# Pure Water Antelope Valley

# CEQA Initial Study

October 2025

Lead Agency:

Palmdale Water District
2029 East Avenue Q
Palmdale, California 93550

Technical Assistance Provided by:

Stantec

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Pasadena, California 91101

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# Section 1
# Project and Agency Information

## 1.1 PROJECT TITLE AND LEAD AGENCY

| | |
|---|---|
| **Project Title:** | Pure Water Antelope Valley |
| **Lead Agency Name:** | Palmdale Water District |
| **Lead Agency Address:** | 2029 East Avenue Q<br>Palmdale, California 93550 |
| **Contact Person:** | Scott L. Rogers, PE, Assistant General Manager |
| **Contact Phone Numbers/email:** | d: 661-456-1020 c: 206-303-9303<br>srogers@palmdalewater.org |
| **Project Sponsor:** | Palmdale Water District |

## 1.2 PROJECT BACKGROUND AND OBJECTIVES

### 1.2.1 Background

Originally operated as the Palmdale Irrigation District, the Palmdale Water District (PWD) has been providing water service to the Antelope Valley of Los Angeles County since 1918. Serving approximately 27,000 connections, PWD provides potable water to municipal, industrial, and agricultural customers within a 187 square mile service area. Approximately 48 percent of the water supply is from the Antelope Valley groundwater basin, an adjudicated basin that has been in overdraft condition due to extensive agricultural use since the 1930s. Other sources of water supply are the Littlerock Reservoir, conveyed through the Palmdale Ditch, and the State Water Project, conveyed through the California Aqueduct, and stored in Lake Palmdale.

In June 2023 PWD finalized a Strategic Water Resources Plan (SWRP) Update (update to the 2010 SWRP) to outline a plan for developing and diversifying PWD's water supply through 2050. To sustainably meet future water demands and address existing groundwater overdraft, the SWRP examines maximizing PWD imported water supplies for internal water storage, purified recycled water injection, well rehabilitation and/or replacement of existing wells, new wells, and local supplies enhancements through the sediment removal at Littlerock Reservoir and Palmdale Ditch Conversion project, and conservation. In 2024 a Program Environmental Impact Report (PEIR) was prepared in compliance with the California Environmental Quality Act (CEQA) (Woodard & Curran 2024). The proposed Project, Pure Water Antelope Valley (Pure Water AV), is the purified recycled water injection component of the SWRP and the subject of this CEQA Initial Study (IS). Information from the PEIR is referenced throughout this IS, as relevant.

Pure Water AV is a regional water augmentation program using indirect potable reuse (IPR) by groundwater augmentation via direct injection. Using advanced treatment processes including microfiltration (MF), reverse osmosis (RO), and ultraviolet/advanced oxidation processes

(UV/AOP), Pure Water AV would further purify tertiary treated (Title 22) wastewater to produce water that would meet all applicable state and federal drinking water standards and regulations for IPR. Project water from the proposed Advanced Water Purification Facility (AWPF) would be injected into the Antelope Valley groundwater basin, thereby supplementing PWD's existing water supplies.

As the entity that has proposed and would approve construction and operation of the proposed Project, PWD is the CEQA Lead Agency. PWD has prepared this IS to address the potential impacts of construction and operation of Pure Water AV. The IS has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., and the State CEQA Guidelines, Title 14 California Code of Regulations (CCR) Section 15000 et seq. The IS identifies the site-specific impacts, evaluates their potential significance, and determines the appropriate document needed to comply with CEQA. Based on the information reviewed and contained herein, the proposed Project would not have a significant environmental impact with mitigation measures incorporated into the Project. Based on this IS, a Mitigated Negative Declaration (MND) is the appropriate CEQA document for evaluating the potential environmental impacts of the Pure Water AV Project.

### 1.2.2 Demonstration Facility

As a separate data collection project and as part of the CCR Title 22 permitting process, PWD is currently constructing a 240-gallon per minute (gpm) (feedwater flow) advanced water treatment (AWT) demonstration facility and visitor center to be located adjacent to PWD's headquarters. Tertiary effluent would be provided from the Los Angeles County Sanitation Districts' (LACSD) Palmdale Water Reclamation Plant (PWRP). Treatment processes for the demonstration facility are low-pressure MF, RO and UV/AOP. The goals for the demonstration facility are:

- Determine the optimum process design parameters for the full-scale AWPF
- Evaluate the operational and water quality performance of unit processes
- Support public outreach and education
- Collect necessary data to obtain regulatory approval of the full-scale AWPF

In 2022 PWD determined that the demonstration facility was categorically exempt from CEQA under sections 15306 (information collection) and 15303 (new construction of small structures). Construction is anticipated to be completed in the summer of 2026 with commissioning, operations and testing starting shortly thereafter. Once the necessary data are collected, PWD plans to continue operating the facility as a training center for operations staff and for public education.

### 1.2.3 Project Objective

The overall objective of Pure Water AV is to develop an IPR by groundwater augmentation via direct injection project to recharge the Antelope Valley groundwater basin to enhance local water supply for PWD customers.

The Pure Water AV Project is proposed to support the primary objectives of the SWRP:

- Meet the current and future water supply needs for PWD's service area
- Increase water supply reliability by identifying feasible and reliable sources of water to meet current and future needs
- Maximize cost savings by optimizing existing water rights and facilities, while strategically prioritizing new projects that align with PWD's Mission and Vision
- Identify and plan for the facilities that will be needed to meet current and future needs
- Maximize potential funding by selecting water supply sources that are in line with existing funding programs
- Plan for system redundancy and sustainability so that the system and PWD can accommodate unforeseen changes

Specific objectives of the SWRP for recycled water and groundwater are:

- Maximize the use of recycled water within PWD's service area to reduce the current demand for imported water and limit the need for more imported water in the future
- Obtain funding and partnerships to offset the cost of Pure Water AV
- Be able to pump stored water to meet demands during imported water shortages
- Establish and operate recharge facilities to offset proposed pumping increases
- Leverage excess stored water to generate capital for PWD projects
- Increase PWD's groundwater production right

To meet these objectives the goal of Pure Water AV is to augment 4.75 million gallons per day (mgd) of highly treated recycled water to the Antelope Valley groundwater basin in the near-term and 10 mgd with ultimate buildout of the proposed AWPF.

