Park Service states that 50 years is the general estimate of the time needed to develop the necessary historical perspective to evaluate significance (National Park Service 1997:41). Properties which are less than 50 years must be determined to have "exceptional importance" to be considered eligible for NRHP listing.

## California Register of Historical Resources

The CRHR was established in 1992 and codified by PRC §§5024.1 and 4852. The CRHR is an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change (Public Resources Code, 5024.1(a)). The criteria for eligibility for the CRHR are consistent with the NRHP criteria but have been modified for state use in order to include a range of historical resources that better reflect the history of California (Public Resources Code, 5024.1(b)). Unlike the NRHP however, the CRHR does not have a defined age threshold for eligibility; rather, a resource may be eligible for the CRHR if it can be demonstrated sufficient time has passed to understand its historical or architectural significance (California Office of Historic Preservation 2006). Furthermore, resources may still be eligible for listing in the CRHR even if they do not retain sufficient integrity for NRHP eligibility (California Office of Historic Preservation 2006). Generally, the California Office of Historic Preservation recommends resources over 45 years of age be recorded and evaluated for historical resources eligibility (California Office of Historic Preservation 1995:2).

A properties is eligible for listing in the CRHR if it meets one of more of the following criteria:

**Criterion 1:** Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage

**Criterion 2:** Is associated with the lives of persons important to our past

**Criterion 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

**Criterion 4:** Has yielded, or may be likely to yield, information important in prehistory or history

### California Assembly Bill 52 of 2014

As of July 1, 2015, Assembly Bill (AB) 52 was enacted and expands CEQA by defining a new resource category, "tribal cultural resources". AB 52 establishes, "a project with an effect that may cause a

substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states the CEQA lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3).

PRC Section 21074 (a)(1)(A) and (B) define tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and that meets at least one of the following criteria, as summarized in CEQA Guidelines Appendix G:

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 Section 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 with California Native American tribes that must be completed before a CEQA document can be certified. 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." California Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

## California Health and Safety Code

Section 7050.5 of the California Health and Safety Code states that in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined if the remains are subject to the Coroner's authority. If the human remains are of Native American origin, the coroner must notify the NAHC within 24 hours of this identification.

## California Public Resources Code §5097.98

Section 5097.98 of the California Public Resources Code states that the NAHC, upon notification of the discovery of Native American human remains pursuant to Health and Safety Code §7050.5, shall immediately notify those persons (i.e., the Most Likely Descendant [MLD]) that it believes to be descended from the deceased. With permission of the landowner or a designated representative, the MLD may inspect the remains and any associated cultural materials and make recommendations for treatment or disposition of the remains and associated grave goods. The MLD shall provide recommendations or preferences for treatment of the remains and associated cultural materials within 48 hours of being granted access to the site.

# 3 Natural and Cultural Setting

## 3.1 Natural Setting

The project site 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 site 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, chía, 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 California Historical Resources Information System Records Search

In July 2021, a search of the California Historical Resources Information System (CHRIS) at the Eastern Information Center (EIC) was conducted by EIC staff at the University of California, Riverside (Appendix B). The EIC is the official state repository for cultural resources records and reports for the county in which the project falls. The purpose of the records search was to identify previously recorded cultural resources, as well as previously conducted cultural resources studies within the project site and a 0.5-mile radius. Rincon also reviewed the NRHP, the CRHR, the California Historical Landmarks list, and the Built Environment Resources Directory (BERD), as well as its predecessor the California State Historic Property Data (HPD) File. Additionally, Rincon reviewed the Archaeological Determination of Eligibility (ADOE) list.

### Previously Conducted Studies

The CHRIS records search identified 88 previously conducted cultural resources studies completed within 0.5 miles of the project area between 1953 and 2019 (Table 1). Twenty-two of these studies overlap portions of the project area and two (RI-09077 and RI-10415) discuss two cultural resources (P-33-023946 and P-33-019865, respectively) in the project area. Reports RI-09077and RI-10415 are summarized below. See Appendix B for the full CHRIS records search results.

**Table 1 Cultural Resources Studies Previously Conducted within the Project Area**

| Report Number | Author(s) | Year | Title | Relevant Resources Discussed |
|---|---|---|---|---|
| RI-00612 | Dover | 1979 | *Cultural Resource Inventory Box Canyon Ranch Preliminary Plan, Riverside County, California* | None |
| RI-01843 | Scientific Resource Surveys, Inc. | 1984 | *Cultural Resource Survey Report on Wolfskill Ranch* | None |
| RI-02061 | Lerch | 1986 | *Archaeological Survey of Festival at Moreno Valley, Riverside County, California* | None |
| RI-02171 | McCarthy | 1987 | *Cultural Resources Inventory for the City of Moreno Valley, Riverside County, California* | None |
| RI-03693 | Foster et al. | 1991 | *Cultural Resource Investigation: Inland Feeder Project, Metropolitan Water District of Southern California* | None |
| RI-04211 | Love and Tang | 1999 | *Identification and Evaluation of Historic Properties for the Perris Valley Industrial Corridor Infrastructure Project near the City of Perris, Riverside County, California* | None |
| RI-07127 | Jordan | 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)* | None |

| Report Number | Author(s) | Year | Title | Relevant Resources Discussed |
|---|---|---|---|---|
| RI-07538 | Tang et al. | 2007 | *Cultural Resources Technical Report, North Perris Industrial Specific Plan, City of Perris, Riverside County, California* | None |
| RI-07691 | Clifford and Smith | 2005 | *Cultural Resources Study for the Stratford Ranch Project* | None |
| RI-08802 | Tang et al. | 2012 | *Phase I Archaeological Assessment: Moreno Master Drainage Plan Revision* | None |
| RI-09077 | McKenna | 2014 | *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* | 33-023946 |
| RI-09311 | Wills | 2014 | *Cultural Resource Records Search and Site Visit Results for Verizon Wireless Candidate 'Gentian', 16015 North Perris Boulevard, Moreno Valley, Riverside County, California* | None |
| RI-09784 | Kraft and Smith | 2016 | *Phase I Cultural Resources Survey of the Moreno Valley Festival Project* | None |
| RI-09806 | Kraft and Smith | 2016 | *Phase I Cultural Resources Survey of the Moreno Valley Festival Project* | None |
| RI-10150 | Brunzell | 2016 | *Cultural Resources Assessment: The Alessandro Apartments Project, City of Moreno Valley, Riverside County, California* | None |
| RI-10199 | Fulton | 2014 | *Discovery and Monitoring Plan for the Mid-County Parkway* | None |
| RI-10251 | Smith | 2017 | *Phase I Cultural Resources Survey for the First Perry Logistics Center Project and Off- Site Improvements, Perris, California* | None |
| RI-10397 | Smith | 2017 | *Class lll Archaeological study for the First Perry Logistics Center Project for Section 106 Compliance* | None |
| RI-10415 | Castells and George | 2017 | *Cultural Resources Assessment for the Markham/Perris Project, City of Perris, Riverside County, California* | 33-019865 |
| RI-10445 | Clark and Garcia | 2014 | *Cultural Resources Assessment for the Proposed Isla Verde Residential Project, City of Moreno Valley, County of Riverside, California* | None |
| RI-10784 | Stropes et al. | 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* | None |
| RI-10802 | Stropes et al. | 2019 | *A Class III Historic Resources Study for the Moreno Valley Festival Project for Section 106 Compliance* | None |

Source: Eastern Information Center, October 2021

## RI-09077

This Phase I Cultural Resources Survey Report for the proposed Walmart Supercenter Project in Moreno Valley was prepared by Jeanetta McKenna in 2014 and included the central portion of the APE (APNs 485-220-041). The study recorded one historical archaeological site (P-33-23936, remnants of a loading dock associated with a former farm) within the current project site. McKenna

recorded the feature as part of the larger holdings of Henry and Emile Barrow (approximately 20 acres). This property, in turn, was also part of the larger holdings of Camillo and Francis Martin (pre-1892-1912). Upon evaluation, however, McKenna found the property to be ineligible for listing in the NRHP, CRHR, or any local listings.

### RI-10415

This Phase I Cultural Resources Survey Report for the proposed Markham/Perris Industrial Development Project in the City of Perris was prepared by Justin Castells and Joan George in 2017 and included the southcentral portion of the APE (APNs 302-120-004, -006, -011,-012,-013,-014,-015,-016, -017, -018, -019, -020, -021, -022). The study relocated one previously recorded historical archaeological site (P-33-019865, remnants of a homestead and water conveyance system) within the current APE. Castells and George found the site largely unchanged and concurred with earlier recommendations that 33-019865 is ineligible for listing on the NRHP/CRHR.

## Previously Recorded Resources

Thirty-six cultural resources have been documented within a 0.5-mile radius of the project site (Table 2). Of these, 17 are historic-period built environment resources comprised of 13 historical properties and four water conveyance features, and 19 are archaeological, including 17 sites (10 historic-period and seven prehistoric), as well as two isolates (one historic-period and one prehistoric). The recorded boundaries of four resources (P-33-011604, P-33-016078, P-33-019865, and P-33-023936) are within the project site and the recorded boundary of one (P-33-008699) is directly adjacent. These five resources are further summarized below.

**Table 2 Previously Recorded Cultural Resources within 0.5 Miles of the Project Area**

| Resource Number | Resource Type | Description | Recorder(s) and Year(s) | NRHP/CRHR Status[1] | Relationship to Project Site |
|---|---|---|---|---|---|
| P-33-000535 | Prehistoric archaeological site | Bedrock milling features (n=7) | Ambrose 1972<br>Cary 1983 | Unevaluated | Outside |
| P-33-000536 | Prehistoric archaeological site | Bedrock milling features (n=2) | T. Ambrose 1972<br>D. Cary 1983 | Unevaluated | Outside |
| P-33-000857 | Prehistoric archaeological site | Bedrock milling features (n=15) (n=1) basalt flake | Weaver 1975<br>Prior et al. 1987<br>Ballester and Perez 2013 | Unevaluated | Outside |
| P-33-002994 | Prehistoric archaeological site | Bedrock milling features (n=10) and (n=1) mano | Mason 1984 | Unevaluated | Outside |
| P-33-003159 | Prehistoric archaeological site | Bedrock milling features (n=3) | Prior et al. 1987<br>Ballester and Perez 2013<br>Ballester 2015 | Unevaluated | Outside |
| P-33-003341 | Prehistoric archaeological site | Bedrock milling features (n=3) | Prior et al. 1987<br>Ballester and Perez 2013 | Unevaluated | Outside |

| Resource Number | Resource Type | Description | Recorder(s) and Year(s) | NRHP/CRHR Status[1] | Relationship to Project Site |
|---|---|---|---|---|---|
| P-33-003342 | Prehistoric archaeological site | Bedrock milling feature (n=1) | Neiditch 1987<br>Ballester and Perez 2013 | Unevaluated | Outside |
| P-33-005775 | Historic-period built environment | March Air Force Base Well and Well House | Diehl and Montijo 1999<br>Earth Tech 1994 | Recommended NRHP ineligible | Outside |
| P-33-007276 | Historic-period built environment | Single family property | Warner 1983 | Unevaluated | Outside |
| P-33-007280 | Historic-period built environment | Single family property | Warner 1983 | Unevaluated | Outside |
| P-33-007284 | Historic-period built environment | Single family property | Warner 1983 | Unevaluated | Outside |
| P-33-007285 | Historic-period built environment | Multifamily property | Warner 1983 | Unevaluated | Outside |
| P-33-007286 | Historic-period built environment | Single family property | Warner 1983 | Unevaluated | Outside |
| P-33-007287 | Historic-period built environment | Single family property | Warner 1983 | Unevaluated | Outside |
| P-33-007288 | Historic-period built environment | Single family property | Warner 1983 | Unevaluated | Outside |
| P-33-007289 | Historic-period built environment | Single family property | Warner 1983 | Unevaluated | Outside |
| P-33-007290 | Historic-period built environment | Single family property | Warner 1983 | Unevaluated | Outside |
| P-33-008699 | Historic-period built environment | Reservoir and water conveyance system | Love 1999 | Recommended NRHP/CRHR ineligible | ***Adjacent*** |
| P-33-011604 | Historic-period built environment | Well | Goodwin 2001 | Appears to be individually eligible for local listing or designation | ***Within*** |
| P-33-014109 | Historical-period archaeological site | Foundations, structure pads, and refuse scatter | Chandler et al. | Unevaluated | Outside |
| P-33-014136 | Prehistoric archaeological site | Lithic scatter (n=16 flakes), Bedrock milling features (n=4), and (n=1) crescent | Clifford 2004<br>Goodwin 2011 | Unevaluated | Outside |
| P-33-015301 | Prehistoric isolate | Granitic pestle | Chandler 2005 | NRHP/CRHR ineligible | Outside |
| P-33-015854 | Historic-period isolate | Concrete standpipe | Sanka 2007 | NRHP/CRHR ineligible | Outside |

| Resource Number | Resource Type | Description | Recorder(s) and Year(s) | NRHP/CRHR Status[1] | Relationship to Project Site |
|---|---|---|---|---|---|
| P-33-016078 | Historic-period archaeological site | Foundations, structure pads, and remnants of a water conveyance system | Strudwick et al. 2005 | Unevaluated | ***Within*** |
| P-33-17202 | Historic-period built environment | Single family property | Smallwood 2008 | Recommended NRHP/CRHR ineligible | Outside |
| P-33-17203 | Historic-period built environment | Single family property | Smallwood 2008 | Recommended NRHP/CRHR ineligible | Outside |
| P-33-19865 | Historic-period archaeological site | Remnants of a homestead and water conveyance system | Strudwick et al. 2007<br>Moloney and Elder 2017 | Recommended NRHP/CRHR ineligible | ***Within*** |
| P-33-21503 | Historic-period archaeological site | Remnants of grain mill facility | Kay 2013 | Unevaluated | Outside |
| P-33-23936 | Historic-period built environment | Remnants of farm | McKenna 2014 | Recommended NRHP/CRHR ineligible | ***Within*** |
| P-33-24195 | Historic-period archaeological site | Remnants of farm | Smallwood 2008 | Unevaluated | Outside |
| P-33-028072 | Historic-period archaeological site | Refuse scatter | Morales 2015 | Unevaluated | Outside |
| P-33-028073 | Historic-period archaeological site | Refuse scatter | Morales 2015 | Unevaluated | Outside |
| P-33-028200 | Historic-period built environment | Cactus Avenue Drainage Channel | Boites 2018 | Recommended NRHP/CRHR ineligible | Outside |
| P-33-028621 | Historic-period archaeological | Foundation, well, road | Garrison 2019 | Recommended CRHR ineligible | Outside |
| P-33-028824 | Historic-period archaeological | Foundation, downed powerline pole, and refuse scatter | Goodwin 2019 | Unevaluated | Outside |
| P-33-029118 | Historic-period built environment | Water conveyance system | Garrison and Smith 2020 | Recommended NRHP/CRHR ineligible | 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, October 2021

## P-33-008699

Resource P-33-008699 consists of an earthen reservoir and adjoining square “standpipe”. The resource was not evaluated for the CRHR or NRHP during its initial recording because Love (1999) was not able to determine if the features were over 50 years old. This site is located in a tilled field adjacent to the project site and will not be directly impacted by the project; therefore, it will not be discussed any further below.

### P-33-011604

Resource P-33-011604 consists of an historic agricultural well with turbine pump dating to the 1930s or 1940s that is likely the remnant of a pre-existing irrigation system. The site was not evaluated for the NRHP or CRHR upon its recordation by Goodwin in 2001.

### P-33-016078

Resource P-33-016078 consists of the remnants of an historic-period water conveyance system with four features including a water reservoir, a concrete pad with an electric pump, a water trough, and a second larger concrete pad likely used for parking. The site is dated to 1950 and is likely related to agricultural or ranching activities in the area. The site was not evaluated for the NRHP or CRHR upon its recordation by Strudwick et al. in 2005.

### P-33-019865

Resource P-33-019865 consists of the remains of a historic homestead and water conveyance system. The site was recommended not eligible for the CRHR and NRHP by Lawson (2006) due to its lack of data potential or association with significant events or people. The resource was relocated by Castells and George in 2017 and it was found to be in the same condition as its initial recording. Castells and George concurred with the initial recommendation, also finding it to be NRHP/CRHR ineligible.

### P-33-023936

Resource P-33-023936 consists of a historic alfalfa field with a loading dock in the western half. McKenna recorded the feature as part of the larger holdings of Henry and Emile Barrow as well as part of the larger holdings of Camillo and Francis Martin (pre-1892-1912). The site was recommended NRHP/CRHR ineligible by McKenna in 2014. The site record also notes that the property was slated to be redeveloped as a commercial property.

## 4.2 Sacred Lands File Search

Rincon contacted the Native American Heritage Commission (NAHC) on July 1, 2021, to request a Sacred Lands File (SLF) search of the project area, as well as a contact list of Native Americans culturally affiliated with the project area. On July 25, 2021, the NAHC responded that the SLF search results were negative for the project site. Appendix C provides documentation of communication with the NAHC and results of the SLF search.

## 4.3 Aerial Imagery and Historical Topographic Maps Review

Rincon completed a review of historical topographic maps and aerial imagery to ascertain the development history of the project area. A review of historical maps and aerial photographs of the project area from the 1930s to the 2000s show much of the surrounding area was characterized by agricultural fields intermixed with sparse areas of residential development (NETROnline 2021). The aerial imagery indicates that Lake Perris was not constructed until sometime between 1967 and 1978, and much of the project area experienced rapid development in the 1980s and 1990s. By the

early twenty-first century, most of the agricultural lands are gone, replaced by residential, commercial, and industrial development (NETROnline 2021; FrameFinder (ucsb.edu)).

# 5 Field Survey

## 5.1 Methods

Between October 25 to 27, 2021, Rincon archaeologists John C. Bergner IV, Rachel Bilchak, and Lilibeth Tome conducted a pedestrian field survey of the project area, which consists of 41 different individual parcels with up to 22 proposed well locations. When possible, each of the parcels were inspected by walking a series of transects spaced at approximately 15-to-20-meter (49-65 foot) intervals. Approximately 50% of the project area was inaccessible for pedestrian survey due to either being blocked off by construction fencing or because the area had already been paved over and/or developed. For example, one parcel had been completely developed as a result of the construction of an Amazon distribution center.

Any exposed ground surfaces were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock [FAR]), ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historic-period debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows and drainages were also visually inspected. Survey accuracy was maintained using a handheld GPS unit and a georeferenced map of the project site. Site characteristics and survey conditions were documented using field records and a digital camera. Copies of the survey notes and digital photographs are maintained at the Rincon Redlands office.