## 1.3 PROJECT LOCATION AND ENVIRONMENTAL SETTING

The proposed AWPF and two groundwater injection wells would be constructed on part of a 20-acre parcel bounded by 25th Street East and 27th Street East approximately 950 feet north of Avenue Q in Palmdale, Los Angeles County, California, approximately 60 miles north of the City of Los Angeles (Figures 1, 2). The approximate center of the parcel is located at 34.59 latitude -118.08 longitude, United States Geological Survey (USGS) Palmdale NW, California 7.5-minute quadrangle map. Owned by PWD, the land proposed for the AWPF is approximately 5 acres of

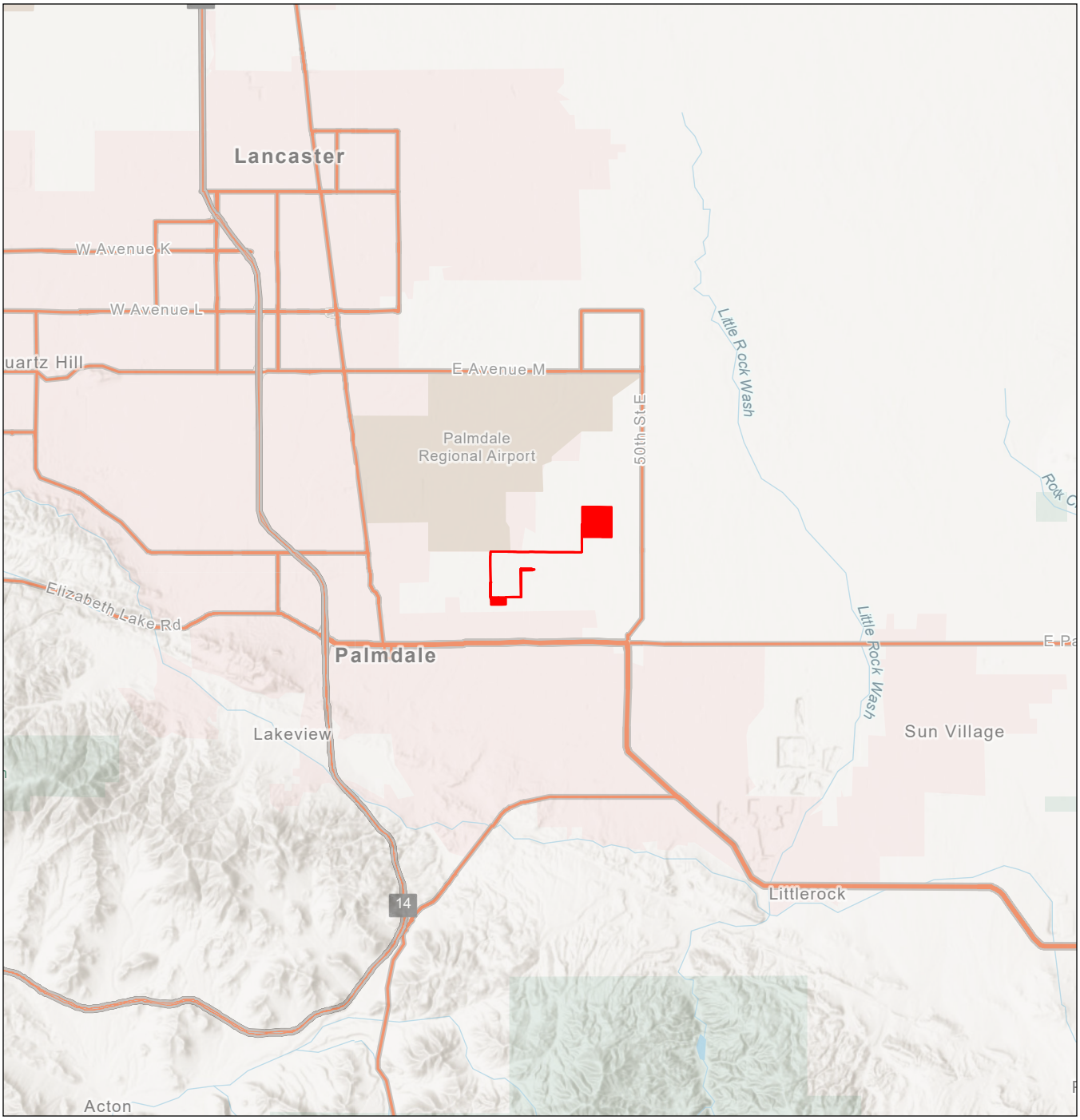
the northwest quadrant of the 20-acre parcel (Figure 3). The equipment expansion for Phase 2 will be within the Phase 1 footprint. Pipelines and injection wells would be installed within the 20-acre parcel. Access to the proposed AWPF site is via 25th Street East. Adjacent land uses include a landscaping company, maintenance company, and one single-family home to the south, warehouse to the southeast, storage facility to the east and open space north and west of the proposed Project site. City of Palmdale zoning of the proposed AWPF parcel is Office Flex; adjacent parcels are Office Flex (west), Prezone Aerospace Industrial (north), Light Industrial (east) and Mixed Use 3 (south) (Palmdale 2023).

Proposed Project pipelines would be located within the rights-of-way of existing roadways and on property owned by Los Angeles World Airport (LAWA) north of the proposed AWPF. Brine disposal for the Project is proposed for existing oxidation ponds owned by LACSD east of 40th Street East, north of East Avenue P; surrounding land uses are agriculture and open space. Tertiary effluent feed water would be conveyed to the AWPF from the PWRP located north of East Avenue P-8 and east of 30th Street East. Project-related construction at this existing facility would be limited to a pump station and pipeline. The Project also includes construction of a replacement groundwater production well (Well 37) to be located west of the PWRP just north of East Avenue P-8 on undeveloped LAWA property.

The Project is located in the Antelope Valley at the western terminus of the Mojave Desert Geomorphic Province. The Antelope Valley is adjacent to the Great Basin geomorphic province to the Northeast and shares some of its geomorphic features. Structurally, the Antelope Valley is a wedge-shaped fault block, bounded to the southwest by the San Andreas Fault, to the Northwest by the Garlock fault, and by an indefinite eastern boundary that extends into the Mojave Desert (Norris and Webb 1990).

The climate of the Mojave Desert is sub-arid, a transitional zone between the Great Basin's relatively colder climate and the Sonoran Desert's subtropical climate (Axelrod 1979; McCorkle-Apple and Lilburn 1992). Seasonal temperatures vary, as do rain, general humidity, and wind levels. As a result, temperature extremes are common, ranging from well below freezing to over 100 degrees Fahrenheit (°F). The Project occurs at an elevation of approximately 2,537-2,576 feet above mean sea level (msl), with average annual temperatures ranging from a low of 49 °F to a high of 78 °F. Annual precipitation averages approximately 7.4 inches (U.S. Climate Data 2025).