## 5.2 Findings

The pedestrian survey did not identify any new archaeological or built environment cultural resources within the project area. Rincon archaeologists attempted to relocate the four previously recorded sites located within the project area; only one was successfully revisited as the other three have been destroyed.

Modern construction debris, trash, and gravel were observed throughout the project area, as well as current construction and staging activities. Heavy ground disturbance due to demolition, grading, and construction activities was observed throughout many of the 41 parcels. The entire project site has been previously disturbed in some manner due to ground-clearing activities such as tilling, grading, construction, landscaping, or development. Several parcels are entirely covered with pavement and existing facilities. Additionally, approximately 50% of the parcels were inaccessible, being blocked off completely by construction fencing. Maps showing the proposed locations of each monitoring well can be found in Appendix A, along with a table (Table 3) describing each parcel's survey status along with additional relevant information. 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 project area have been extensively disturbed.

### Previously Recorded Resources

#### P-33-011604

Resource P-33-011604 consists of an historic-period agricultural well with turbine pump dating to the 1930s or 1940s that is likely the remnant of a pre-existing irrigation system. The site was

previously recorded by LSA Associates, Inc., in 2011 but was not evaluated for the CRHR or NRHP. Rincon archaeologists attempted to revisit resource P-33-011604 for the current field effort; however, they were unable to relocate the resource. The site has likely been destroyed as a result of development. Because the resource has been destroyed, Rincon provides no significance evaluation.

## P-33-016078

Resource P-33-016078 consists of the remnants of an historic-period water conveyance system with four features including a water reservoir, a concrete pad with an electric pump, a water trough, and a second larger concrete pad likely used for parking. The resource was recorded by LSA Associates Inc., in 2006 and dated to 1950 based on an inscription in the reservoir, likely related to agricultural or ranching activities in the area; however, the resource was not evaluated for the CRHR or NRHP. Rincon archaeologists revisited resource P-33-016078 on October 25, 2021, for the current field effort and noted that the site retains the same condition as that in 2006 when it was recorded by LSA Associates. As part of this project, P-33-016078 was not evaluated as it is assumed the project will not alter the resource. The disturbance that will result from the proposed groundwater monitoring wells will be predominantly below ground, and the 100-ft construction buffer does not encroach on the resource; therefore, it has no potential to be impacted by the project and it was not subjected to a significance evaluation.

## P-33-019865

Resource P-33-019865 consists of the remains of a historic homestead and water conveyance system. The resource was recommended not eligible for the CRHR and NRHP by Lawson (2006) due to its lack of data potential or association with significant events or people. Rincon archaeologists attempted to revisit resource P-33-019865 for the current field effort; however, they were unable to relocate the resource because an Amazon distribution center has been built on the parcel sometime within the last two years. The resource has been destroyed as a result of the construction. Because the resource has been destroyed, Rincon provides no significance evaluation.

## P-33-023936

Resource P-33-023936 consists of a historic-period alfalfa field with a loading dock in the western half. The resource was recommended not eligible for the CRHR and NRHP by Jeanette A. McKenna in 2014. The resource record noted that the property was slated to be redeveloped as a commercial property. Rincon archaeologists attempted to revisit resource P-33-023936 for the current field effort; however, they were unable to access the parcel on which the resource is located. The entire parcel was closed off by construction fencing for a housing development. Rincon archaeologists took photos from the outside of the fence and were unable to see any evidence of the loading dock from that vantage point. The entire area has been bladed and it is likely that resource P-33-023936 was destroyed in the process. Based on current aerial imagery, the loading dock appears to be gone. Because the resource was inaccessible and has been destroyed, Rincon provides no significance evaluation.

**Photograph 1 Proposed location of MW-01, facing West**


**Photograph 2 Proposed location of MW-03, facing North**

**Photograph 3 Proposed location of MW-07a, facing South, inaccessible**

**Photograph 4 Proposed location of MW-09a, facing North**

**Photograph 5 Proposed location of MW-10b, facing North/Northeast**

**Photograph 6 Proposed location of Opt. D-1, facing Northwest**

# 6 Conclusions and Recommendations

Rincon archaeologists attempted to relocate the four previously recorded resources documented within the project site but were only able to positively identify one of the resources (P-33-016078). Two of the resources (P-33-011604 and P-33-019865) have been destroyed due to development. One of the resources (P-33-023936) could not be directly accessed during the survey but appeared, from a distance, to have been destroyed as a result of pre-construction blading. Examination of current aerial imagery of the area has confirmed that the resource has been demolished. As these sites are no longer extant, the resources require no management consideration. Resource P-33-016078 was revisited by Rincon archaeologists and the property appears in the same condition from its last evaluation in 2006. As part of this study, P-33-016078 was not evaluated, as the project will not directly or indirectly alter the resource. All of the features are located just outside of the proposed project area. Additionally, the proposed groundwater monitoring wells will be predominantly below ground, and the 100-ft. construction buffer does not encroach on the resource; therefore, it will not be affected, nor does it need to be evaluated at this time. No new archaeological or built environment resources were identified as a result of the pedestrian field survey that was conducted for this project.

No historic-period built environment resources are extant within the area proposed for construction, therefore Rincon recommends a finding of ***no impact to historical resources*** under CEQA.

The SLF search was returned with negative results and no Native American cultural resources were identified within the project area as a result of the records search. Given the level of previous ground disturbance within the project area (i.e., demolition of buildings, grading, and construction activities) the project site is considered to have low archaeological sensitivity. However, unanticipated discoveries during construction remain a possibility. Therefore, with the implementation of the recommended mitigation (below), Rincon recommends a finding of ***less than significant impact to archaeological resources*** under CEQA.

The following are recommended in the unlikely case of unanticipated discoveries during ground-disturbing activities. Also included below is a summary of existing regulations regarding the discovery of human remains.

## 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 an 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

Figures

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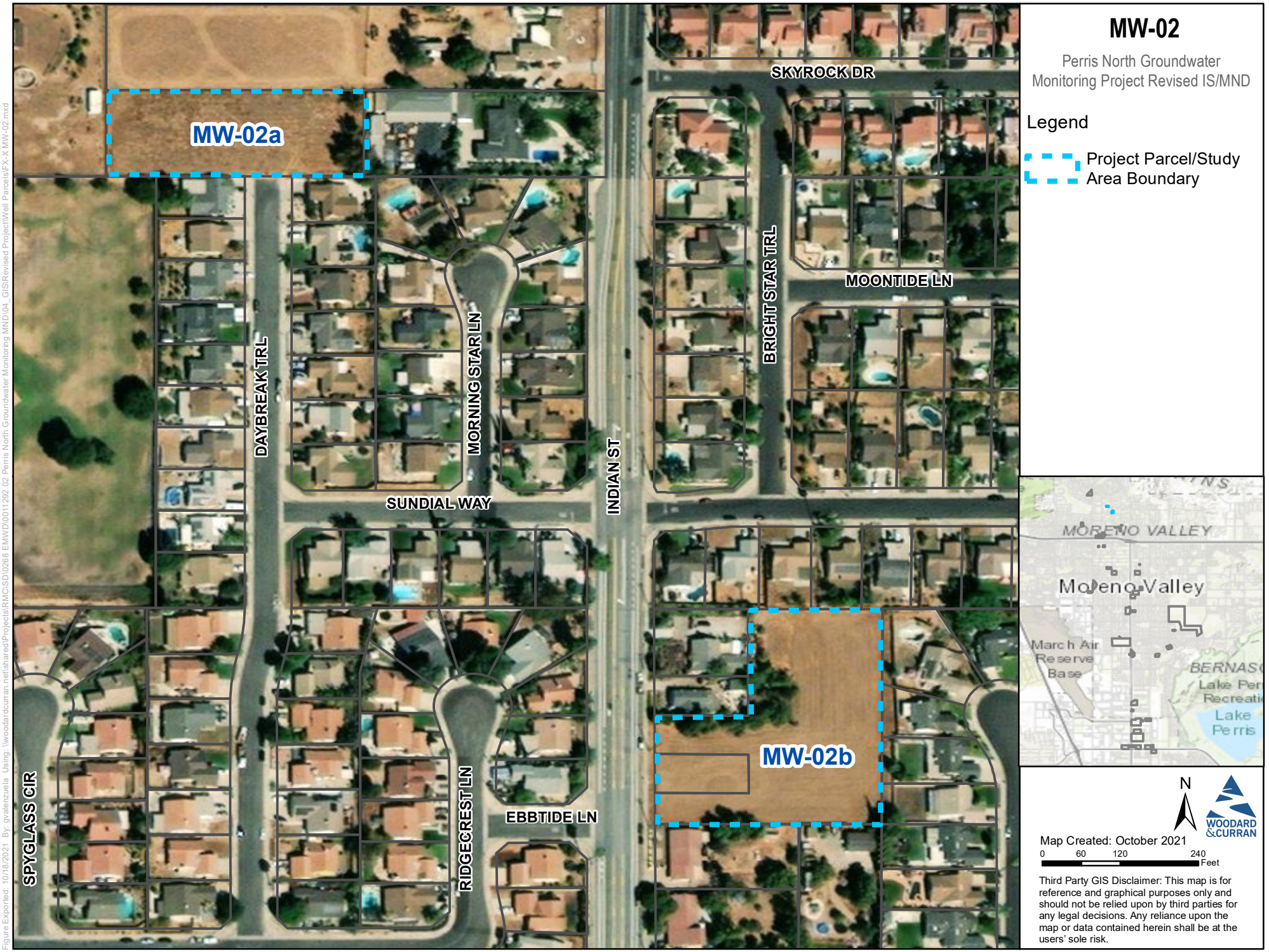
PINE FIELD DR
OAK FIELD DR
HAZELWOOD DR
REDBARK DR
HEACOCK ST
FENTON RD
MANZANITA AVE
COLD SPRING
MW-01
MW-01
Perris North Groundwater Monitoring Project Revised IS/MND
Legend
Project Parcel/Study Area Boundary
MORENO VALLEY
Moreno Valley
March Air Reserve Base
Lake Perris
N
WOODARD &CURRAN
Map Created: October 2021
0 50 100 200
Feet
Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk.
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-01.mxd




# MW-02

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary

N

WOODARD &CURRAN

Map Created: October 2021

0 60 120 240 Feet

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk.

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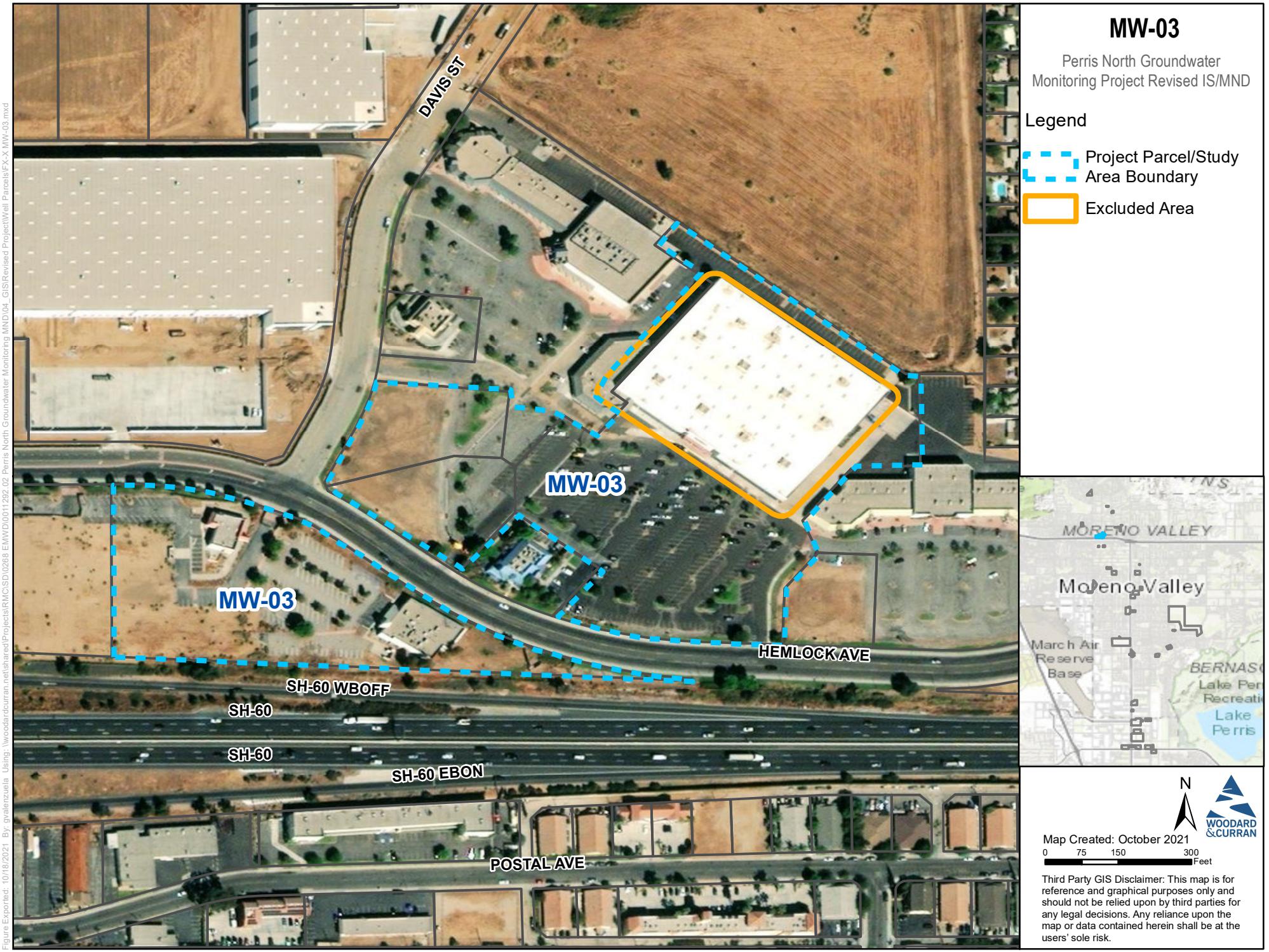
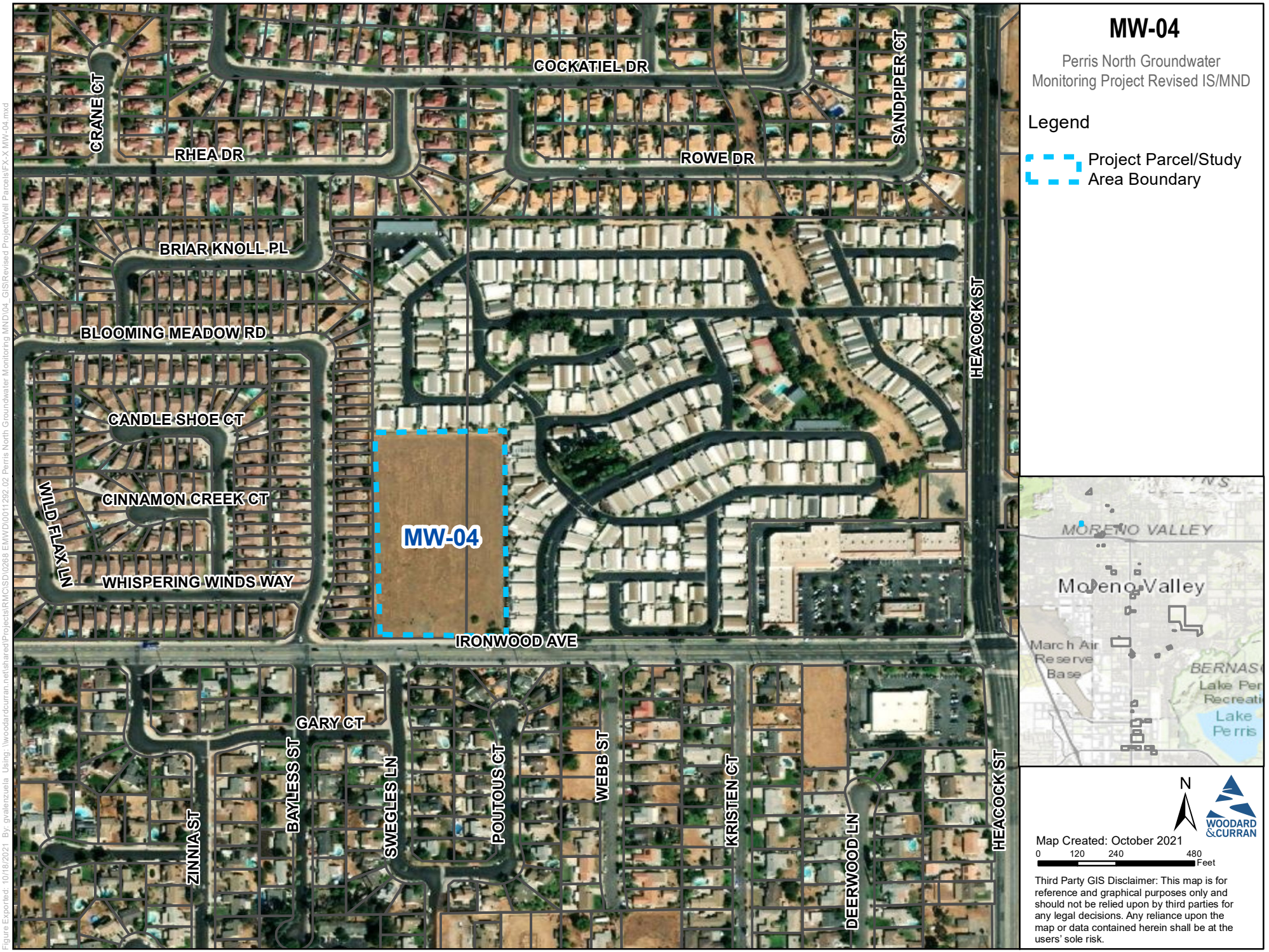

DAVIS ST
MW-03
MW-03
HEMLOCK AVE
SH-60 WBOFF
SH-60
SH-60
SH-60 EBON
POSTAL AVE
MW-03
Perris North Groundwater
Monitoring Project Revised IS/MND
Legend
Project Parcel/Study
Area Boundary
Excluded Area
MORENO VALLEY
Moreno Valley
March Air
Reserve
Base
Lake
Perris
N
WOODARD
&CURRAN
Map Created: October 2021
0 75 150 300
Feet
Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk.
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-03.mxd




# MW-04

Perris North Groundwater Monitoring Project Revised IS/MND

## Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 120 240 480 Feet

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Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RIVCNSD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-04.mxd