The Project site lies in the Mojave Desert scrub vegetation community. This biome is dominated by drought-resistant bushes such as creosote (*Larrea tridentate*), all-scale (*Atriplex polycarpa*), brittlebush (*Encelia farinose*), desert holly (*Atriplex hymenelytra*), Joshua tree (*Yucca brevifolia*), and white burro brush (*Hymenoclea salsola*). In addition, black brush (*Coleogyne ramosissima*) and various cactus species are common throughout the region. Fauna include a variety of rodents, reptiles, small carnivores, and birds.




Project Location

0 1.25 2.5 Miles

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1:162,342

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Stantec

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2025.
**3.** Background:Stantec World Topographic Map: World Ocean Base: Esri, GEBCO, Garmin World Hillshade: Esri, CGIAR, USGS

*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2025-09-08
TR by SET on 2025-09-08
IR by SG on 2025-09-08

*Client/Project* 184031611

Palmdale Water District
Pure Water Antelope Valley Project

*Figure No.*
**1**

*Title*
**Project Location**

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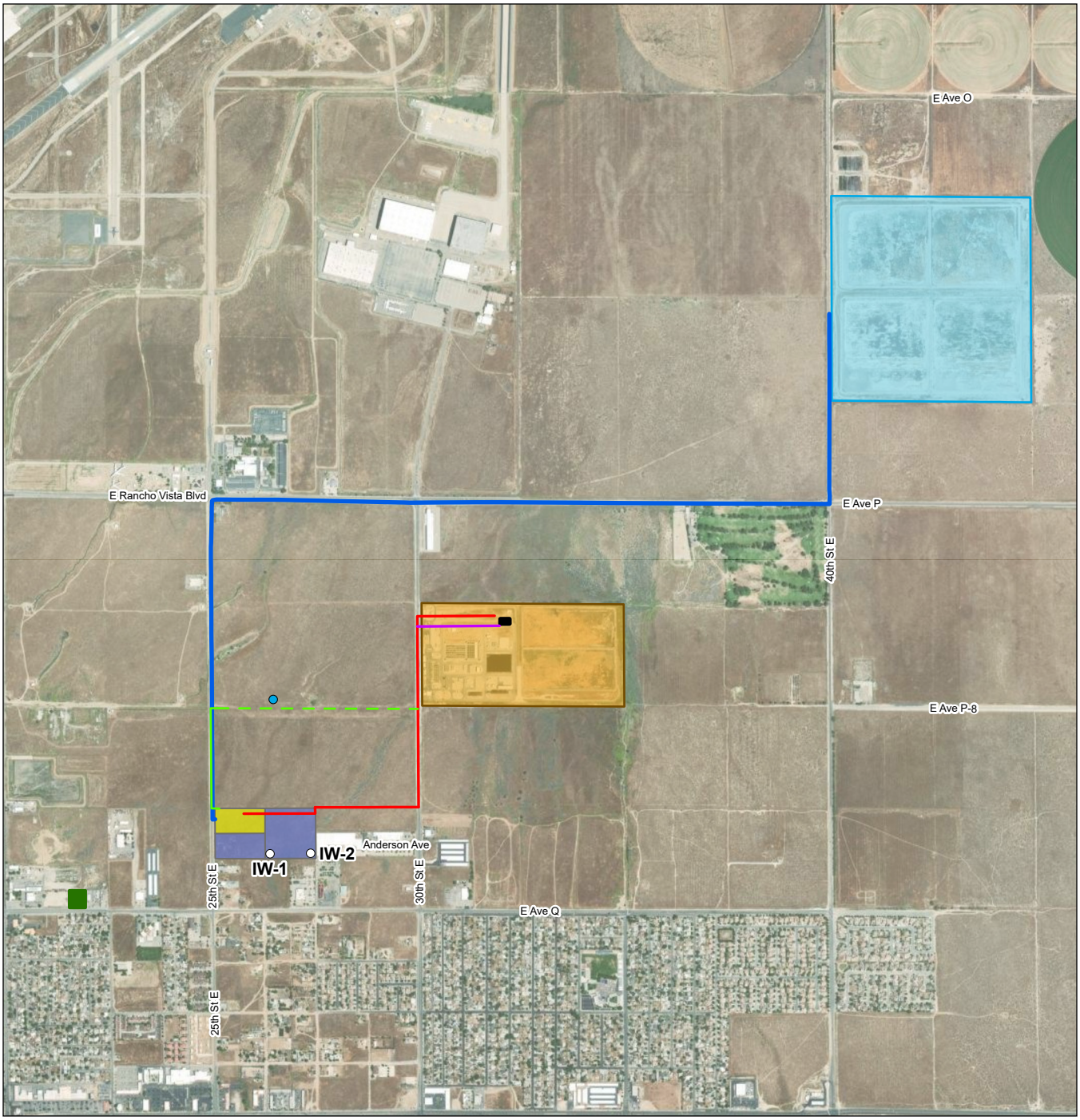


- Proposed Injection Well (Approximate Location)
- Proposed Well 37
- Existing Sewer Pipeline
- Proposed Brine Pipeline
- Proposed Sewer Pipeline
- Proposed Tertiary Effluent Pipeline
- Proposed Recycled Water Pipeline
- Existing Demonstration Facility
- Existing Palmdale Water Reclamation Plant (PWRP)
- Proposed Advanced Water Purification Facility (AWPF)
- Proposed Advanced Water Purification Facility (AWPF) Staging Areas
- Proposed Brine Ponds (Existing Oxidation Ponds)
- Proposed Pump Station

0 1,000 2,000 Feet

(At original document size of 8.5x11)
1:24,000

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***Notes***

**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2025.
**3.** Background:World Imagery: Earthstar Geographics
World Ocean Base: Esri, GEBCO, Garmin, NaturalVue

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*Project Location*
City of Palmdale,
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Prepared by DL on 2025-09-08
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IR by SG on 2025-09-08