MW-05
Perris North Groundwater Monitoring Project Revised IS/MND
Legend
Project Parcel/Study Area Boundary
MW-05a
MW-05b
MW-05c
WELLER PL
WELBY PL
KILGORE ST
HUBBARD ST
FOUCH LN
IRONWOOD AVE
BAYBERRY CIR
AFTON WAY
ALCOVE PL
NEVIN PL
AARON DR
HARCLARE DR
SINALOA ST
LEAHY DR
Moreno Valley
March Air Reserve Base
Lake Perris
N
WOODARD &CURRAN
Map Created: October 2021
0 75 150 300
Feet
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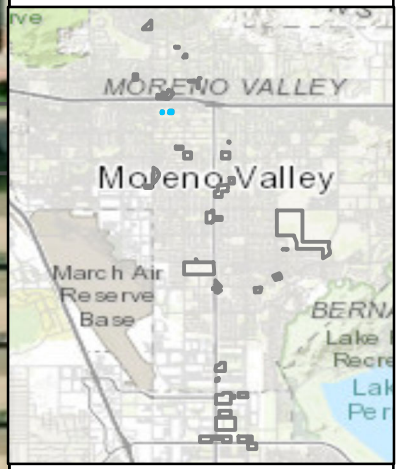
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-05.mxd


# MW-06

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 50 100 200 Feet

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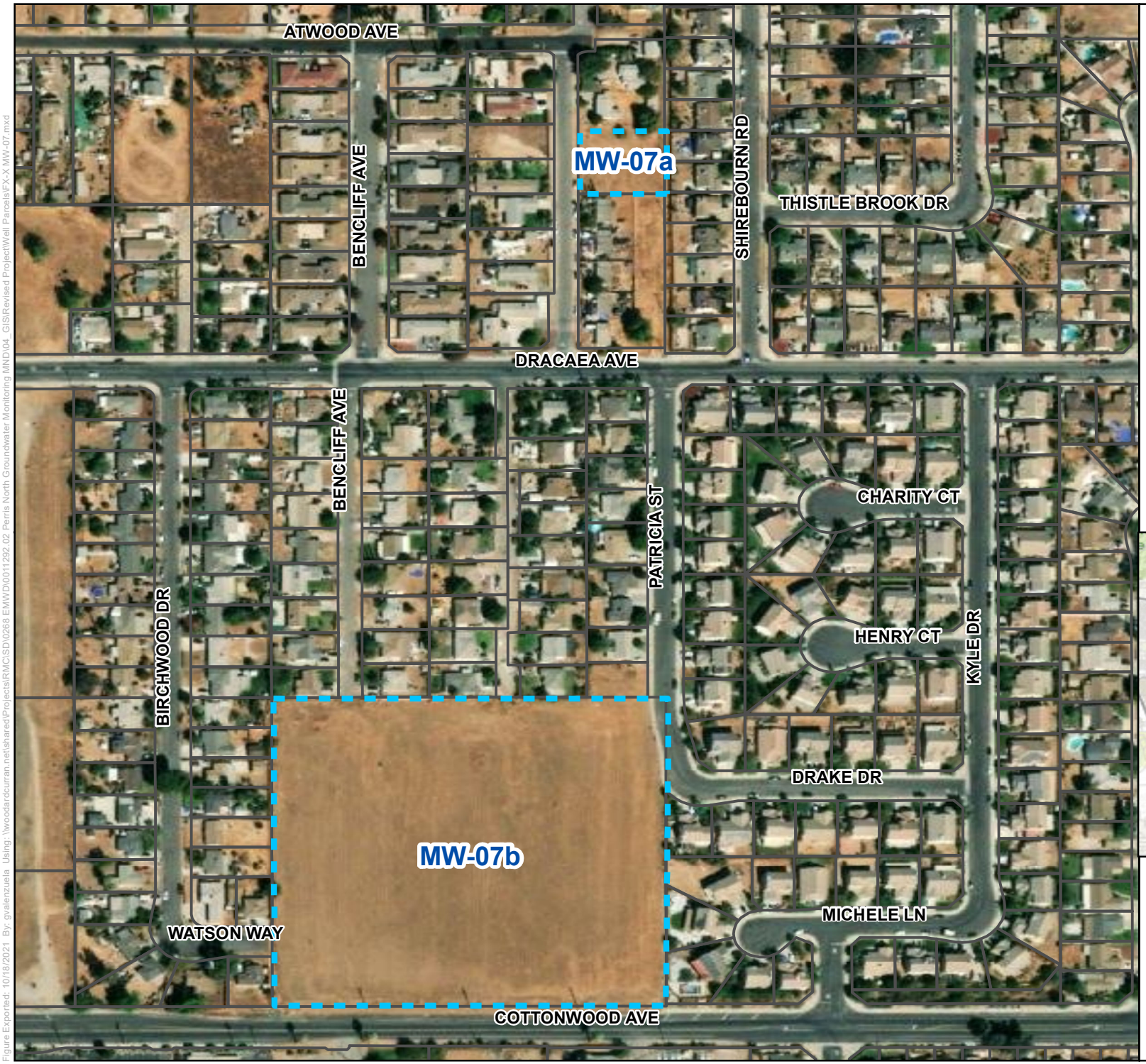
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-06.mxd

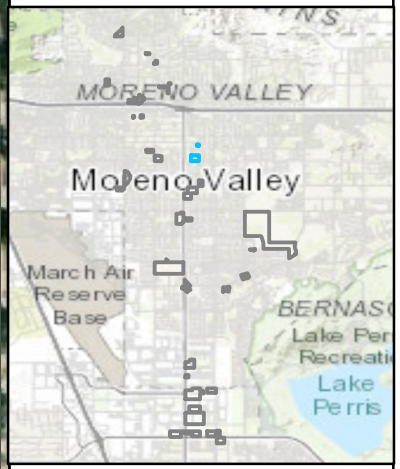



# MW-07

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 87.5 175 350 Feet

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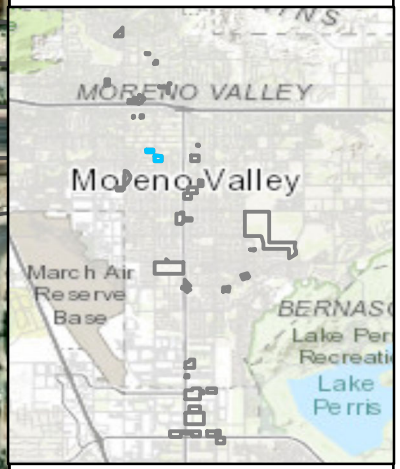
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-07.mxd


# MW-08

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 105 210 420 Feet

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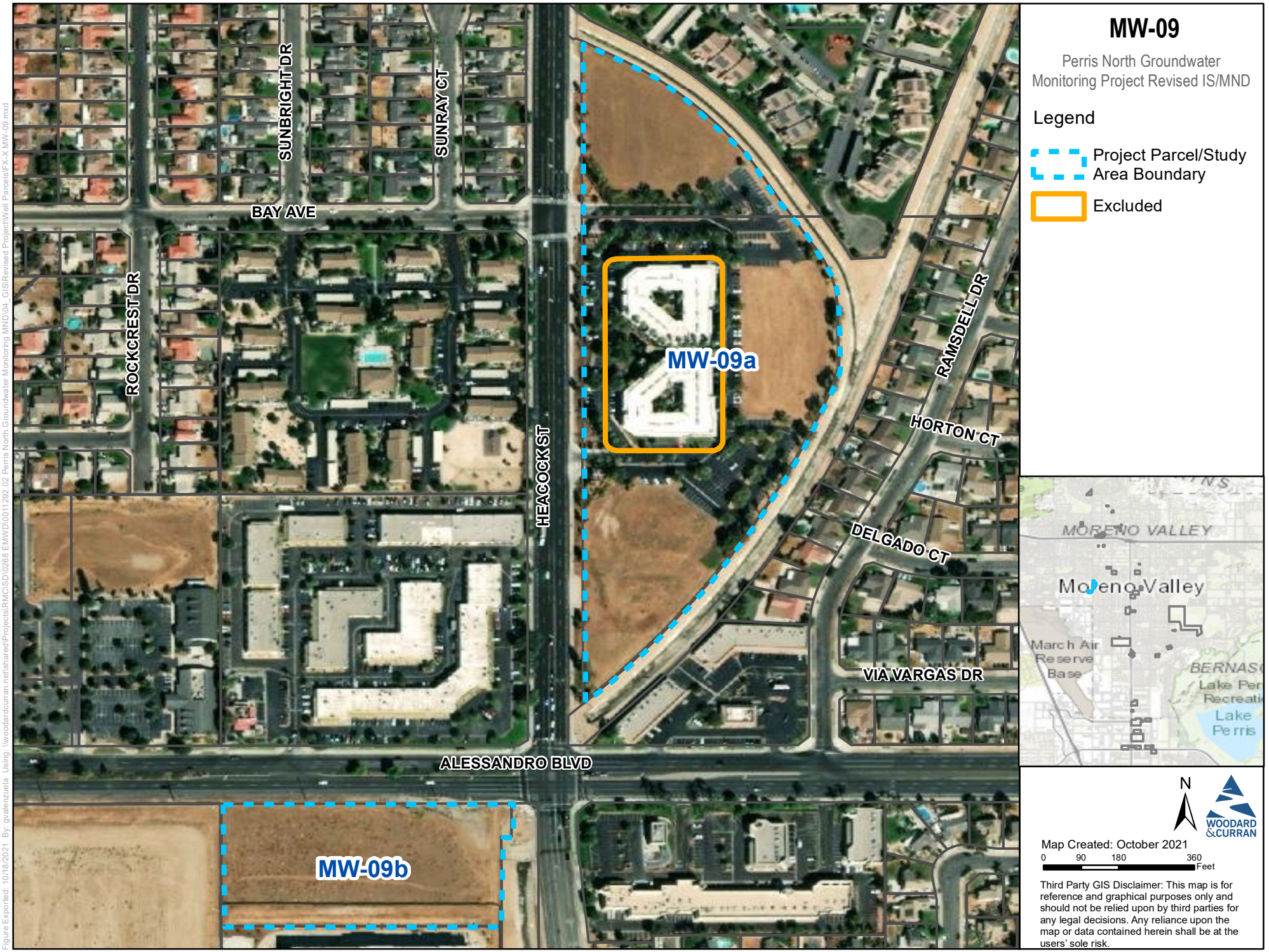
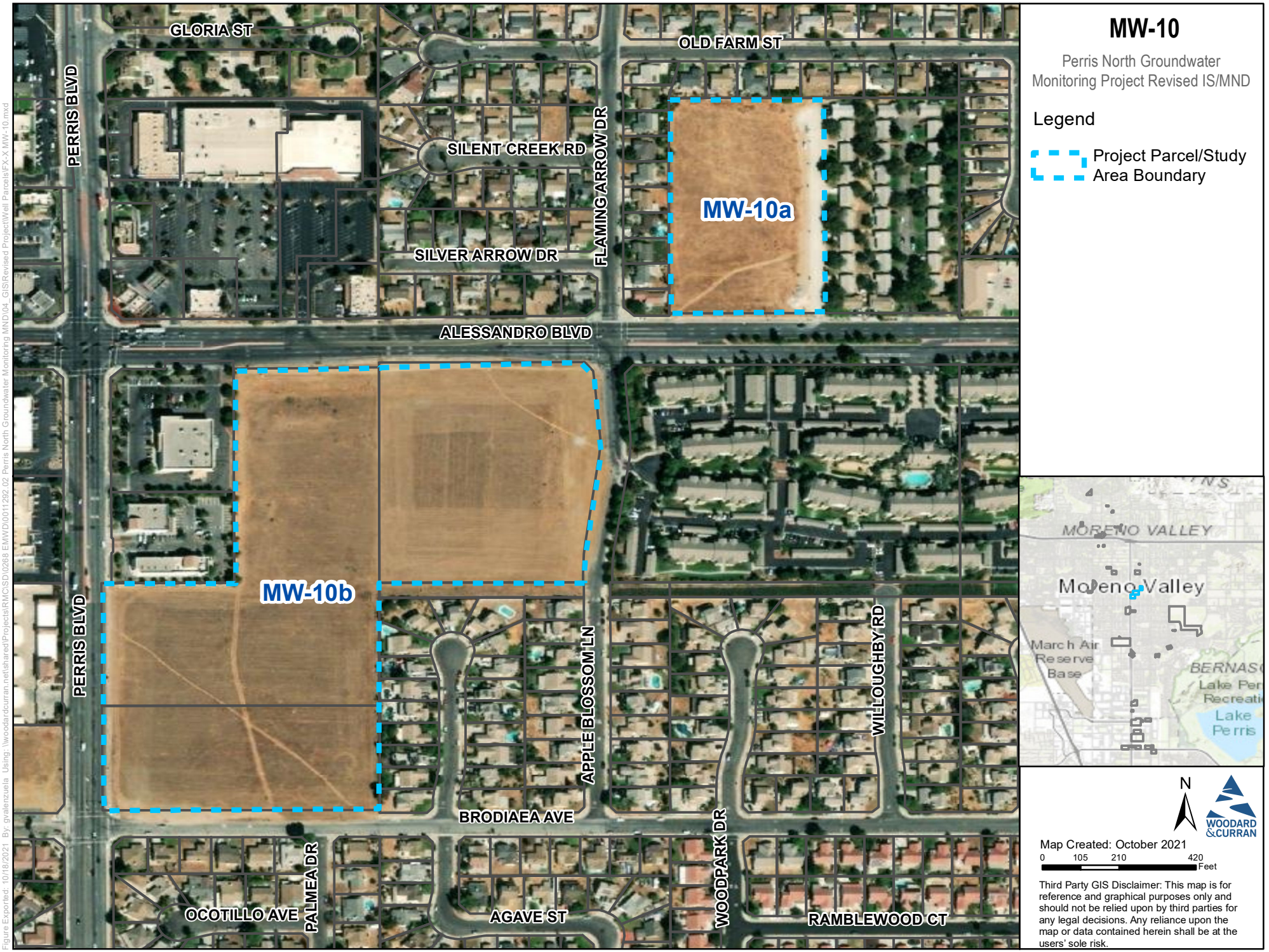
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\R\MCSD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-08.mxd


MW-09a
MW-09b
SUNBRIGHT DR
SUNRAY CT
BAY AVE
ROCKCREST DR
HEACOCK ST
RAMSDELL DR
HORTON CT
DELGADO CT
VIA VARGAS DR
ALESSANDRO BLVD
MW-09
Perris North Groundwater Monitoring Project Revised IS/MND
Legend
Project Parcel/Study Area Boundary
Excluded
MORENO VALLEY
Moreno Valley
March Air Reserve Base
Lake Perris
N
WOODARD &CURRAN
Map Created: October 2021
0 90 180 360
Feet
Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk.
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-09.mxd




# MW-10

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 105 210 420 Feet

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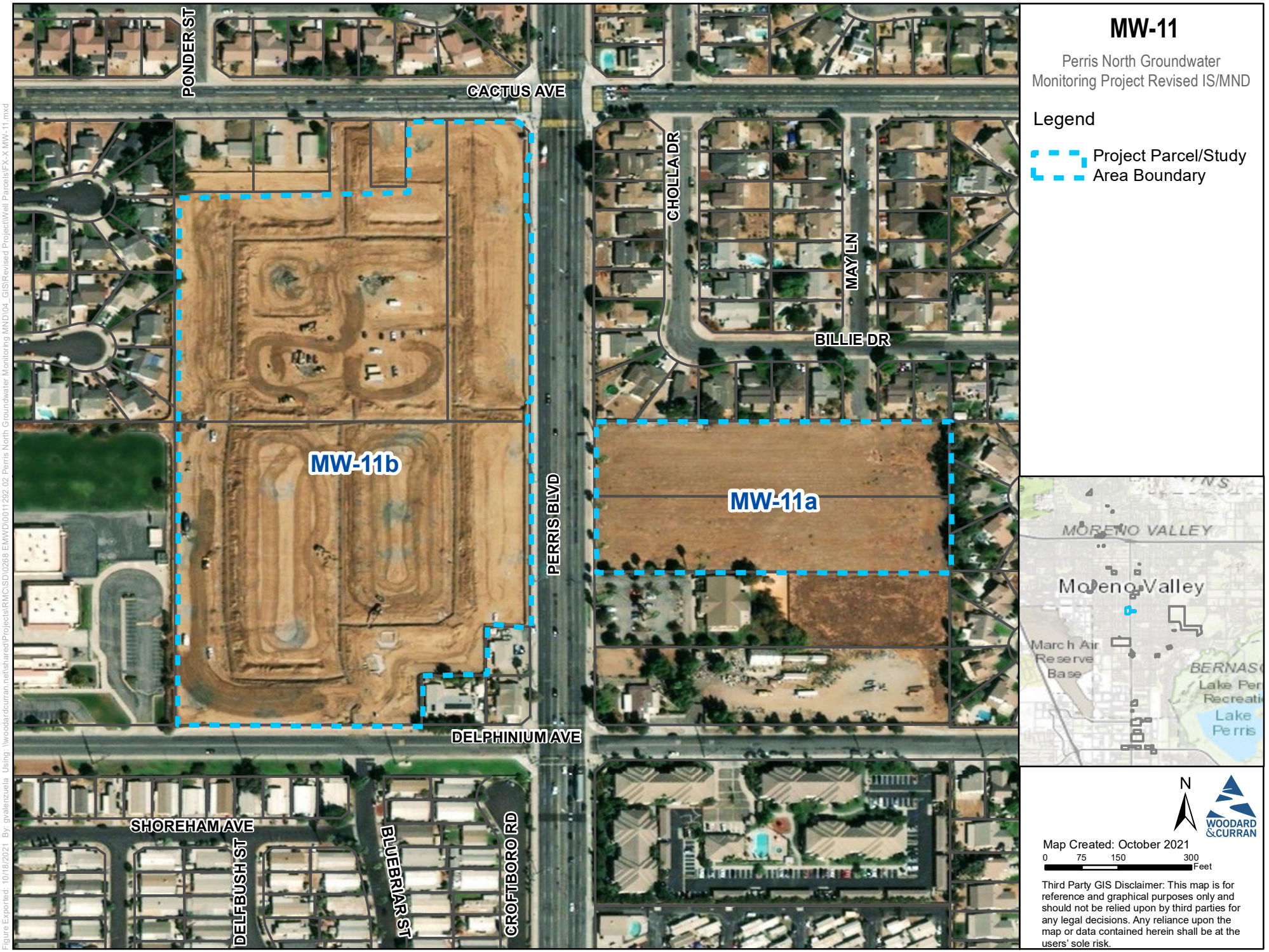
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RIVCSD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-10.mxd