*Client/Project*
184031611

Palmdale Water District
Pure Water Antelope Valley Project

*Figure No.*
**2**

*Title*
**Project Components Map**

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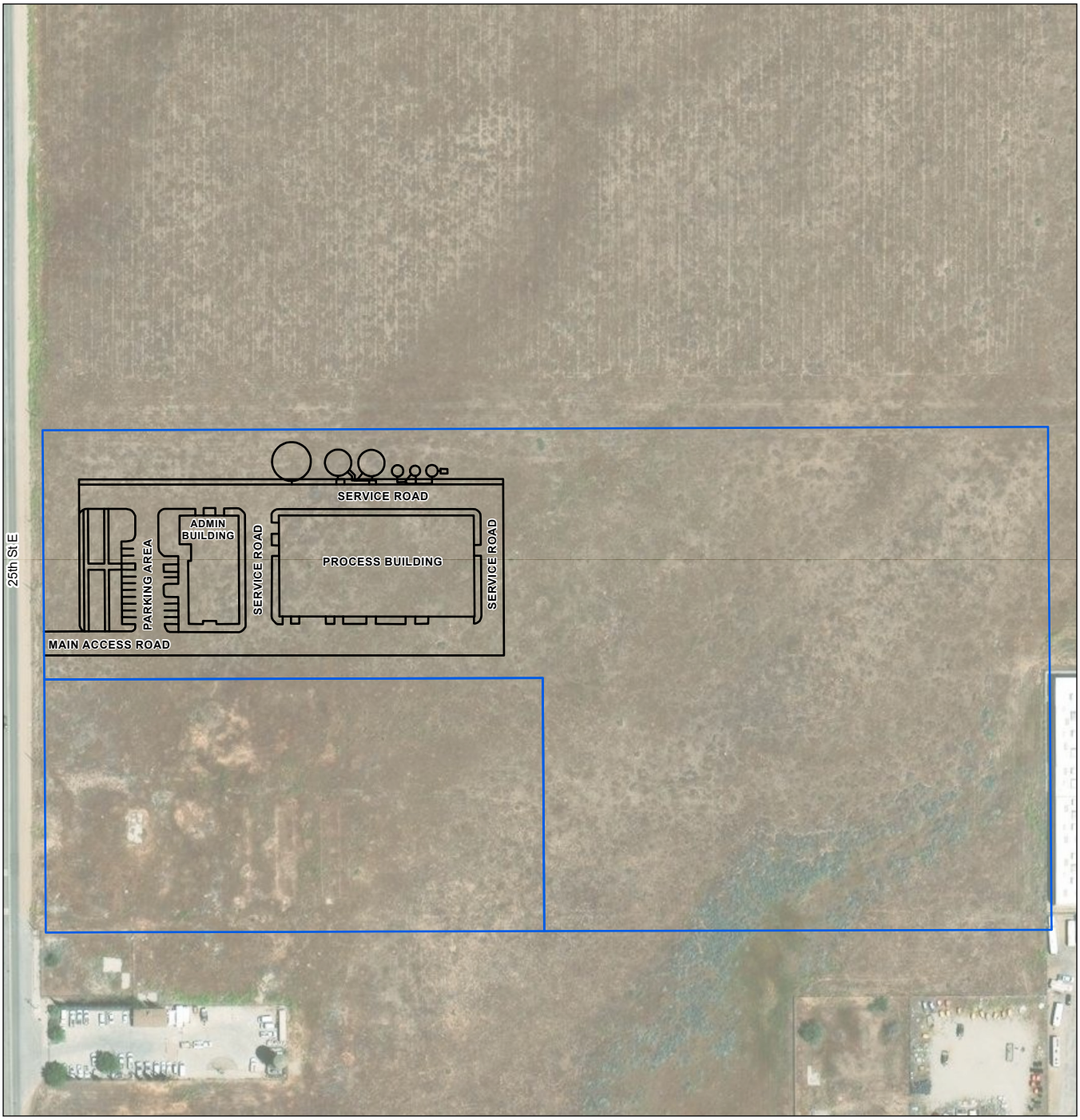


— Approximate Advanced Water Purification Facility (AWPF) Site Layout

Parcel Boundaries

0 100 200 Feet

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1:2,400

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*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2025-09-08
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IR by SG on 2025-09-08

*Client/Project*
184031611

Palmdale Water District
Pure Water Antelope Valley Project

*Figure No.*
**3**

*Title*
**Advanced Water Purification Facility Site Layout**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2025.
**3.** Background:World Imagery: Maxar
World Ocean Base: Esri, GEBCO, Garmin, NaturalVue

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## 1.4 PROJECT DESCRIPTION

As shown in the process schematic below (Figure 4), the proposed Project includes development of an AWPF, injection wells for the storage of the recycled water in the groundwater basin, and conveyance facilities for AWPF feed water and waste streams. Modification of existing inoperative oxidation ponds for use for brine disposal is also proposed. Extraction and chlorination of groundwater for delivery to potable water customers in PWD's service area would continue as under PWD's existing operations. One replacement production well (Well 37) is proposed as part of the Project.

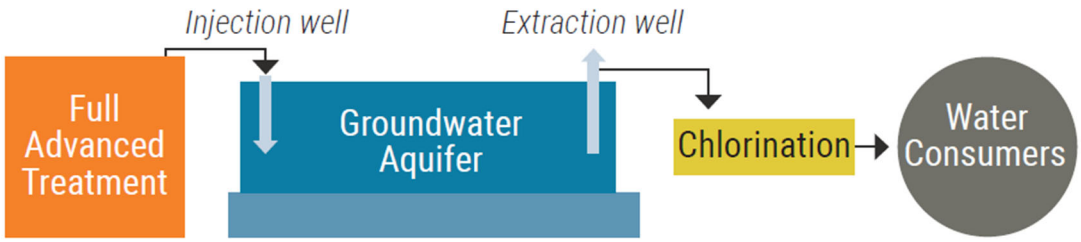



**Figure 4. Process Schematic of Groundwater Recharge via Direct Injection**

### 1.4.1 Indirect Potable Reuse

IPR includes the addition of recycled and/or purified water to an environmental buffer (e.g., groundwater aquifer) and subsequently extracting and retreating it for potable distribution. Two broad forms of IPR which have been formally regulated by the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) since 2014 and 2018 include groundwater recharge (GWR) and surface water augmentation (SWA). GWR can be further classified as surface application (i.e., surface spreading via percolation basins) or subsurface application (i.e., direct injection). Title 22 classifies a project as a groundwater replenishment reuse project (GRRP) when a project involves planned use of recycled municipal wastewater that is operated for the purpose of replenishing a groundwater basin. PWD's pursuit of IPR by GWR via subsurface application qualifies as a GRRP.

#### 1.4.1.1 Water Recycling Criteria

The GWR regulations require that the wastewater used for direct injection adhere to the definition of Title 22 disinfected tertiary recycled purified water, which requires that wastewater is oxidized (i.e., biological treatment), filtered, and disinfected in accordance with the specified criteria. Recycled municipal wastewater (i.e., tertiary effluent) from the PWRP meets this definition and would be used by Pure Water AV as the feed water for its AWPF.

#### 1.4.1.2 Treatment Requirements

According to Title 22, full advanced treatment (FAT), which includes RO and AOP, is required for GRRP's pursuing GWR via direct injection. Additionally, MF is a required pretreatment to the

RO process. Following FAT and the injection of purified recycled water in a groundwater aquifer, a minimum subsurface retention time of two months is required. The replenished groundwater can then be extracted, chlorinated, and conveyed to customers.

FAT must meet advanced treatment criteria regarding sodium chloride rejection, operational recovery percentage, pH, total organic carbon (TOC), continuous performance monitoring, 1,4-dioxane, source control to prevent pollutants that may interfere with the advanced treatment process, and pathogen control for enteric viruses, *Giardia* cysts, and *Cryptosporidium* oocysts.

As mandated in the GWR regulations, the applied purified recycled water for recharge must meet all federal and state primary and secondary Maximum Contaminant Levels (MCLs) for drinking water, as well as lead and copper action levels, as defined in Title 22 of the CCR. For certain chemicals with no MCLs, DDW has established health-based advisory levels known as notification levels (NLs). The total nitrogen (TN) of the purified water must be below 10 milligrams per liter (mg/L) as N, and the TOC must be less than 0.5 mg/L. Full advanced treated water can reliably meet all requirements set forth by Title 22 for TN, TOC, constituents with primary and secondary MCLs, lead and copper action levels, and constituents with NLs.

### 1.4.2 Advanced Water Purification Facility

#### 1.4.2.1 Buildings

Two buildings would be constructed as part of the proposed Project, an approximate 10,200 square ft Administration Building and an approximate 26,700 square ft Process Building (Figure 3). These structures are planned for the northwest quadrant of PWD's 20-acre site. The area below the proposed AWPF and the eastern portion of the site would be used for injection well siting, product water pipeline routing, construction laydown area or potentially future developments.

The single-story Process Building would consist of a pre-engineered metal building frame with an exterior insulated metal panel skin and insulated standing seam roof panel, sitting on a slab-on-grade concrete foundation. The design blends a minimalist, industrial character matching the Administrative Building with a complementary asymmetrical roof line over a rectangular volume. The building would accommodate a future expansion from the initial phase facility to up to the ultimate buildout facility. Storage tanks for various water types (e.g., influent, RO waste, product water) would be located outside the Process Building. The single-story Administration Building would consist of a pre-engineered metal frame clad in insulated metal wall panels and insulated standing seam metal roof panels, sitting on a slab-on-grade foundation. Spaces within the Administration Building are designated for entry lobby, offices, mechanical equipment room, restroom/lockers, breakroom, conference room, supervisory control and data acquisition (SCADA) system/information technology, mechanical and electrical, and laboratory. The Administration Building would have a maximum occupancy of 49 people.

#### 1.4.2.2 Roadways and Parking

Service roads would be constructed throughout the site, surrounding and connecting the buildings to facilitate operational and maintenance access. A primary access road along the southern side would support site entry for maintenance vehicles and chemical deliveries, leading directly to the

chemical area located on the south side of the Process Building. Process water storage tanks would be situated near the site's northern boundary, maintaining open sightlines across the property and enabling centralized monitoring capabilities.

A pedestrian loading sidewalk and parking would be provided on the west side of the site with access from the main road. A fence line separating the right of way from the parcel would be established. The parking lot located adjacent to the loading sidewalk would be separated by a 10-ft landscaped area. The parking lot would include 18 spaces, with 7 spaces for staff including one Americans with Disabilities Act (ADA) accessible stall and 11 spaces for visitors with one ADA accessible stall. Accessible parking and CALGreen requirements apply to the proposed Project. At least two electric vehicle (EV) parking stalls would be provided.

#### 1.4.2.3 Security Features

A perimeter fence would be installed around the AWPF site; specifics regarding materials and size would be developed during detailed design. In areas where chemical storage is required, primary access for vehicle entry would be fenced and would include motorized (traction drive) gates. A chain-link fence enclosure with lockable gates would provide secondary access immediately into chemical storage areas. Video cameras would be located within the building and outside of the building to monitor entries and secure areas.

#### 1.4.2.4 Water Treatment Process

With a design capacity of 12 mgd, the existing PWRP provides primary, secondary, and tertiary treatment meeting CCR Title 22 Water Recycling Criteria. Primary treatment consists of bar screens, aerated grit chambers, and primary clarifiers. Secondary treatment includes activated sludge with anoxic and aerated zones for nitrification and partial denitrification, followed by secondary clarifiers. Tertiary treatment is achieved with cloth-media filtration and disinfection using chloramines. Effluent from the PWRP would serve as the feed water to the AWPF. The AWPF is designed around an initial feed flow of 4.75 mgd (Initial Phase) and ultimate potential buildout feed flow of 10.0 mgd (Ultimate Buildout), if additional tertiary effluent flows are identified and accepted to the facility. A process flow diagram for the AWPF is provided as Figure 5. The main AWPF processes units would be:

- **MF Feed Tank and Pumps**: The tanks and pumps would provide equalization of tertiary effluent feed flow to the AWPF and the requisite flow and head ahead of the MF feed strainers and MF trains. It is assumed that the optimal configuration for the MF feed tank and pumps would include an above-grade cylindrical tank with above-grade mounted vertical turbine pumps. Sodium hypochlorite and ammonium sulfate would be added downstream of the MF feed pumps and upstream of the strainers, as needed, to boost the chloramine residual in PWRP tertiary effluent for biofouling control through the MF system.
- **MF System**: The MF system would remove particulate matter from the feed water to enhance downstream RO membrane performance. The MF system serves as the first pathogen removal barrier in the AWPF for *Giardia* and *Cryptosporidium* while providing necessary pretreatment for the RO process. The MF system includes the MF

feed strainers, MF trains, and MF clean-in-place (CIP) system. Upstream automatic strainers would provide particulate removal to protect the membranes from physical damage. As solids accumulate on the feed side of the screens, the pressure differential between the feed and filtrate would increase. Once the pressure differential reaches a preset value, the strainers would automatically backwash.

The Compressed air system would allow daily pressure decay tests on each MF train to demonstrate membrane integrity and to operate pneumatic valve actuators on the MF skids.

The purpose of the MF CIP system is to accomplish maintenance cleans (MCs) and recovery cleans (RCs) on individual MF trains to mitigate the long-term impacts of inorganic and organic foulants (e.g., precipitants, colloidal organics, biogrowth) that are not removed by the backwash process.