# MW-11

Perris North Groundwater Monitoring Project Revised IS/MND

## Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 75 150 300 Feet

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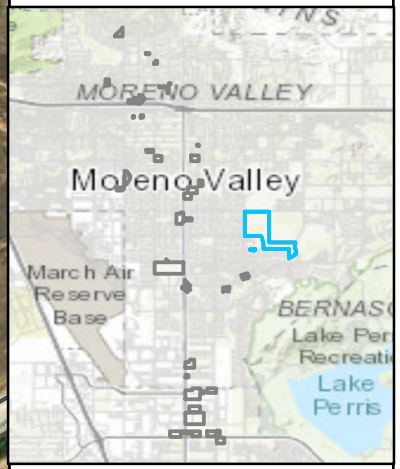
# MW-12

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 265 530 1,060 Feet

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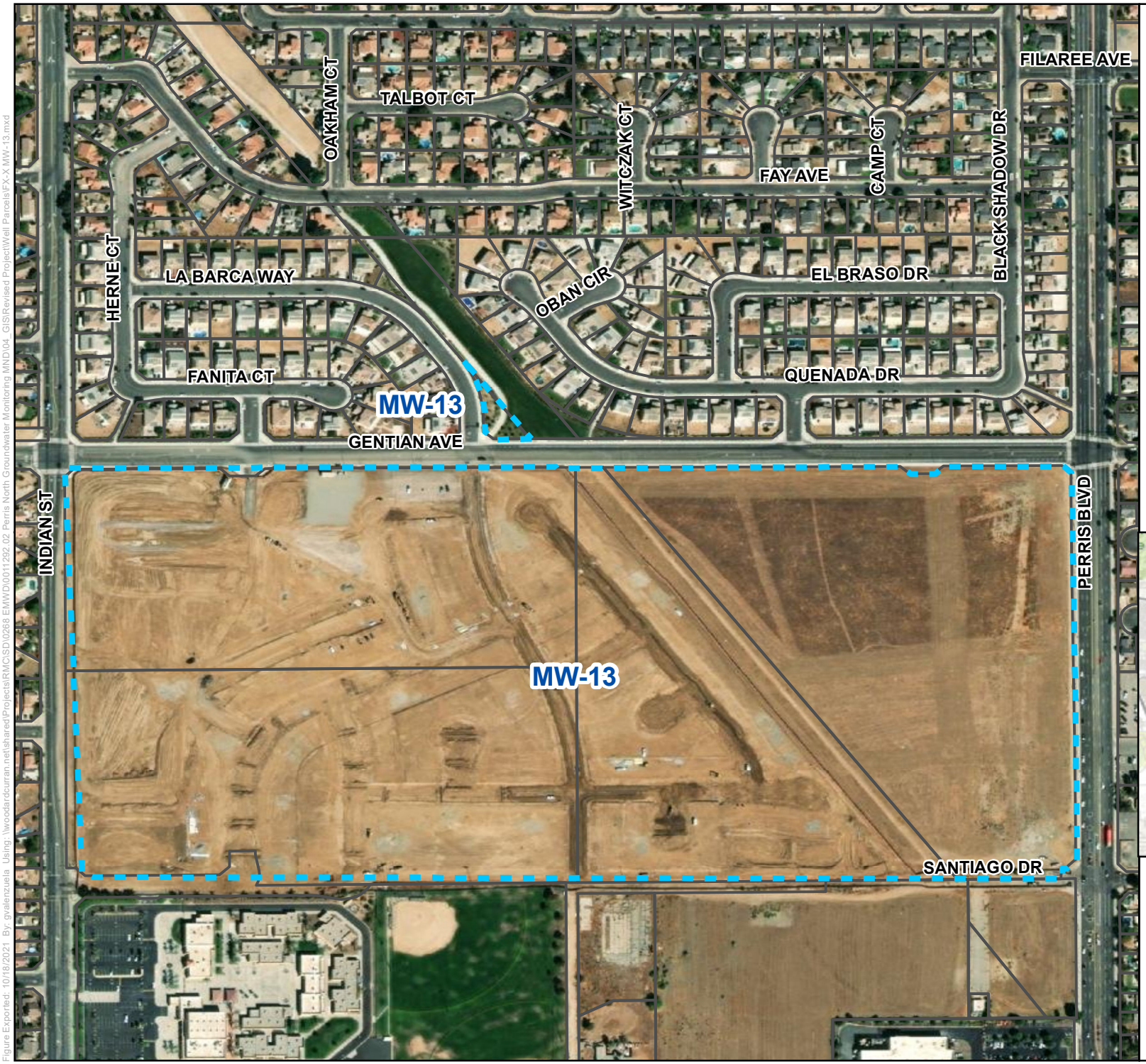
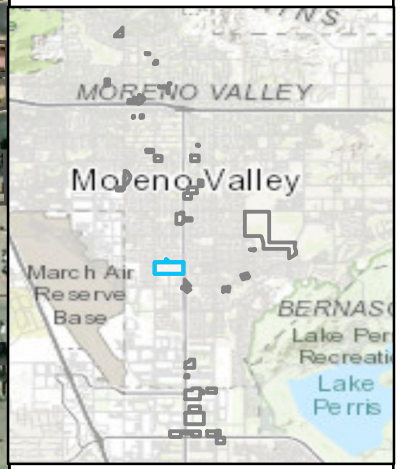



# MW-13

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 130 260 520 Feet

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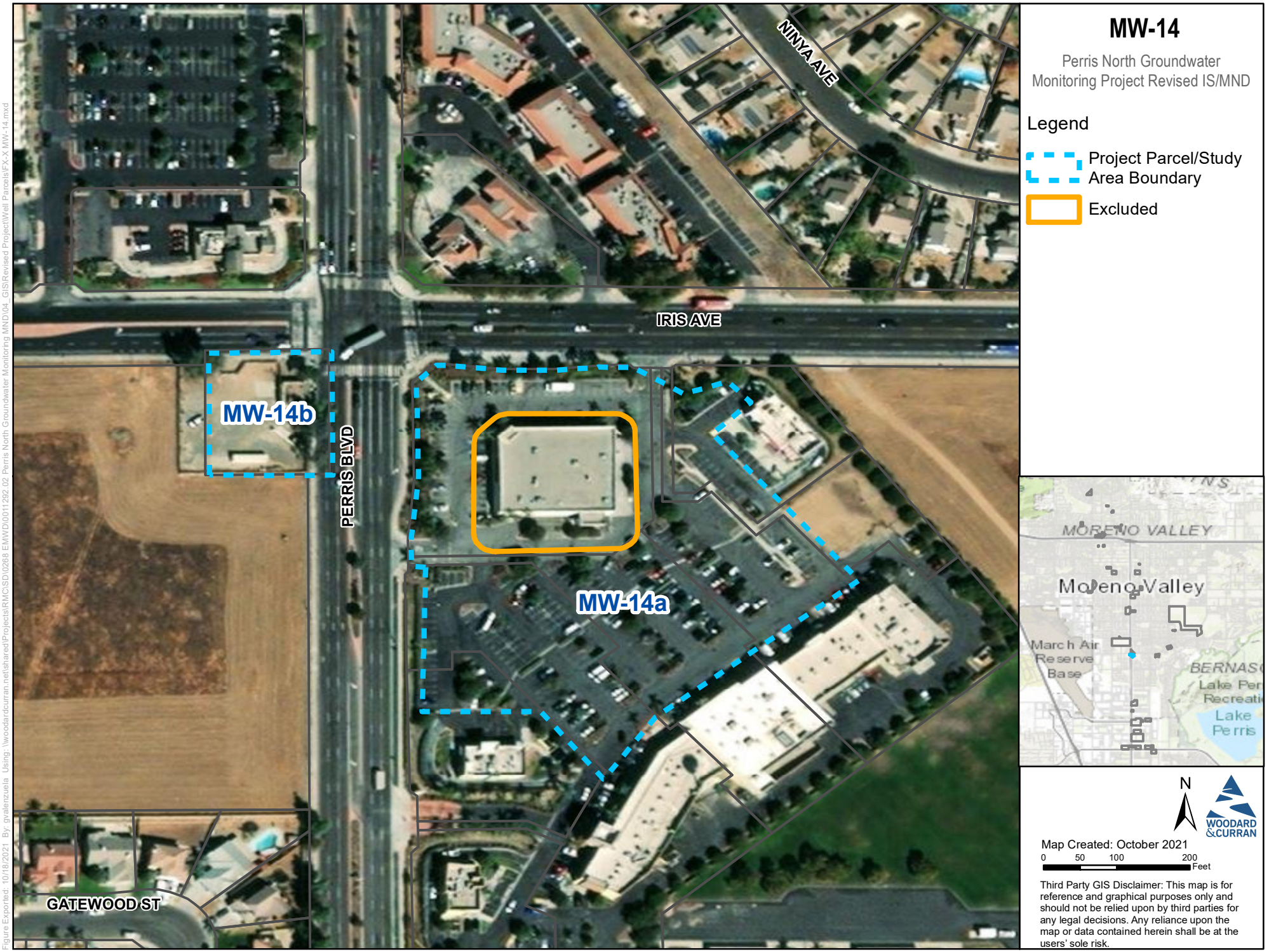
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-13.mxd




# MW-14

Perris North Groundwater Monitoring Project Revised IS/MND

## Legend

- Project Parcel/Study Area Boundary
- Excluded




N

WOODARD &CURRAN

Map Created: October 2021

0 50 100 200 Feet

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Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RIM\CSD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-14.mxd

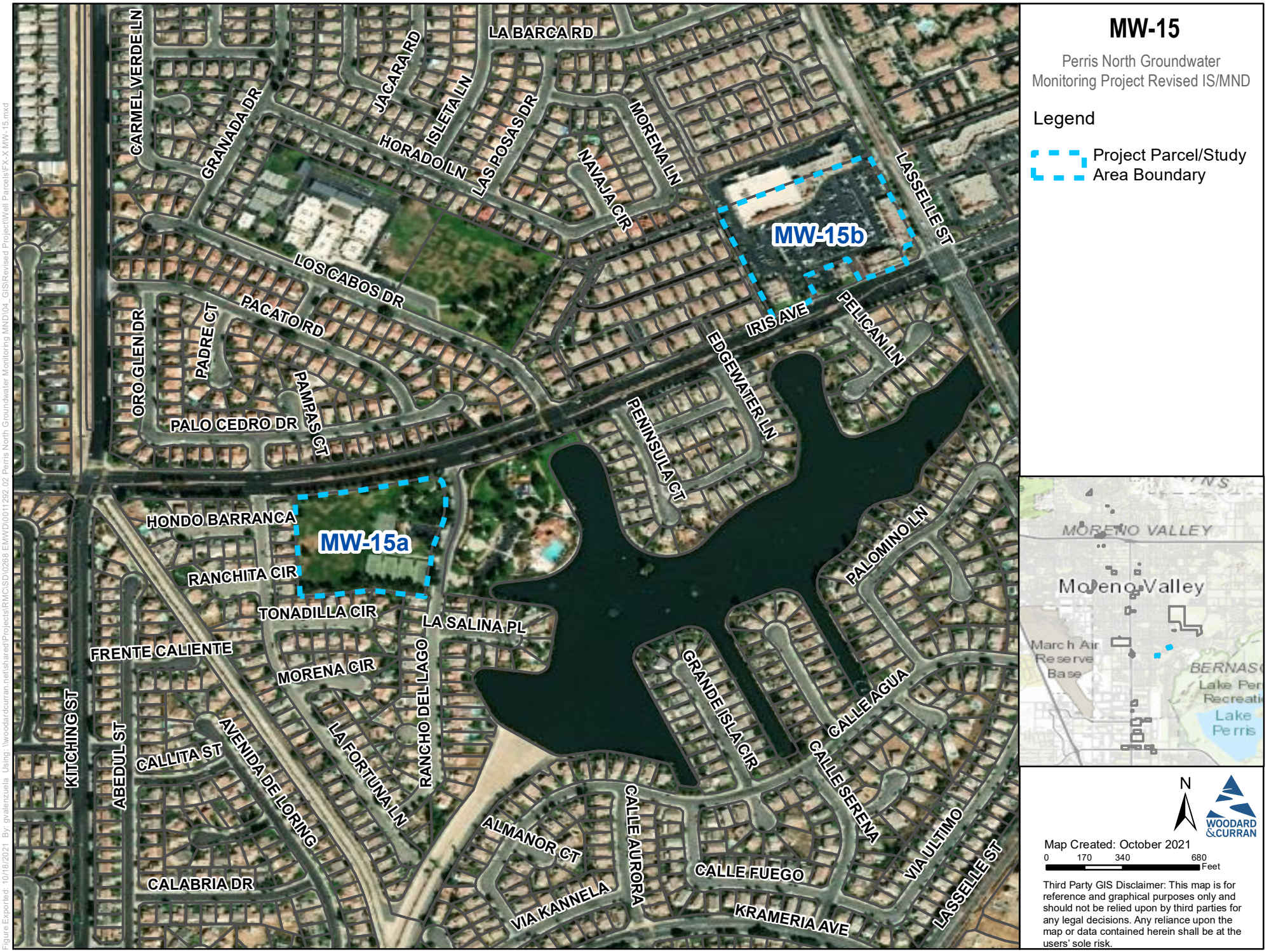


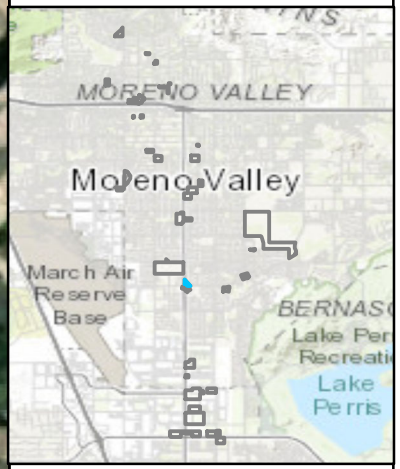

Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RIVCNSD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-15.mxd


# MW-16

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

- Project Parcel/Study Area Boundary
- Excluded Area




N

WOODARD &CURRAN

Map Created: October 2021

0 30 60 120 Feet

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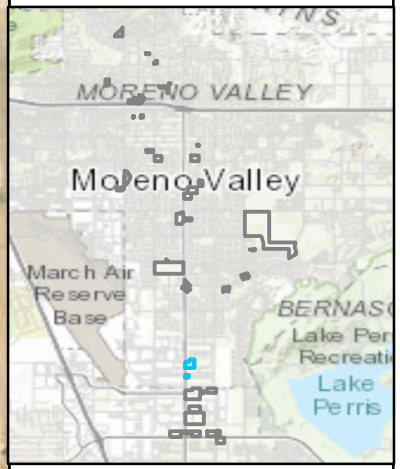
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RIVCNSD\0268 EMWD\00011292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X MW-16.mxd


# Optional Site A

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

- Project Parcel/Study Area Boundary
- Excluded




N

WOODARD &CURRAN

Map Created: October 2021

0 130 260 520 Feet

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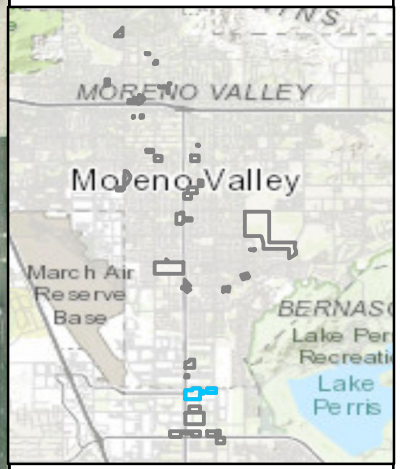
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RIVCSD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X Optional Site A.mxd


# Optional Site B

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 130 260 520 Feet

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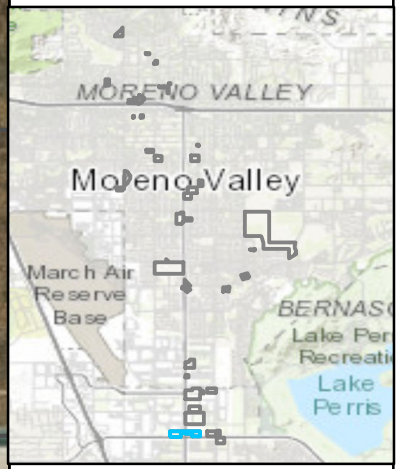
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RIVCSD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X Optional Site B.mxd


# Optional Site C

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: July 2021

0 130 260 520 Feet

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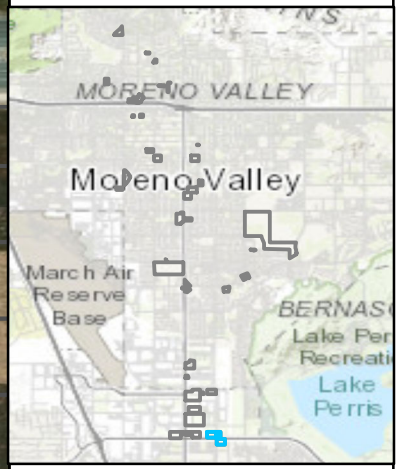
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X Optional Site C.mxd


# Optional Site D

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 80 160 320 Feet

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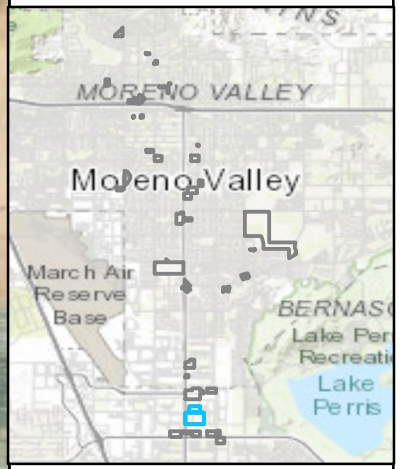
Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RIVCSD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X Optional Site D.mxd


# Optional Site E

Perris North Groundwater Monitoring Project Revised IS/MND

Legend

Project Parcel/Study Area Boundary




N

WOODARD &CURRAN

Map Created: October 2021

0 87.5 175 350 Feet

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Figure Exported: 10/18/2021 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMC\SD\0268 EMWD\001292.02 Perris North Groundwater Monitoring MND\04_GIS\Revised Project\Well Parcels\FX-X Optional Site E.mxd