- **RO System**: The RO system serves as a chemical barrier and pathogen barrier for virus, *Giardia*, and *Cryptosporidium*. The RO configuration would include a primary 2-stage RO system followed by a secondary closed-circuit reverse osmosis (CCRO) system for an overall recovery of 92 percent. The RO system array is designed with 26 stage 1 vessels and 13 stage 2 vessels. Major components include the RO cartridge filters, RO trains, RO flush system, and RO CIP system.
- **UV/AOP System**: The main components of the UV/AOP system include UV reactors, lamps, power distribution enclosures, and an oxidant injection system. The UV/AOP system provides disinfection, chemical control, and pathogen control of all target pathogens. The UV/AOP effluent would be stabilized through the injection of calcium chloride, sodium hydroxide, and carbon dioxide.
- **Product Water Stabilization**: Product water stabilization serves to re-mineralize and increase the pH of the product water to prevent corrosion of the downstream product water conveyance, as well as prevent mobilization of metals in the aquifer. The main components include calcium chloride, sodium hydroxide, and carbon dioxide chemical storage and feed systems.
- **Product Water Pump Station**: To provide equalization, purified water from the AWPF would collect in a product water clearwell before being pumped to the injection wells.
- **Waste Equalization Tank and Pump**: The tank would provide equalization of waste streams from all major unit processes (primarily MF and RO) and pump waste to the sewer.

### 1.4.3 Product Water Conveyance Line

Purified water from the AWPF would be conveyed to the product water clearwell before being pumped to the injection wells. The final size and alignment of product water pipelines would be determined once the injection well number, capacity and location are determined. The pipelines would be installed within the boundary of the PWD-owned parcel.

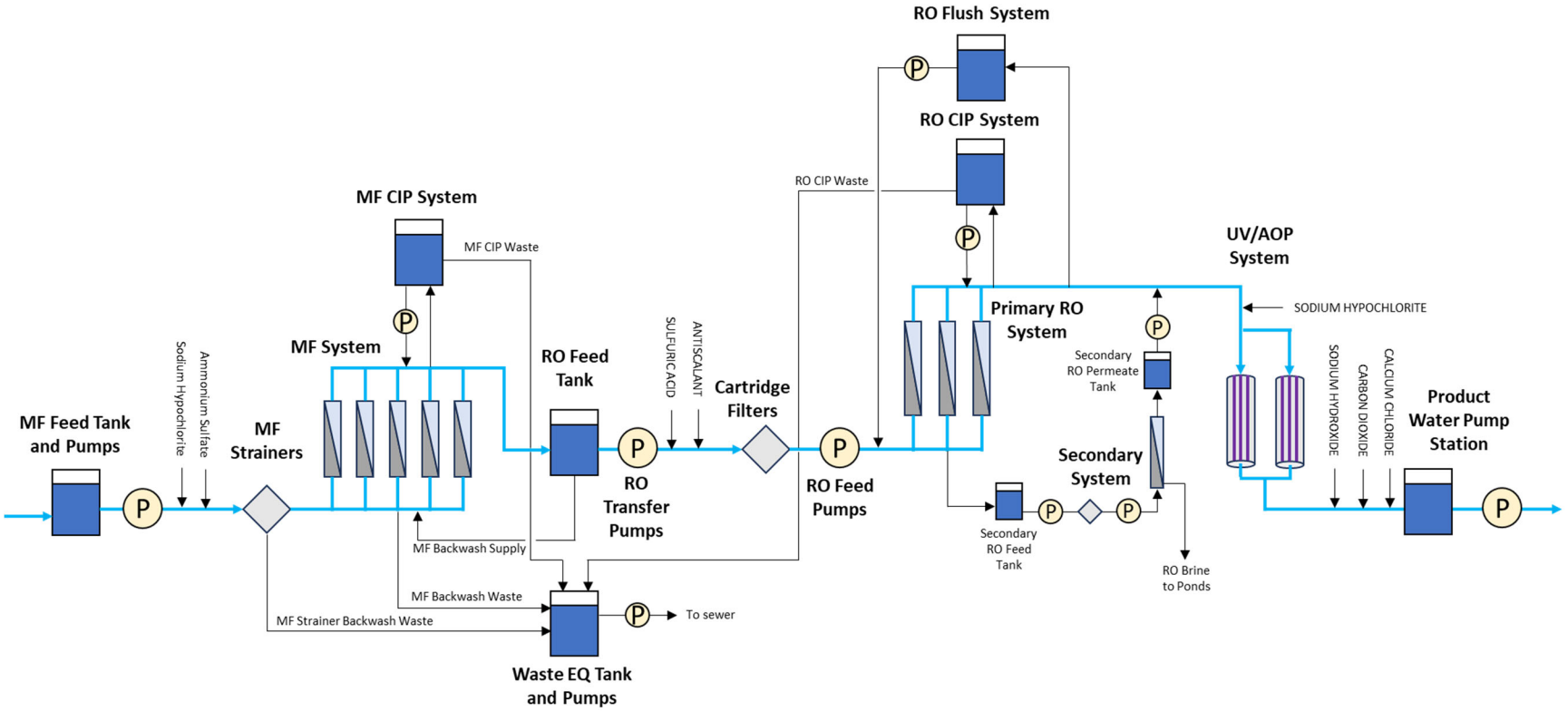



**Figure 5. Process Flow Diagram for the Pure Water AV AWPF**

### 1.4.4 Injection Wells

Based on conceptual design, two injection wells capable of injecting approximately 1,650 gpm would be constructed on the 20-acre parcel. Based on further geotechnical investigation and detailed design, the specific number and location of injection wells would be determined. Preliminary injection well design includes a 24-inch diameter well drilled to a depth of approximately 850 feet with well screening at 600 to 840 feet below ground surface (bgs). Final location and total number of injection wells would depend on the total treatment rate, aquifer conditions, and injection well design.

### 1.4.5 Wells

Pure Water AV operation would require monitoring of purified water flow in the saturated zone between the injection wells and pumping wells. Title 22 regulations require at least two monitor wells to be located downgradient of the injection wells and upgradient of the pumping wells. At least one monitor well shall be located as follows:

- No less than two weeks, but no more than six months, of purified water travel time in the aquifer system
- At least one month of purified water travel time upgradient of the nearest drinking water well.

The wells would be small diameter and installed to 500 ft or more. One monitor well would be located on the PWD property, and one monitor well could be located in the vicinity of 25th Street East and East Avenue Q.

A replacement production well (Well 37) is proposed west of abandoned PWD Well 24 and would be constructed within an easement from LAWA. The new well would be designed to deliver approximately 200 gpm of water from the Antelope Valley Groundwater Basin. Since existing PWD Wells 4A and 24 are inactive and Well 24A is abandoned, operation of Well 37 would not increase PWD's overall groundwater production capacity.

### 1.4.6 Tertiary Effluent Pump Station and Pipeline

A tertiary effluent pump station would be installed at the PWRP and would contain two centrifugal end suction with variable frequency drive (VFD) pumps plus one standby for the AWPF and three pumps plus one standby for PWD's existing recycled water system. Based on preliminary design, the pump station building housing the pumps would be 77 feet by 27 feet and located on a previously disturbed area in the northeast portion of the PWRP. Two surge tanks (each approximately 5 feet wide by 10 feet long) would be outside west of the pump building and a concrete pad with emergency standby generator would be outside and east of the pump station building. Approximately 6,500 feet of 18-inch diameter pipeline would be installed on 30$^{th}$ Street East to convey tertiary effluent to the MF feed tank at the AWPF.

The recycled water system consists of an existing 24-inch pipe along 30th Street, approximately 4,900 feet of 12-inch pipe along Avenue Q, and approximately 1,020 feet of new 12-inch diameter pipe to replace the existing 8-inch pipe that would need to be installed to convey tertiary water from the new AWPF pump station to the point of connection to the existing 24-inch pipe in 30th

Street. McAdam Park on East Avenue R and the Academic Rise (SOAR) Palmdale High School at 2270 E Ave Q are existing recycled water users (for landscape irrigation).

### 1.4.7 Waste Streams

The full-scale AWPF would produce waste streams that must be disposed of in accordance with applicable environmental regulations and LACSD. Table 1 lists the flows generated from each process unit together with discharge locations and waste frequency. Waste streams are defined as continuous or intermittent, if generated during normal operation on an hourly or daily basis; or scheduled, if generated less frequently (e.g., weekly or monthly), and generally initiated by plant operators.

**Table 1. AWPF Waste Stream Summary**

| What Process | Waste Flow | Waste Frequency | Discharge Location |
|---|---|---|---|
| Various | Process drains, online analyzers | Continuous | Waste equalization tank, pumped to sewer |
| MF System | Strainer backwash | Intermittent | |
| | MF backwash | Intermittent | |
| | MF MC and RC* | Scheduled | |
| RO System | Primary and secondary RO flush | Scheduled | |
| | Primary and secondary RO CIP* | Scheduled | |
| UV/AOP System | Drain to waste | Scheduled | |
| Administration and Maintenance Building | Sanitary | Intermittent | Onsite maintenance hole, pumped to sewer |

*Chemically neutralized
Key: AWPF = advanced water purification facility; CIP = clean in place; MC = maintenance clean; MF = microfiltration; RC = recovery clean; RO = reverse osmosis; UV/AOP = ultraviolet advanced oxidation process

#### 1.4.7.1 Brine

Brine generated by the primary RO process would be further concentrated by the secondary RO process then conveyed in a new pipeline to the brine ponds. The pipeline would be constructed of small-diameter (approximately 6-inch) plastic piping, since plastic is smooth and chemically inert, which mitigates issues with precipitate formation and pipe corrosion. Detailed design of the brine conveyance pipelines would consider adding an acid dosing location, redundant conveyance system, and flushing capabilities. It is assumed that the brine conveyance lines would be 6-inch plastic main pipe for the initial brine effluent flow rate of approximately 0.35 mgd, and additional brine conveyance lines would be constructed in the future for ultimate buildout. Anticipated brine flow rates are summarized in Table 2.

**Table 2. Reverse Osmosis Brine Waste Flow Rates**

| Overall RO Recovery | RO Brine Flow Rate (gpm) | |
|---|---|---|
| | Initial Phase | Ultimate Buildout |
| 92% | 246 | 517 |

Brine generated from the RO system would be conveyed to evaporation ponds, utilizing repurposed oxidation ponds currently owned by LACSD located northeast of the intersection of 40th Street East and East Avenue P (Figure 2). A planning-level analysis, based on a general flow-balance model, estimated approximately 90 acres of pond area would be required (assuming an N+1 pond design) for a design AWPF feed flow of 4.75 mgd. In the future if AWPF feed flow increases, brine flowrate and required brine pond area would increase accordingly.

### 1.4.8 Power Facilities

The facility would receive power supply from the local utility, Southern California Edison (SCE). In order to comply with SCE capacity requirement of 4000A per 480V transformer and typical capacity ratings of low voltage motor control centers (MCCs), the electrical configuration would be split into two MCCs and coincide with the initial and buildout construction phases. Each MCC would be powered by its own utility transformer. Both transformers would either get power from nearby SCE utility lines or from a potential new SCE substation built on site.

A standby generator would provide power to the lighting; heating, ventilation and air conditioning (HVAC); and flush pump loads within the Process Building and Administration Building in the case of power disruption. The specific location and size of the outdoor generator would be determined during detailed design, although it is assumed to be approximately 800kW. An emergency natural gas generator would also be installed at the PWRP, on an approximately 12 ft by 20 ft concrete pad on the east side of the proposed pump station building.

### 1.4.9 Project Construction

The AWPF, product water conveyance pipeline, injection wells, corresponding site development, and supporting site infrastructure would be constructed under a progressive design-build contract. This two-phased qualifications approach allows early contractor involvement and iterative design refinement. The production well and the remaining conveyance Project components, including the tertiary water pump station and pipeline, brine conveyance and brine ponds, would be constructed under a design, bid, build approach.

While the construction contractor would determine the specific schedule for construction activities, the general construction sequence would be as follows:

- Mobilization and initial surface preparation (clearing and grubbing of vegetation and debris)
- Foundations and substructure - general grading for foundations and over excavation and scarifying subgrade for roadway construction and parking areas
- Mechanical and piping
- Buildings superstructures
- Buildings envelopes
- Equipment installation
- Finishes - external finishes, windows, doors, HVAC and electrical systems, interior finishes, fixtures, fittings
- Testing and Commissioning

The anticipated number of work days by construction activity is summarized in Table 3.

**Table 3. Anticipated Construction Work Days**

| Major Construction Task | Total duration (days) | Total Work Days |
|---|---|---|
| Construction | 839 | 600 |
| General Conditions | 839 | 600 |
| Mobilization Activities | 73 | 53 |
| Off-Site Civil/Utility | 171 | 122 |
| Site Civil Utility | 174 | 125 |
| Outdoor Storage Tanks | 208 | 150 |
| Process Building | 729 | 522 |
| Admin Building | 263 | 189 |

General construction information includes:

- Approximately 6,200 CY of soil would be exported for disposal by the construction contractor at an applicable Construction and Demolition (C&D) landfill. Approximately 7,650 CY would be imported for backfill. This fill material would consist of backfill soils, topsoil, building structural backfill, road structural backfill, and pipe bedding backfill.
- Concrete deliveries are anticipated to be from an existing concrete supplier in Palmdale. Based on conceptual design, an estimated volume of 3,650 CY of concrete would be required.
- Facilities are anticipated to be constructed over approximately 29 months. The conceptual design assumes that the buildings, AWPF site utilities, and outdoor storage tanks are constructed approximately concurrently, with construction of the Process Building taking the longest at 24 months. Offsite pipelines and pump station would lag 6 months from the start of construction for the buildings.