## Table 3 Project Sites and Corresponding APNs

| Project Site | APN | Survey Status | Additional Information |
|---|---|---|---|
| MW-01 | 260141030 | Surveyed | Disturbed due to park construction. No new or previously recorded cultural resources identified. |
| MW-02a | 475090003 | Surveyed | Previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-02b | 475160065, 475160056 | Surveyed | Previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-03a | 481090034, 481090019, 481090018, 481090021, 481020021, 481020023, 481090033 | Partially Surveyed | Southern portion was inaccessible, blocked off by construction fencing. No new or previously recorded cultural resources identified. |
| MW-04 | 264100009, 264100008 | Not Surveyed | Inaccessible, blocked by fencing. Appears previously disturbed due to ground clearing activities. |
| MW-05a | 481342020, 481342028 | Not Surveyed | Inaccessible, blocked by fencing. Appears previously disturbed due to ground clearing activities. |
| MW-05b | 481341034 | Not Surveyed | Inaccessible, blocked by fencing. Appears previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-05c | 475300064 | Not Surveyed | Inaccessible, blocked by fencing. Appears previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-06a | 481120020 | Not Surveyed | Inaccessible, blocked by fencing with a “No Trespassing” sign. Appears previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-06b | 481140025, 481140024 | Partially Surveyed | Western half was inaccessible, blocked by fencing. Appears previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-07a | 479121021 | Not Surveyed | Inaccessible, blocked by fencing. Appears previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-07b | 479140022 | Surveyed | Previously disturbed by ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-08a | 482121001 | Surveyed | Previously disturbed by ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-08b | 482161024, 482161022, 482161021, 482161023 | Not Surveyed | Inaccessible, blocked by fencing. Area is a construction zone for a housing development. |

| Project Site | APN | Survey Status | Additional Information |
|---|---|---|---|
| MW-09a | 482180075, 482180074 | Surveyed | Previously disturbed by ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-09b | 297170090 | Not Surveyed | Inaccessible, blocked by fencing. Area appears heavily disturbed due to ground clearing activities. |
| MW-10a | 479220024 | Surveyed | Previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-10b | 484020006, 484020025, 484020018 | Surveyed | Previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-11a | 484231016, 484231015 | Surveyed | Previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-11b | 482582039, 482582040 | Not Surveyed | Inaccessible, blocked by fencing. Area appears heavily disturbed due to ground clearing activities. |
| MW-12a | 486300013, 486320009, | Not Surveyed | Inaccessible, blocked by fencing with a “No Trespassing” sign. Appears previously disturbed due to ground clearing activities. No new or previously recorded cultural resources identified. |
| MW-12b | No APN designated (GPS: 33.898872 N, -117.206045 W) | Surveyed | Existing neighborhood park. No new or previously recorded cultural resources identified. |
| MW-13 | 485220041, 485220032, 485220040, 485220042, 485121012 | Partially Surveyed | A large portion of this parcel was inaccessible, blocked by construction fencing. Area is previously disturbed due to ground clearing activities. Previously recorded resource P-33-023936 is located in the SE portion of the parcel. |
| MW-14a | 312360005, 312360006, 312360002, 312360003, 312360004, 312360007, 312360001 | Surveyed | Consists of a large, paved parking lot and a Walgreen facility. No new or previously recorded cultural resources identified. |
| MW-14b | 316030015 | Not surveyed | Inaccessible, blocked by fencing. Pump station is located behind the fence. No new or previously recorded cultural resources identified. |
| MW-15a | 486160037 | Surveyed | Disturbed due to city park construction. No new or previously recorded cultural resources identified. |
| MW15b | 486160048 | Surveyed | Consists of a small shopping center and parking lot. No new or previously recorded cultural resources identified. |
| MW-16 | 486211022 | Surveyed | Previously disturbed – paved and landscaped. No new or previously recorded cultural resources identified. |
| MW Opt. A-1 | 312250043 | Surveyed | Previously disturbed – paved and landscaped. Previously recorded resource P-33-011604 is located on the southern edge of the parcel. |

| Project Site | APN | Survey Status | Additional Information |
|---|---|---|---|
| | | | Resource could not be relocated and has been destroyed due to development. |
| MW Opt. A-2 | 312270001 | Surveyed | Previously disturbed – paved and landscaped. No new or previously recorded cultural resources identified. |
| MW Opt. B-1 | 302100025, 302100010, 302100009, 302100011, 302100002 | Not surveyed | Inaccessible, private land, blocked by fencing. No new or previously recorded cultural resources identified. |
| MW Opt. B-2 | 302100029 | Partially surveyed | Previously disturbed by ground-clearing activities. No new or previously recorded cultural resources identified. |
| MW Opt. C-1 | 302060041 | Surveyed | Previously disturbed by ground-clearing activities. No new or previously recorded cultural resources identified. |
| MW Opt. C-2 | 302130035, 302130034, 302130027 | Surveyed | Previously disturbed by ground-clearing activities. No new or previously recorded cultural resources identified. |
| MW Opt. D-1 | 302130041 | Surveyed | Previously disturbed by ground-clearing activities and building construction. No new or previously recorded cultural resources identified. |
| MW Opt. D-2 | 302140002 | Surveyed | Previously disturbed by ground-clearing activities and construction of a bike path and canal. No new or previously recorded cultural resources identified. |
| MW Opt. D-3 | 303140001 | Surveyed | Heavy brush. No new or previously recorded cultural resources identified. |
| MW Opt. E-1 | 302110032, 302110023, 302110024 | Surveyed | Previously disturbed by ground-clearing activities. Previously recorded resource P-33-016078 overlaps the project site just slightly in the southwest corner of the parcel. All features associated with the resource are outside the project site boundary and will not be impacted. |
| MW Opt. E-2 | 302120024 | Surveyed | Consists of a large, paved parking lot and an Amazon distribution facility. Previously recorded resource P-33-019865 is located in the northwest corner of the parcel. Site could not be relocated and has been destroyed due to development. |

# Appendix B

Confidential Records Search Results

*Confidential.*

# Appendix C

SLF Results

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**Russell Attebery**
*Karuk*

COMMISSIONER
**William Mungary**
*Paiute/White Mountain Apache*

COMMISSIONER
**Julie Tumamait-Stenslie**
*Chumash*

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
**Christina Snider**
*Pomo*

**NAHC HEADQUARTERS**
1550 Harbor Boulevard
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California 95691
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nahc@nahc.ca.gov
NAHC.ca.gov

July 25, 2021

Leanna Flaherty
Rincon Consultants, Inc.

Via Email to: lflaherty@rinconconsultants.com

**Re: Eastern Municipal Water District Perris North Groundwater Wells Project, Riverside County**

Dear Ms. Flaherty:

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
*Cultural Resources Analyst*

Attachment

**Native American Heritage Commission**
**Native American Contact List**
**Riverside County**
**7/25/2021**

***Agua Caliente Band of Cahuilla Indians***
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5401 Dinah Shore Drive — Cahuilla
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Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

***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

***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
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jstapp@cabazonindians-nsn.gov

***Cahuilla Band of Indians***
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52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

***Los Coyotes Band of Cahuilla and Cupeño Indians***
Ray Chapparosa, Chairperson
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Warner Springs, CA, 92086-0189
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***Morongo Band of Mission Indians***
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***Morongo Band of Mission Indians***
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***Pala Band of Mission Indians***
Shasta Gaughen, Tribal Historic Preservation Officer
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Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

***Pechanga Band of Luiseno Indians***
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Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-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 Eastern Municipal Water District Perris North Groundwater Wells Project, Riverside County.

***Pechanga Band of Luiseno Indians***
Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477 Luiseno
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Phone: (951) 770 - 6306
Fax: (951) 506-9491
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***Quechan Tribe of the Fort Yuma Reservation***
Manfred Scott, Acting Chairman
Kw'ts'an Cultural Committee
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Yuma, AZ, 85366
Phone: (928) 750 - 2516
scottmanfred@yahoo.com

***Quechan Tribe of the Fort Yuma Reservation***
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***Ramona Band of Cahuilla***
John Gomez, Environmental Coordinator
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Fax: (951) 763-4325
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***Ramona Band of Cahuilla***
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***Rincon Band of Luiseno Indians***
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***Rincon Band of Luiseno Indians***
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***San Manuel Band of Mission Indians***
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***Santa Rosa Band of Cahuilla Indians***
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***Serrano Nation of Mission Indians***
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***Serrano Nation of Mission Indians***
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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 Eastern Municipal Water District Perris North Groundwater Wells Project, Riverside County.

***Soboba Band of Luiseno Indians***
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla
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***Soboba Band of Luiseno Indians***
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***Torres-Martinez Desert Cahuilla Indians***
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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 Eastern Municipal Water District Perris North Groundwater Wells Project, Riverside County.

# APPENDIX D: PALEONTOLOGICAL RESOURCES ASSESSMENT

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www.rinconconsultants.com

November 24, 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,

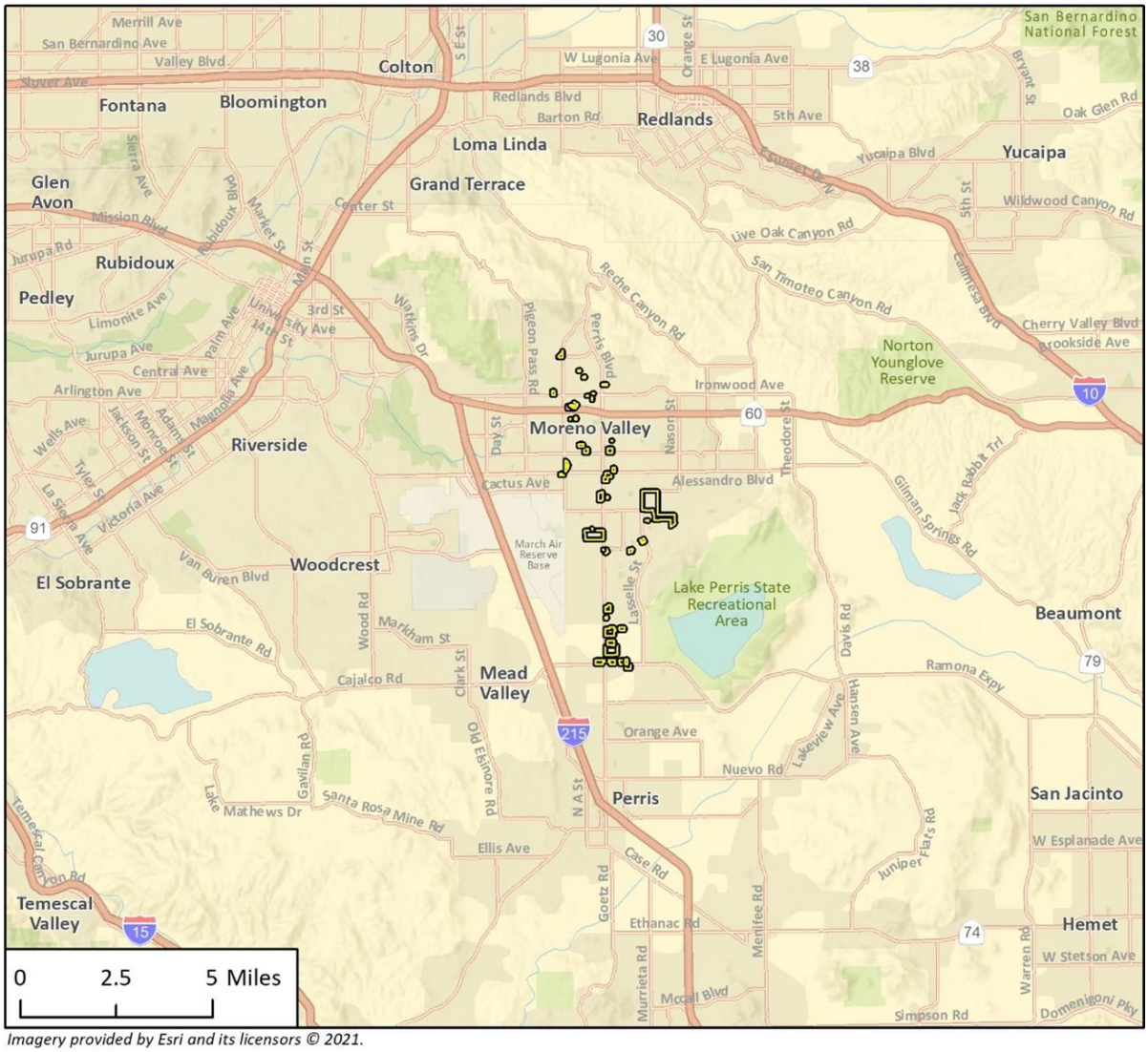
Rincon Consultants, Inc. conducted a paleontological resource assessment for the proposed Perris North Basin Groundwater Contamination Monitoring Project (project) located in the cities of Moreno Valley and Perris, Riverside County, California. The goals of this assessment are to identify the geologic units that may be impacted by development of the project, determine the paleontological sensitivity of geologic units underlying the project sites, 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 California Environmental Quality Act (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 sites and vicinity. Following the literature review and records search, this report assessed the paleontological sensitivity of the geologic units underlying the project sites, determined the potential for impacts to significant paleontological resources, and proposed mitigation measures to reduce impacts to less than significant.

# Project Location and Description

The Eastern Municipal Water District (EMWD) proposes the construction and operation of twenty monitoring wells (MW) at twenty locations throughout the cities of Moreno Valley and Perris in Riverside County, California. Forty-one potential locations, including optional locations, were evaluated for paleontological constraints for the proposed MW sites. The project sites, consisting of several individual parcels, are located east of the Perris Reservoir and Bernasconi Hills, west of the Escondido Freeway (Interstate Highway 215), south of the Box Springs Mountains and Kalmia Hills, and north of the Ramona Expressway and Colorado River Aqueduct (Figure 1 and Figure 2a-d). The project sites are mapped within the United States Geological Survey (USGS) *Sunnymead* and *Perris*, CA 7.5-minute quadrangles. The project sites are in a developed area characterized by a mix of agricultural, residential, commercial, and light industrial uses.

## Figure 1 Regional Vicinity

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Project Location

N

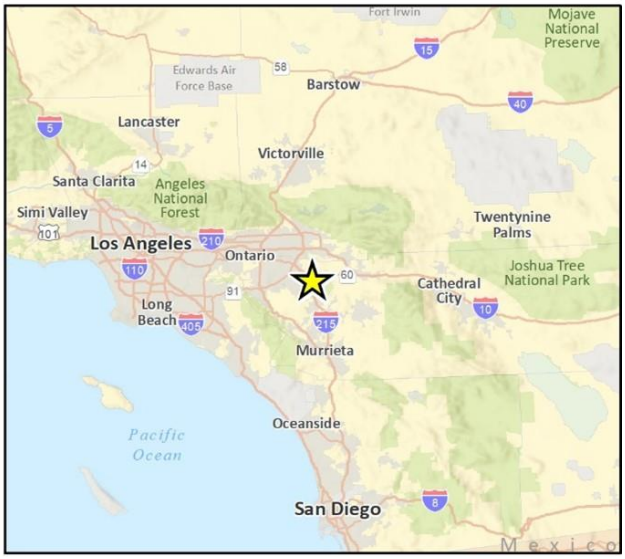

**Figure 2a Project Locations (1 of 4)**

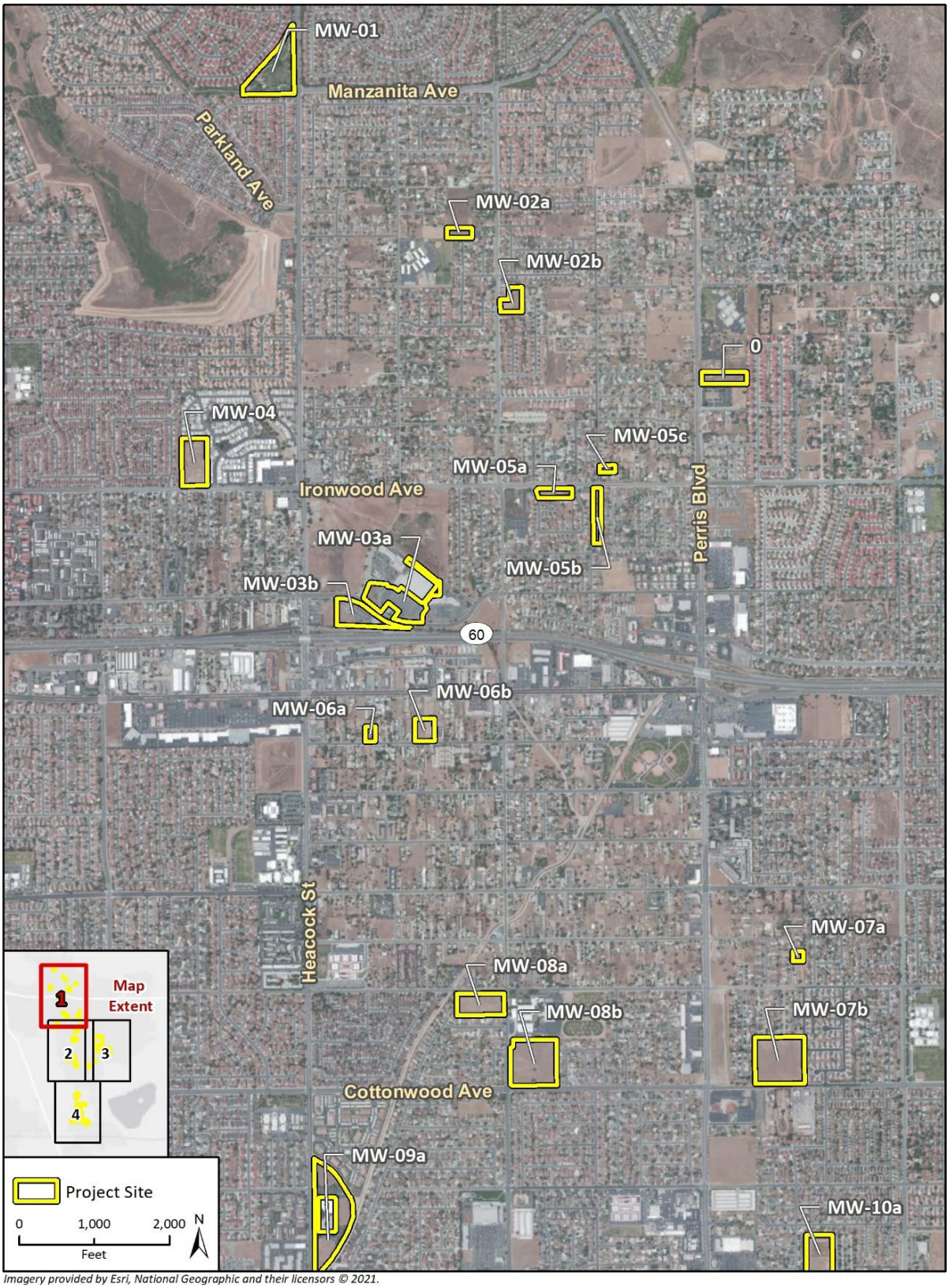


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**Figure 2b Project Location (2 of 4)**

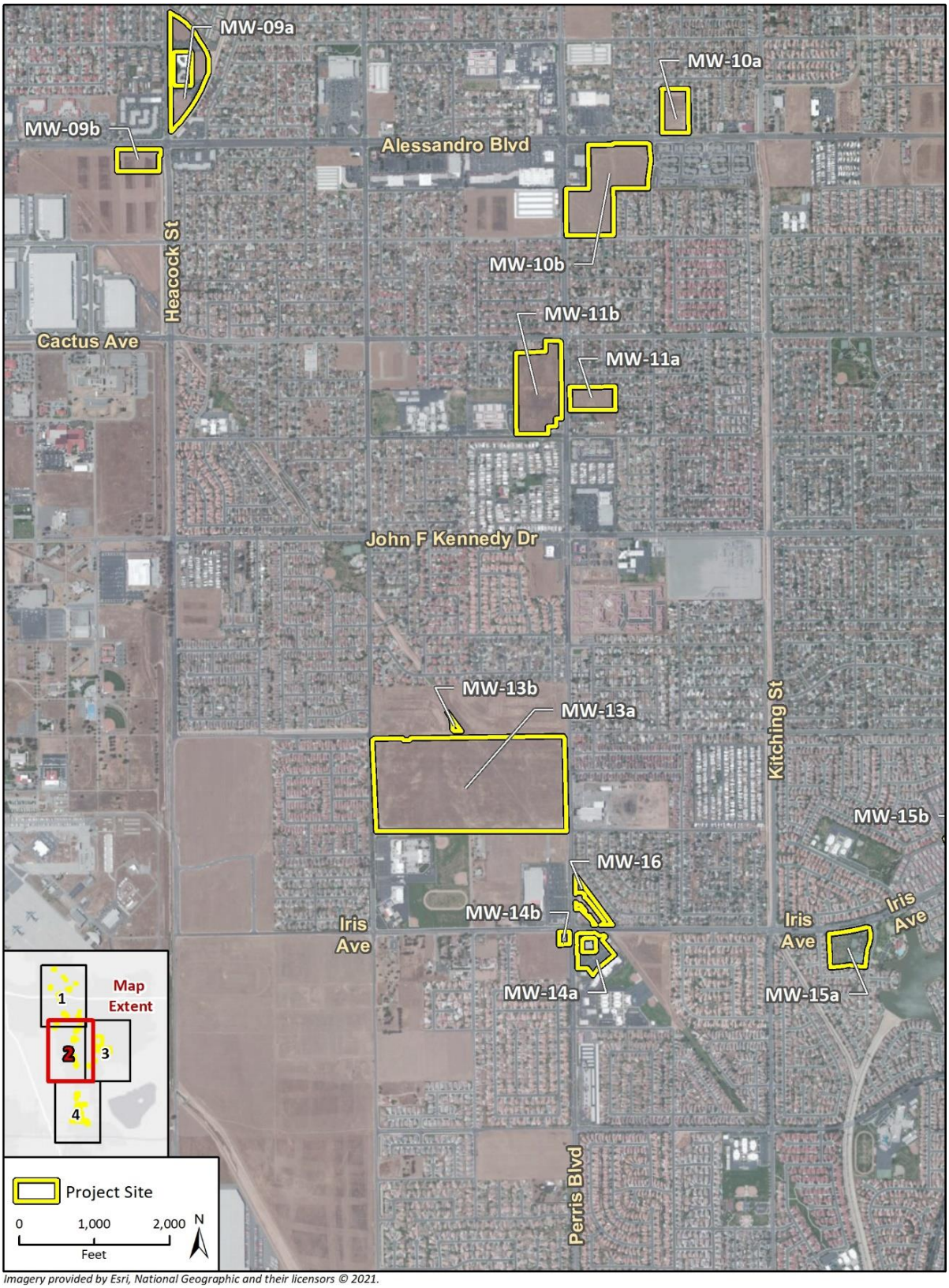


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**Figure 2c Project Location (3 of 4)**

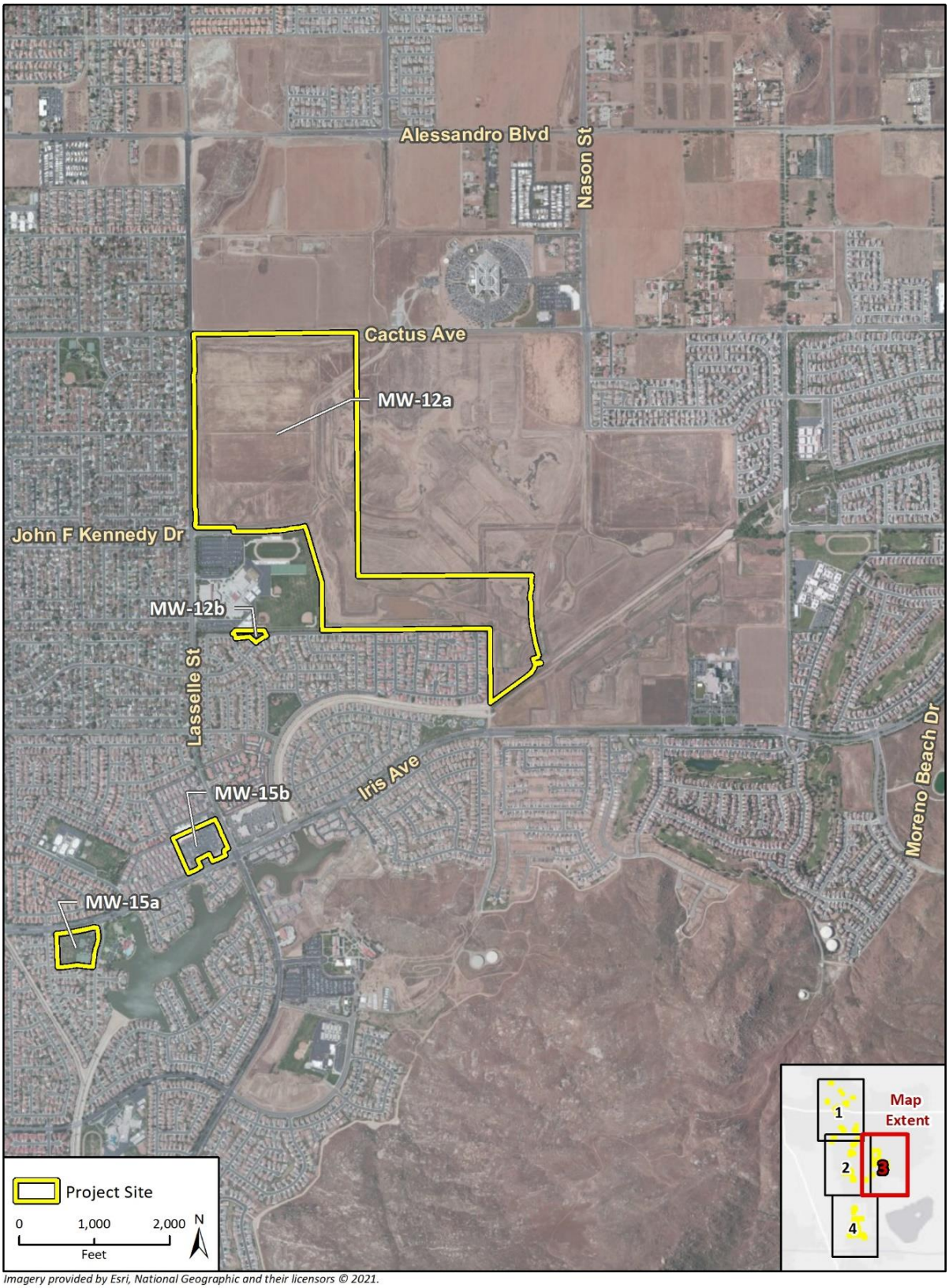


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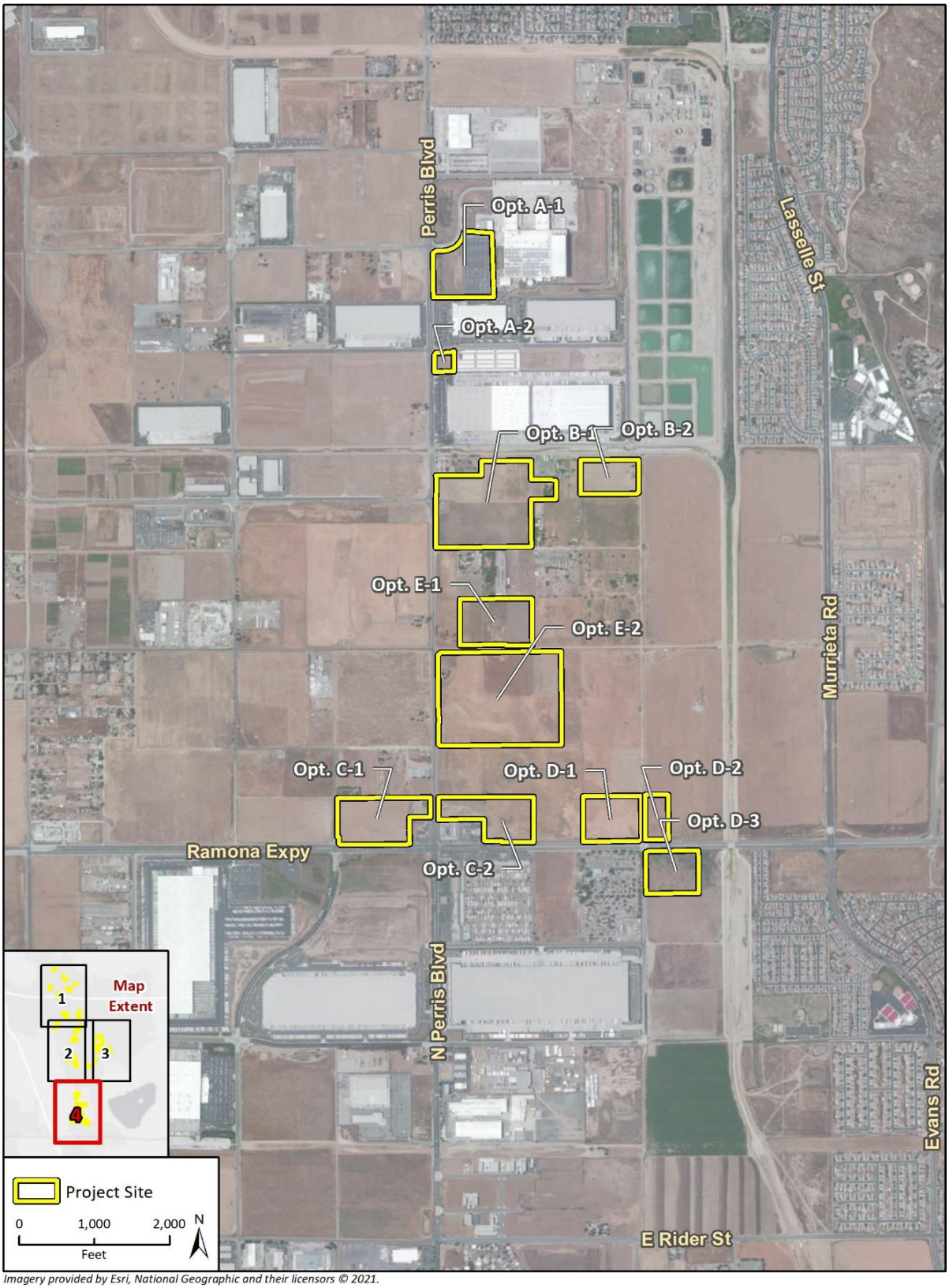
**Figure 2d Project Location (4 of 4)**

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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. For each MW, 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. MW would be drilled to a maximum depth of 200 to 800 feet deep, depending on where in the project site they are located. Assuming a maximum depth of 800 feet, and an 18-inch borehole, approximately 55 cubic yards of drill cuttings would be exported from each MW site. Additional material would be exported from each well site during grading and wellhead construction.

# 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 sites 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.

# Local Regulations

## 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 sites 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 sites 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 sites and immediate vicinity (i.e., localities recorded on the USGS *Sunnymead* and *Perris* California 7.5-minute topographic quadrangles), reviewed geologic maps, and reviewed primary literature.

Rincon assigned paleontological sensitivities to the geologic units mapped within the project sites. 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.

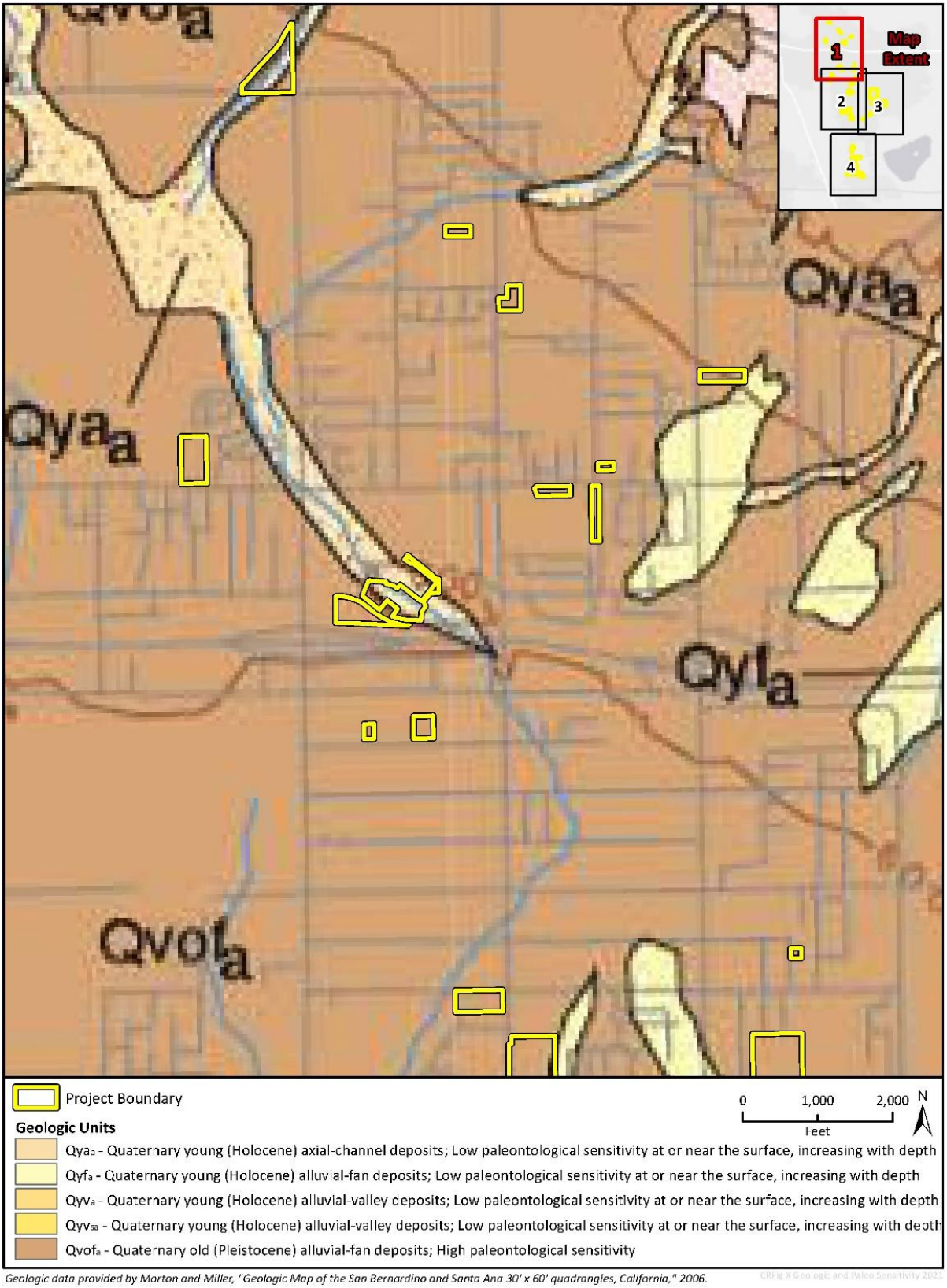
# Geologic Setting

The project sites are 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 Morton and Miller (2006), the project sites include five geologic units mapped at the surface: Quaternary young (Holocene) axial-channel deposits ($Qya_a$), Quaternary young (Holocene) alluvial-valley deposits ($Qyv_a$, $Qyv_{sa}$), Quaternary young (Holocene) alluvial-fan deposits ($Qyf_a$), and Quaternary old (Pleistocene) alluvial-fan deposits ($Qvof_a$) (Morton & Miller 2006). Quaternary young (Holocene) axial-channel deposits ($Qya_a$)**,** mapped within a few of the northern project sites, consists of slightly to moderately consolidated silt, sand, and gravel. Quaternary young (Holocene) alluvial-valley deposits ($Qyv_a$, $Qyv_{sa}$), mapped within the eastern and southern project sites, consist of unconsolidated sand, silt, and clayey alluvium. Quaternary young (Holocene) alluvial-fan deposits ($Qyf_a$), mapped within the central project sites, consists of unconsolidated to moderately consolidated silt, sand, pebbly cobbly sand, and bouldery alluvial-fan deposits. Quaternary old (Pleistocene) alluvial-fan deposits ($Qvof_a$), mapped extensively throughout the project sites, consists of orangish brown moderately to well consolidated silt, sand, gravel, and conglomerate (Morton & Miller 2006). Refer to Figure 3a-d for the surficial geologic units mapped within the project sites, as well as their corresponding paleontological sensitivity.

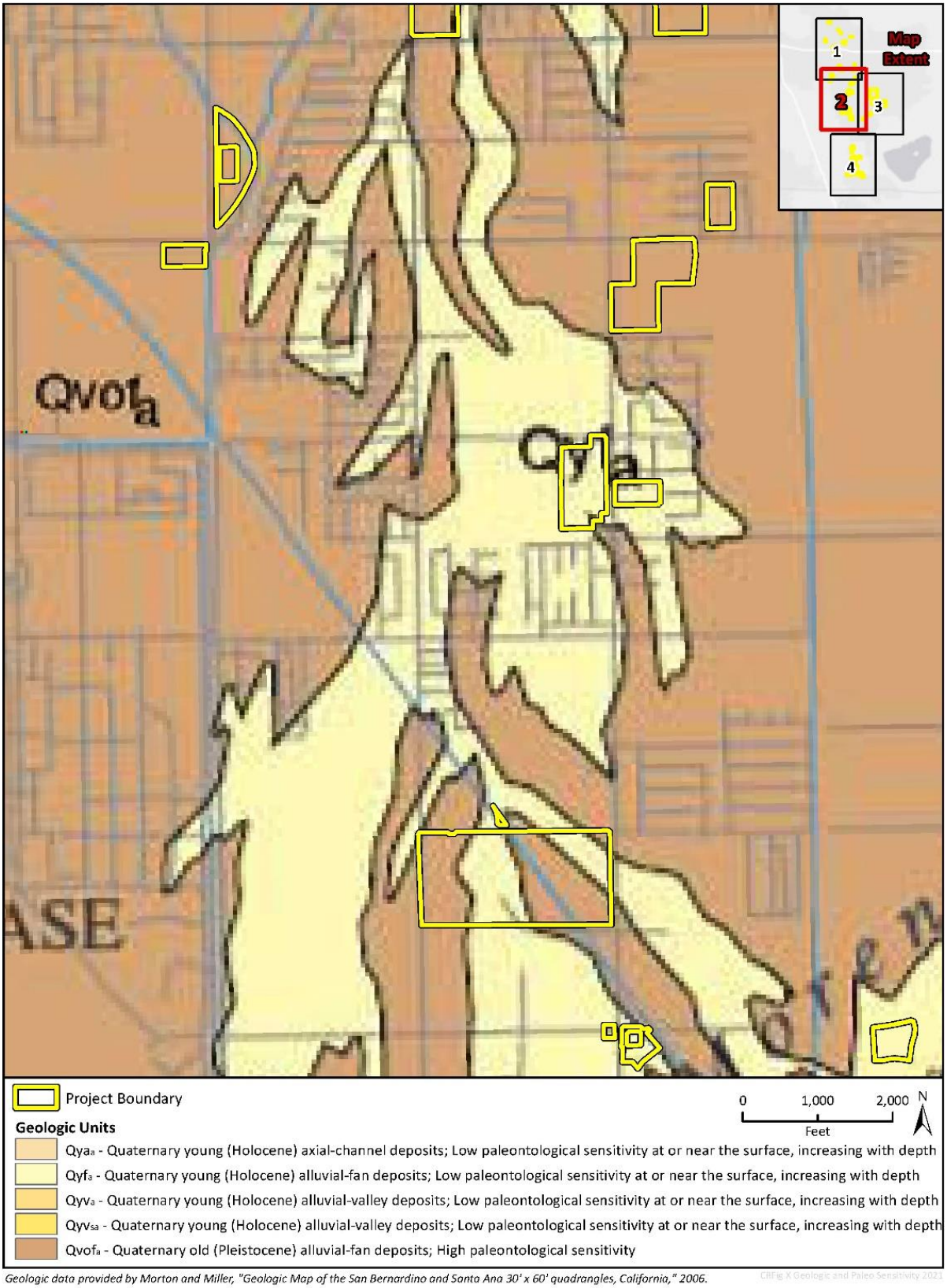
Holocene sediments are generally too young to preserve paleontological resources, but these sediments may grade downward into older deposits of Pleistocene age at moderate or unknown depths. Pleistocene sedimentary deposits (e.g., $Qvof_a$) have a well-documented record of abundant and diverse vertebrate 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; 1991; Merriam 1911; Paleobiology Database 2021; 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 2021).

**Figure 3a Geologic Units and Paleontological Sensitivity of the Project Sites (1 of 4)**



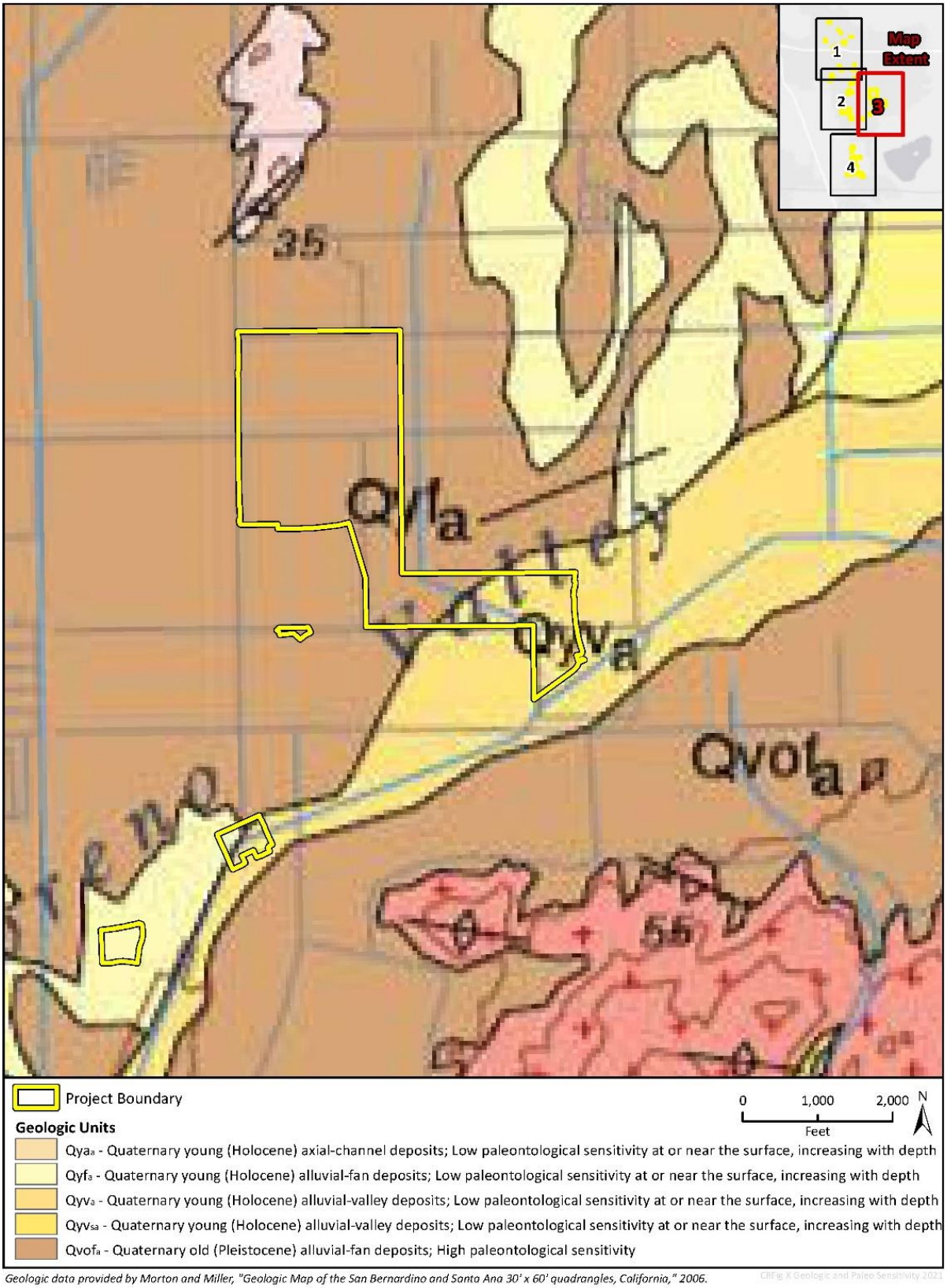

*Geologic data provided by Morton and Miller, "Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California," 2006.*

**Figure 3b Geologic Units and Paleontological Sensitivity of the Project Sites (2 of 4)**



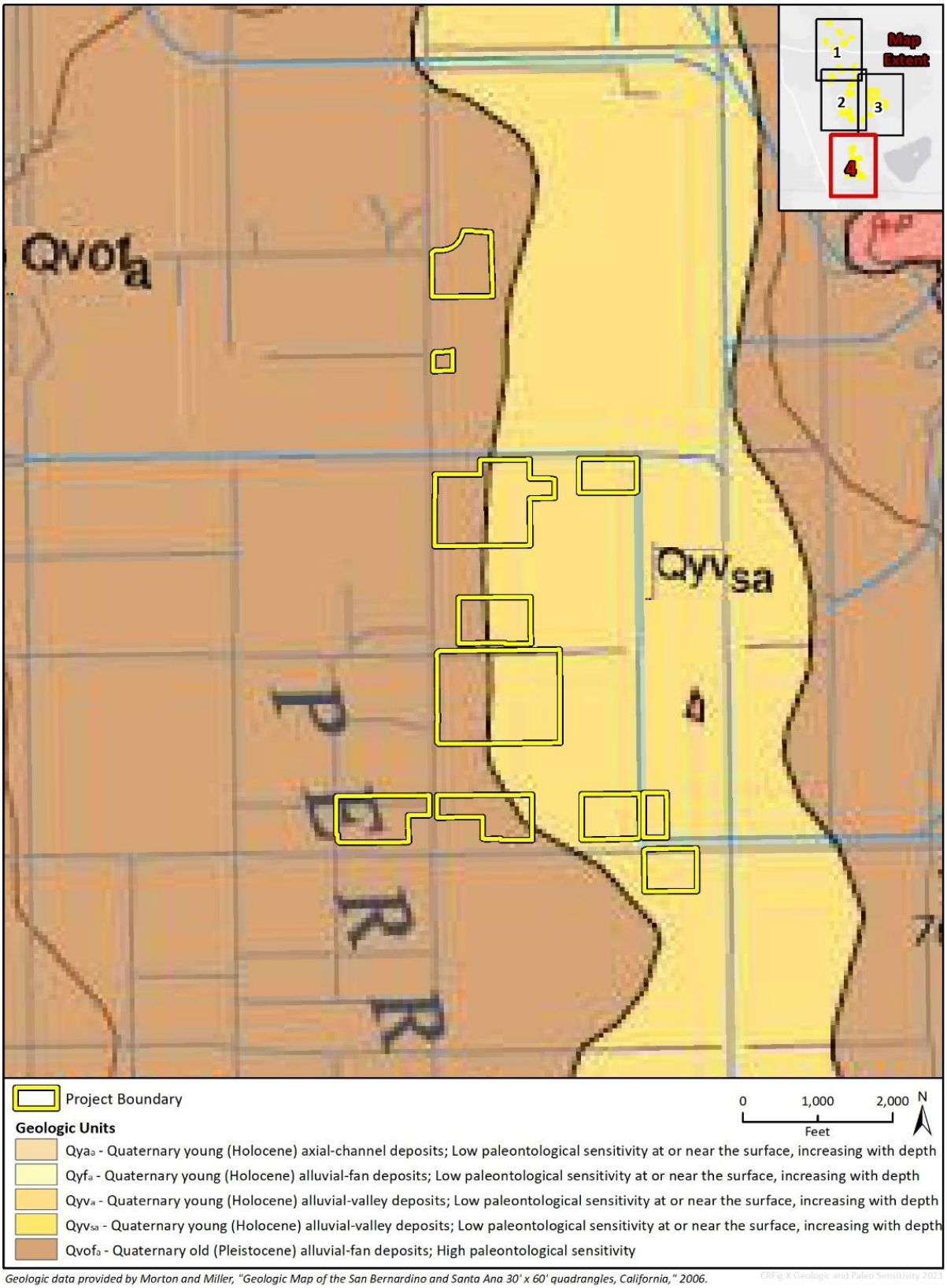

*Geologic data provided by Morton and Miller, "Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California," 2006.*

**Figure 3c Geologic Units and Paleontological Sensitivity of the Project Sites (3 of 4)**




*Geologic data provided by Morton and Miller, "Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California," 2006.*

**Figure 3d Geologic Units and Paleontological Sensitivity of the Project Sites (4 of 4)**




*Geologic data provided by Morton and Miller, "Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California," 2006.*

# Results

## Locality Search

A search of the paleontological locality records at the NHMLAC resulted in no previously recorded fossil localities in the project sites; however, several vertebrate localities are situated within the project's vicinity. According to the NHMLAC collection records, the closest Pleistocene vertebrate locality (LACM VP 6059), which yielded fossilized specimens of a camel-like mammal (Camelidae), is approximately 14 miles south of the southernmost project sites. Table 1 summarizes six Pleistocene fossil localities located between 14 and 30 miles from the project sites.

**Table 1 Museum Records Search Results**

| Locality No. | Location | Geologic Unit | Age | Taxa | Depth |
|---|---|---|---|---|---|
| LACM VP 6059 | Overflow area just east-southeast of Lake Elsinore | Unknown formation | Pleistocene | Camel family (Camelidae) | Unreported |
| LACM VP 7261 | Skinner Reservoir, Auld Valley | Unknown formation (Arenaceous silt) | Pleistocene | Elephant clade (Proboscidea); ungulate (Ungulata) | Unreported |
| LACM VP 7456 | Highway 79 and Butterfield Stage Rd., Pauba Valley near Temecula | Alluvium interbedded silty clay, sandy silt, and silty to coarse grained sand | Pleistocene | Garter snake (*Thamnophis*); pocket gopher (*Thomomys*); deer mouse (*Peromyscus*); snails (gastropods) | Unreported |
| LACM VP 1207 | Hill on east side of sewage disposal plant; 1 mile north-northwest of Corona | Unknown formation | Pleistocene | Bovidae | Unreported |
| LACM VP 7268, 7271 | Sundance Condominiums, South of Los Serranos Golf Course in Chino Hills | Unknown formation | Pleistocene | Horse (*Equus*) | Unreported |
| LACM VP 7508 | Near intersection of Vellano Club Dr. and Palmero Dr., Oakcrest Development; North of Serrano Canyon in Chino Hills | Unknown formation | Pleistocene | Ground sloth (*Nothrotheriops*); elephant family (Proboscidea); horse (*Equus*) | Unreported |

Source: Bell 2021

Records maintained by the Western Science Center (WSC) indicate several fossil localities nearby the project sites. WSC localities 192, 193, and 194 rendered fossil ground sloth (*Megalonyx jeffersonii*), lamine camel (*Hemiauchenia* sp.), and horse (*Equus* sp.) less than 10 miles northeast of the project sites (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 sites based on a geologic map review, literature review, and museum locality search. Quaternary young sedimentary units (i.e., alluvial-valley deposits [$Qyv_a$, $Qyv_{sa}$], alluvial-fan deposits [$Qyf_a$], and axial-channel deposits [$Qya_a$]) mapped at the surface of the project sites are assigned a low paleontological sensitivity because Holocene sediments, particularly those younger than 5,000 years old, are generally too young to contain fossilized material. However, Quaternary old (Pleistocene) sedimentary deposits (e.g., $Qvof_a$) may underlie Quaternary young sedimentary deposits ($Qyv_a$, $Qyv_{sa}$, $Qyf_a$, $Qya_a$) at unknown depths within the project area and the immediate vicinity. Holocene sediments are underlain by Pleistocene alluvial deposits 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 sites (LSA 2014; Radford 2019). Intact (native) Quaternary old (Pleistocene) alluvial-fan deposits ($Qvof_a$) are assigned a high paleontological sensitivity based on its potential to yield scientifically significant paleontological resources (Bell 2021; LSA 2014; Radford 2019).

# Findings and Recommendations

Paleontological resources are nonrenewable and are vulnerable to impacts from development related activities. Fossils provide important information for our understanding of past environments, the history of life, past species diversity, how species respond to climate change, and many other lines of scientific inquiry. Impacts to fossils and fossil localities, and loss of fossils from looting or other destructive activity at fossil sites results in the direct loss of scientific data and directly impacts the ability to conduct scientific research on evolutionary patterns and geological processes. Ground-disturbing activities in previously undisturbed portions of the project sites underlain by geologic units with a high paleontological sensitivity (i.e., Pleistocene alluvial-fan 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. Activities with the potential to impact paleontological resources include grading, excavation, trenching or other activity that disturbs geologic formations with a high paleontological sensitivity.

The proposed activities include establishing temporary work areas 100 feet wide by 100 feet long at the surface and drilling and installing 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 (native) 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 near the surface or at depth, 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 sites 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.**

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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 |
| 27 | 2020/01/28 14:44:51 | 73.2 |
| 28 | 2020/01/28 14:47:51 | 52.3 |
| 29 | 2020/01/28 14:50:51 | 68.0 |
| 30 | 2020/01/28 14:53:51 | 69.5 |
| 31 | 2020/01/28 14:56:51 | 68.2 |
| 32 | 2020/01/28 14:59:51 | 66.5 |
| 33 | 2020/01/28 15:02:51 | 50.7 |
| 34 | 2020/01/28 15:05:51 | 65.2 |
| 35 | 2020/01/28 15:08:51 | 76.5 |
| 36 | 2020/01/28 15:11:51 | 74.2 |
| 37 | 2020/01/28 15:14:51 | 51.9 |
| 38 | 2020/01/28 15:17:51 | 73.0 |
| 39 | 2020/01/28 15:20:51 | 56.7 |
| 40 | 2020/01/28 15:23:51 | 73.7 |
| 41 | 2020/01/28 15:26:51 | 73.7 |
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| 45 | 2020/01/28 15:38:51 | 64.8 |
| 46 | 2020/01/28 15:41:51 | 71.1 |
| 47 | 2020/01/28 15:44:51 | 61.0 |
| 48 | 2020/01/28 15:47:51 | 64.2 |
| 49 | 2020/01/28 15:50:51 | 74.7 |
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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 |
| 55 | 2020/01/28 16:08:51 | 69.0 |
| 56 | 2020/01/28 16:11:51 | 53.9 |
| 57 | 2020/01/28 16:14:51 | 76.6 |
| 58 | 2020/01/28 16:17:51 | 73.2 |
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| 63 | 2020/01/28 16:32:51 | 69.2 |
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| 66 | 2020/01/28 16:41:51 | 72.6 |
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| 74 | 2020/01/28 17:05:51 | 73.2 |
| 75 | 2020/01/28 17:08:51 | 50.7 |
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| 83 | 2020/01/28 17:32:51 | 50.5 |
| 84 | 2020/01/28 17:35:51 | 72.8 |
| 85 | 2020/01/28 17:38:51 | 58.0 |

| | | |
|---|---|---|
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| 87 | 2020/01/28 17:44:51 | 69.5 |
| 88 | 2020/01/28 17:47:51 | 69.4 |
| 89 | 2020/01/28 17:50:51 | 65.2 |
| 90 | 2020/01/28 17:53:51 | 73.4 |
| 91 | 2020/01/28 17:56:51 | 72.4 |
| 92 | 2020/01/28 17:59:51 | 64.2 |
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| 96 | 2020/01/28 18:11:51 | 72.1 |
| 97 | 2020/01/28 18:14:51 | 50.4 |
| 98 | 2020/01/28 18:17:51 | 63.6 |
| 99 | 2020/01/28 18:20:51 | 68.9 |
| 100 | 2020/01/28 18:23:51 | 58.3 |
| 101 | 2020/01/28 18:26:51 | 75.3 |
| 102 | 2020/01/28 18:29:51 | 75.4 |
| 103 | 2020/01/28 18:32:51 | 57.8 |
| 104 | 2020/01/28 18:35:51 | 74.0 |
| 105 | 2020/01/28 18:38:51 | 67.0 |
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| 120 | 2020/01/28 19:23:51 | 70.7 |
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| 122 | 2020/01/28 19:29:51 | 70.5 |
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| 126 | 2020/01/28 19:41:51 | 75.9 |
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| 134 | 2020/01/28 20:05:51 | 73.5 |
| 135 | 2020/01/28 20:08:51 | 67.2 |
| 136 | 2020/01/28 20:11:51 | 56.7 |
| 137 | 2020/01/28 20:14:51 | 58.8 |
| 138 | 2020/01/28 20:17:51 | 77.0 |
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| 140 | 2020/01/28 20:23:51 | 63.7 |
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| 172 | 2020/01/28 21:59:51 | 64.8 |
| 173 | 2020/01/28 22:02:51 | 55.1 |
| 174 | 2020/01/28 22:05:51 | 61.3 |
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| 178 | 2020/01/28 22:17:51 | 55.7 |
| 179 | 2020/01/28 22:20:51 | 54.6 |
| 180 | 2020/01/28 22:23:51 | 57.4 |
| 181 | 2020/01/28 22:26:51 | 59.4 |
| 182 | 2020/01/28 22:29:51 | 72.8 |
| 183 | 2020/01/28 22:32:51 | 65.2 |
| 184 | 2020/01/28 22:35:51 | 68.7 |

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| 185 | 2020/01/28 22:38:51 | 59.3 |
| 186 | 2020/01/28 22:41:51 | 74.9 |
| 187 | 2020/01/28 22:44:51 | 57.3 |
| 188 | 2020/01/28 22:47:51 | 75.2 |
| 189 | 2020/01/28 22:50:51 | 55.0 |
| 190 | 2020/01/28 22:53:51 | 67.4 |
| 191 | 2020/01/28 22:56:51 | 55.7 |
| 192 | 2020/01/28 22:59:51 | 55.9 |
| 193 | 2020/01/28 23:02:51 | 66.2 |
| 194 | 2020/01/28 23:05:51 | 72.5 |
| 195 | 2020/01/28 23:08:51 | 72.2 |
| 196 | 2020/01/28 23:11:51 | 52.9 |
| 197 | 2020/01/28 23:14:51 | 69.0 |
| 198 | 2020/01/28 23:17:51 | 59.4 |
| 199 | 2020/01/28 23:20:51 | 60.4 |
| 200 | 2020/01/28 23:23:51 | 64.2 |
| 201 | 2020/01/28 23:26:51 | 61.3 |
| 202 | 2020/01/28 23:29:51 | 56.8 |
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| 204 | 2020/01/28 23:35:51 | 59.2 |
| 205 | 2020/01/28 23:38:51 | 72.3 |
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| 207 | 2020/01/28 23:44:51 | 60.0 |
| 208 | 2020/01/28 23:47:51 | 53.8 |
| 209 | 2020/01/28 23:50:51 | 75.1 |
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| 211 | 2020/01/28 23:56:51 | 64.4 |
| 212 | 2020/01/28 23:59:51 | 47.1 |
| 213 | 2020/01/29 00:02:51 | 50.7 |
| 214 | 2020/01/29 00:05:51 | 52.7 |
| 215 | 2020/01/29 00:08:51 | 64.6 |
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| 222 | 2020/01/29 00:29:51 | 59.0 |
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| 225 | 2020/01/29 00:38:51 | 69.1 |
| 226 | 2020/01/29 00:41:51 | 55.9 |
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| 228 | 2020/01/29 00:47:51 | 56.1 |
| 229 | 2020/01/29 00:50:51 | 50.1 |
| 230 | 2020/01/29 00:53:51 | 67.8 |
| 231 | 2020/01/29 00:56:51 | 59.7 |
| 232 | 2020/01/29 00:59:51 | 48.9 |
| 233 | 2020/01/29 01:02:51 | 68.5 |
| 234 | 2020/01/29 01:05:51 | 50.7 |
| 235 | 2020/01/29 01:08:51 | 54.0 |
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| 255 | 2020/01/29 02:08:51 | 50.9 |
| 256 | 2020/01/29 02:11:51 | 50.3 |
| 257 | 2020/01/29 02:14:51 | 47.3 |
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| 267 | 2020/01/29 02:44:51 | 55.5 |
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| 274 | 2020/01/29 03:05:51 | 54.4 |
| 275 | 2020/01/29 03:08:51 | 47.2 |
| 276 | 2020/01/29 03:11:51 | 56.4 |
| 277 | 2020/01/29 03:14:51 | 50.7 |
| 278 | 2020/01/29 03:17:51 | 51.7 |
| 279 | 2020/01/29 03:20:51 | 52.6 |
| 280 | 2020/01/29 03:23:51 | 54.4 |
| 281 | 2020/01/29 03:26:51 | 50.5 |
| 282 | 2020/01/29 03:29:51 | 56.3 |
| 283 | 2020/01/29 03:32:51 | 56.8 |

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| 285 | 2020/01/29 | 03:38:51 | 49.7 |
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| 287 | 2020/01/29 | 03:44:51 | 55.2 |
| 288 | 2020/01/29 | 03:47:51 | 66.7 |
| 289 | 2020/01/29 | 03:50:51 | 67.6 |
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| 292 | 2020/01/29 | 03:59:51 | 71.3 |
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| 294 | 2020/01/29 | 04:05:51 | 56.1 |
| 295 | 2020/01/29 | 04:08:51 | 54.5 |
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| 299 | 2020/01/29 | 04:20:51 | 63.6 |
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| 307 | 2020/01/29 | 04:44:51 | 73.3 |
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| 309 | 2020/01/29 | 04:50:51 | 75.7 |
| 310 | 2020/01/29 | 04:53:51 | 70.6 |
| 311 | 2020/01/29 | 04:56:51 | 64.3 |
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| 313 | 2020/01/29 | 05:02:51 | 60.0 |
| 314 | 2020/01/29 | 05:05:51 | 59.8 |
| 315 | 2020/01/29 | 05:08:51 | 57.2 |
| 316 | 2020/01/29 | 05:11:51 | 57.0 |
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| 318 | 2020/01/29 | 05:17:51 | 71.8 |
| 319 | 2020/01/29 | 05:20:51 | 58.0 |
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| 321 | 2020/01/29 | 05:26:51 | 78.0 |
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| 325 | 2020/01/29 | 05:38:51 | 78.2 |
| 326 | 2020/01/29 | 05:41:51 | 73.2 |
| 327 | 2020/01/29 | 05:44:51 | 71.8 |
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| 332 | 2020/01/29 | 05:59:51 | 73.1 |
| 333 | 2020/01/29 | 06:02:51 | 60.3 |
| 334 | 2020/01/29 | 06:05:51 | 74.7 |
| 335 | 2020/01/29 | 06:08:51 | 73.9 |
| 336 | 2020/01/29 | 06:11:51 | 63.9 |
| 337 | 2020/01/29 | 06:14:51 | 69.0 |
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| 339 | 2020/01/29 | 06:20:51 | 73.6 |
| 340 | 2020/01/29 | 06:23:51 | 71.4 |
| 341 | 2020/01/29 | 06:26:51 | 62.9 |
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| 343 | 2020/01/29 | 06:32:51 | 77.1 |
| 344 | 2020/01/29 | 06:35:51 | 78.5 |
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| 347 | 2020/01/29 | 06:44:51 | 71.6 |
| 348 | 2020/01/29 | 06:47:51 | 72.2 |
| 349 | 2020/01/29 | 06:50:51 | 60.1 |
| 350 | 2020/01/29 | 06:53:51 | 80.1 |
| 351 | 2020/01/29 | 06:56:51 | 76.2 |
| 352 | 2020/01/29 | 06:59:51 | 62.7 |
| 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 |
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| 360 | 2020/01/29 | 07:23:51 | 66.2 |
| 361 | 2020/01/29 | 07:26:51 | 76.7 |
| 362 | 2020/01/29 | 07:29:51 | 77.6 |
| 363 | 2020/01/29 | 07:32:51 | 74.7 |
| 364 | 2020/01/29 | 07:35:51 | 71.3 |
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| 369 | 2020/01/29 | 07:50:51 | 74.1 |
| 370 | 2020/01/29 | 07:53:51 | 65.4 |
| 371 | 2020/01/29 | 07:56:51 | 68.9 |
| 372 | 2020/01/29 | 07:59:51 | 74.3 |
| 373 | 2020/01/29 | 08:02:51 | 72.4 |
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| 378 | 2020/01/29 | 08:17:51 | 75.9 |
| 379 | 2020/01/29 | 08:20:51 | 60.0 |
| 380 | 2020/01/29 | 08:23:51 | 76.8 |
| 381 | 2020/01/29 | 08:26:51 | 73.5 |
| 382 | 2020/01/29 | 08:29:51 | 65.2 |

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| 383 | 2020/01/29 | 08:32:51 | 73.5 |
| 384 | 2020/01/29 | 08:35:51 | 67.0 |
| 385 | 2020/01/29 | 08:38:51 | 61.7 |
| 386 | 2020/01/29 | 08:41:51 | 70.8 |
| 387 | 2020/01/29 | 08:44:51 | 73.8 |
| 388 | 2020/01/29 | 08:47:51 | 70.5 |
| 389 | 2020/01/29 | 08:50:51 | 74.1 |
| 390 | 2020/01/29 | 08:53:51 | 55.2 |
| 391 | 2020/01/29 | 08:56:51 | 72.6 |
| 392 | 2020/01/29 | 08:59:51 | 73.2 |
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| 394 | 2020/01/29 | 09:05:51 | 74.7 |
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| 398 | 2020/01/29 | 09:17:51 | 76.1 |
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| 402 | 2020/01/29 | 09:29:51 | 77.7 |
| 403 | 2020/01/29 | 09:32:51 | 71.2 |
| 404 | 2020/01/29 | 09:35:51 | 61.0 |
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| 406 | 2020/01/29 | 09:41:51 | 66.4 |
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| 414 | 2020/01/29 | 10:05:51 | 68.8 |
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| 416 | 2020/01/29 | 10:11:51 | 70.0 |
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| 418 | 2020/01/29 | 10:17:51 | 65.3 |
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| 434 | 2020/01/29 | 11:05:51 | 60.0 |
| 435 | 2020/01/29 | 11:08:51 | 71.6 |
| 436 | 2020/01/29 | 11:11:51 | 72.9 |
| 437 | 2020/01/29 | 11:14:51 | 68.0 |
| 438 | 2020/01/29 | 11:17:51 | 76.4 |
| 439 | 2020/01/29 | 11:20:51 | 71.2 |
| 440 | 2020/01/29 | 11:23:51 | 58.8 |
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| 442 | 2020/01/29 | 11:29:51 | 66.0 |
| 443 | 2020/01/29 | 11:32:51 | 71.5 |
| 444 | 2020/01/29 | 11:35:51 | 67.8 |
| 445 | 2020/01/29 | 11:38:51 | 54.9 |
| 446 | 2020/01/29 | 11:41:51 | 71.4 |
| 447 | 2020/01/29 | 11:44:51 | 74.1 |
| 448 | 2020/01/29 | 11:47:51 | 65.2 |
| 449 | 2020/01/29 | 11:50:51 | 75.7 |
| 450 | 2020/01/29 | 11:53:51 | 73.3 |
| 451 | 2020/01/29 | 11:56:51 | 64.2 |
| 452 | 2020/01/29 | 11:59:51 | 71.8 |
| 453 | 2020/01/29 | 12:02:51 | 58.5 |
| 454 | 2020/01/29 | 12:05:51 | 71.5 |
| 455 | 2020/01/29 | 12:08:51 | 71.8 |
| 456 | 2020/01/29 | 12:11:51 | 69.2 |
| 457 | 2020/01/29 | 12:14:51 | 67.5 |
| 458 | 2020/01/29 | 12:17:51 | 71.5 |
| 459 | 2020/01/29 | 12:20:51 | 59.6 |
| 460 | 2020/01/29 | 12:23:51 | 73.0 |
| 461 | 2020/01/29 | 12:26:51 | 58.8 |
| 462 | 2020/01/29 | 12:29:51 | 60.4 |
| 463 | 2020/01/29 | 12:32:51 | 71.0 |
| 464 | 2020/01/29 | 12:35:51 | 72.5 |
| 465 | 2020/01/29 | 12:38:51 | 72.6 |
| 466 | 2020/01/29 | 12:41:51 | 68.1 |
| 467 | 2020/01/29 | 12:44:51 | 64.3 |
| 468 | 2020/01/29 | 12:47:51 | 69.4 |
| 469 | 2020/01/29 | 12:50:51 | 66.3 |
| 470 | 2020/01/29 | 12:53:51 | 63.9 |
| 471 | 2020/01/29 | 12:56:51 | 72.1 |
| 472 | 2020/01/29 | 12:59:51 | 67.1 |
| 473 | 2020/01/29 | 13:02:51 | 62.5 |
| 474 | 2020/01/29 | 13:05:51 | 77.4 |
| 475 | 2020/01/29 | 13:08:51 | 64.7 |
| 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
-

| No.s | Date Time | (dB) |
|---|---|---|
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| 2 | 2020/01/29 17:29:33 | 58.0 |
| 3 | 2020/01/29 17:32:33 | 56.3 |
| 4 | 2020/01/29 17:35:33 | 58.8 |
| 5 | 2020/01/29 17:38:33 | 54.9 |
| 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 |
| 19 | 2020/01/29 18:20:33 | 47.6 |
| 20 | 2020/01/29 18:23:33 | 46.8 |
| 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 |
| 24 | 2020/01/29 18:35:33 | 43.6 |
| 25 | 2020/01/29 18:38:33 | 56.3 |
| 26 | 2020/01/29 18:41:33 | 51.5 |
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| 29 | 2020/01/29 18:50:33 | 48.1 |
| 30 | 2020/01/29 18:53:33 | 46.0 |
| 31 | 2020/01/29 18:56:33 | 48.0 |
| 32 | 2020/01/29 18:59:33 | 46.9 |
| 33 | 2020/01/29 19:02:33 | 45.0 |
| 34 | 2020/01/29 19:05:33 | 44.5 |
| 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 |
| 38 | 2020/01/29 19:17:33 | 38.7 |
| 39 | 2020/01/29 19:20:33 | 40.6 |
| 40 | 2020/01/29 19:23:33 | 39.8 |
| 41 | 2020/01/29 19:26:33 | 39.8 |
| 42 | 2020/01/29 19:29:33 | 40.0 |
| 43 | 2020/01/29 19:32:33 | 38.5 |
| 44 | 2020/01/29 19:35:33 | 38.3 |
| 45 | 2020/01/29 19:38:33 | 46.6 |
| 46 | 2020/01/29 19:41:33 | 39.7 |
| 47 | 2020/01/29 19:44:33 | 40.5 |
| 48 | 2020/01/29 19:47:33 | 44.2 |
| 49 | 2020/01/29 19:50:33 | 42.6 |
| 50 | 2020/01/29 19:53:33 | 46.8 |
| 51 | 2020/01/29 19:56:33 | 43.9 |
| 52 | 2020/01/29 19:59:33 | 45.7 |
| 53 | 2020/01/29 20:02:33 | 45.2 |
| 54 | 2020/01/29 20:05:33 | 49.5 |
| 55 | 2020/01/29 20:08:33 | 46.3 |
| 56 | 2020/01/29 20:11:33 | 43.7 |
| 57 | 2020/01/29 20:14:33 | 42.9 |
| 58 | 2020/01/29 20:17:33 | 52.9 |
| 59 | 2020/01/29 20:20:33 | 48.2 |
| 60 | 2020/01/29 20:23:33 | 45.0 |
| 61 | 2020/01/29 20:26:33 | 47.7 |
| 62 | 2020/01/29 20:29:33 | 42.2 |
| 63 | 2020/01/29 20:32:33 | 40.5 |
| 64 | 2020/01/29 20:35:33 | 40.5 |
| 65 | 2020/01/29 20:38:33 | 39.5 |
| 66 | 2020/01/29 20:41:33 | 37.2 |
| 67 | 2020/01/29 20:44:33 | 36.4 |
| 68 | 2020/01/29 20:47:33 | 37.2 |
| 69 | 2020/01/29 20:50:33 | 39.1 |
| 70 | 2020/01/29 20:53:33 | 42.7 |
| 71 | 2020/01/29 20:56:33 | 43.0 |
| 72 | 2020/01/29 20:59:33 | 38.1 |
| 73 | 2020/01/29 21:02:33 | 36.3 |
| 74 | 2020/01/29 21:05:33 | 41.3 |
| 75 | 2020/01/29 21:08:33 | 48.5 |
| 76 | 2020/01/29 21:11:33 | 38.8 |
| 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 |
| 80 | 2020/01/29 21:23:33 | 40.8 |
| 81 | 2020/01/29 21:26:33 | 35.8 |
| 82 | 2020/01/29 21:29:33 | 38.9 |
| 83 | 2020/01/29 21:32:33 | 38.1 |
| 84 | 2020/01/29 21:35:33 | 34.6 |
| 85 | 2020/01/29 21:38:33 | 39.0 |

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| 86 | 2020/01/29 | 21:41:33 | 38.2 |
| 87 | 2020/01/29 | 21:44:33 | 38.1 |
| 88 | 2020/01/29 | 21:47:33 | 45.4 |
| 89 | 2020/01/29 | 21:50:33 | 38.0 |
| 90 | 2020/01/29 | 21:53:33 | 43.6 |
| 91 | 2020/01/29 | 21:56:33 | 35.3 |
| 92 | 2020/01/29 | 21:59:33 | 37.1 |
| 93 | 2020/01/29 | 22:02:33 | 39.0 |
| 94 | 2020/01/29 | 22:05:33 | 40.5 |
| 95 | 2020/01/29 | 22:08:33 | 43.1 |
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|---|---|
| **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 | | | |
|---|---|---|---|---|---|---|
| | | Impact | Spec Lmax | Actual Lmax | Receptor Distance | Estimated 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 | | | |
|---|---|---|---|---|---|---|
| | | Impact | Spec Lmax | Actual Lmax | Receptor Distance | Estimated 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

| Equipment | Calculated (dBA) *Lmax | Leq | Noise Limits (dBA) Day Lmax | Leq | Evening Lmax | Leq | Night Lmax | Leq | Noise Limit Exceedance (dBA) Day Lmax | Leq | Evening Lmax | Leq | Night 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 | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (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 | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | Impact | | Lmax | Lmax | Distance | Shielding |
| Description | Device | Usage(%) | (dBA) | (dBA) | (feet) | (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

| | | 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 |
| 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 |

| Equipment | Calculated (dBA) *Lmax | Leq | Results Noise Limits (dBA) Day Lmax | Day Leq | Evening Lmax | Evening Leq | Night Lmax | Night Leq | Noise Limit Exceedance (dBA) 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 |

| Calculated (dBA) | Results 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 | | 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 ----

| | | 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 | 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) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | 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 ----

| | | 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 | 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 ----

| 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 | 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 ----

| 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 | 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 |

| | | Calculated (dBA) | | Results 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 |

| | | Calculated (dBA) | | Results 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 ----

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 | 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 |
| | 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 ----

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 | 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 |
| | 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.