While the construction contractor would determine the specific equipment necessary for construction activities, typical equipment and estimated durations of use for the proposed facilities are summarized in Table 4.

**Table 4. Typical Construction Equipment and Approximate Durations of Use**

| Equipment type | Equipment Size (hp) | Equipment Time (hr) | Hours per Day of Use |
|---|---|---|---|
| Excavator | 165 | 1454 | 2.42 |
| Mini-excavator | 44 | 25 | 0.04 |
| Forklift | 110 | 3674 | 6.12 |

| Equipment type | Equipment Size (hp) | Equipment Time (hr) | Hours per Day of Use |
|---|---|---|---|
| Paver | 142 | 22 | 0.04 |
| Roller Compactor | 100 | 852 | 1.42 |
| Medium Skid steer | 74 | 154 | 0.26 |
| Loader | 117 | 79 | 0.13 |
| Water truck | 250 | 197 | 0.33 |
| Crane | 180 | 1151 | 1.92 |
| Lift | 20 | 7116 | 11.86 |
| Dozer | 104 | 1051 | 1.75 |
| Grader | 145 | 394 | 0.66 |
| Plate compactor | 7 | 734 | 1.22 |
| Concrete pump truck | 240 | 49 | 0.08 |
| Drill rig | 440 | 814 | 1.36 |
| Generator (15 kW) | 33 | 31223 | 52.04 |

Additionally, delivery trucks would be required to transport materials to the Project site. Table 5 summarizes the estimated number of each type of delivery vehicle.

**Table 5. Typical Construction Equipment and Approximate Durations of Use**

| Type of Delivery Vehicle | Number of Trips during the Construction Period |
|---|---|
| Utility Truck | 53 |
| Flat bed Semi | 362 |
| Low boy Semi | 118 |
| Dry Van Trailers Semi | 77 |
| 8 CY Concrete Mix Truck | 464 |
| 20 CY Dump Truck | 694 |
| **Total** | **1,768** |

General construction information includes:

- Worker parking and material staging for the AWPF construction would be within the 20-acre PWD-owned parcel.
- Normal construction work hours, including materials deliveries, are anticipated to be limited to Monday to Friday 7:00 a.m. to 7:00 p.m.
- Water for water trucks would be obtained from a potable fire hydrant located near the proposed AWPF site.
- Construction equipment and vehicles would be refueled offsite. No on-site fuel storage tanks are anticipated to be required during construction.

- On-site construction workforce would average an estimated 36 people per day (21 craft workers and 15 management workers).

**Brine Ponds**

Design details for reconfiguration of the existing oxidation ponds into brine ponds have not yet been developed. It is envisioned that the area would be graded with pond berms reconfigured. The brine ponds would be lined with a high-density polyethylene (HDPE) liner. At this time it is anticipated that solids disposal (approximately 4,400 cy/year) would be infrequent. After approximately 20 years of use (life cycle of the liner), each pond cell would be taken offline for removal of all solids and replacement of the liner. It is anticipated that a biosolids disposal company would then dispose of the solids in accordance with applicable local and State regulations.

**Best Management Practices**

The following best management practices (BMPs) would be implemented during Project construction:

- **Water Trucks.** To control dust emissions, water trucks would spray cleared and grubbed areas, soil stockpiles, and unimproved roadways during construction.
- **High Wind Events.** Construction activities would be stopped during sustained high wind events (i.e., a period or periods of time aggregating more than 3 minutes in any 60-minute period) greater than 20 miles per hour (mph).
- **Haul Trucks**. Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Haul trucks traveling along freeways or major roadways should be covered.
- **Street Sweeping**. Use wet power vacuum street sweepers to remove any visible track-out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- **Vehicle Speed Limit**. Limit vehicle speeds on unpaved roads to 15 mph.
- **Paving**. Roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- **Stormwater Management**. BMPs for the protection of stormwater quality would be implemented during Project construction. The Storm Water Pollution Prevention Plan (SWPPP) prepared by the construction contractor would detail the specific measures to be implemented and the pollution controls to be monitored during Project construction. Table 6 summarizes typical measures anticipated to be implemented.

**Table 6. Typical Stormwater Management Best Management Practices**

| |
|---|
| **Housekeeping Measures** |
| • Conduct an inventory of products used or expected to be used |
| • Cover and/or berm loose stockpiled construction materials |
| • Store chemicals in watertight containers |
| **Employee Training** |
| • Brief staff on the importance of preventing stormwater pollution |
| • Have staff review SWPPP |
| • Conduct refresher training during the wet season |
| • Document training |
| **Erosion and Sediment Controls** |
| • Provide effective cover for inactive areas – cover, berm, or direct runoff to suitable basins |
| • Establish and maintain effective perimeter control |
| • Stabilize construction entrances and exits to control sediment – inspect ingress and egress points daily, and maintain as necessary |
| • Control dust during earthwork |
| • Place sandbags or other barriers to direct stormwater flow to suitable basins |
| **Spill Prevention and Control** |
| • Inspect construction equipment for leaking |
| • Use drip pans until equipment can be repaired |
| • Cleanup spills Immediately – remove adsorbent promptly |
| • Notify the proper entities in the event of a spill |
| **Concrete Truck Washing Waste** |
| • Provide containment for capture of wash water |
| • Maintain containment area |
| **Hazardous Waste Management and Disposal** |
| • Store hazardous wastes in covered, labeled containers with secondary containment for liquid hazardous wastes |
| • Store wastes separately to promote recycling and to prevent undesirable chemical reactions |
| **Materials Handling and Storage** |
| • Establish a designated area for hazardous materials |
| • Berm, cover, and/or contain the storage area as necessary to prevent materials from leaking or spilling |
| • Store the minimum volume of hazardous materials necessary for the work |
| |

| Vehicle and Equipment Maintenance, Repair, and Storage |
|---|
| • Inspect vehicles and equipment regularly |
| • Conduct maintenance as necessary |
| • Designate areas for storage – where fluids can be captured and disposed of properly |
| **Scheduling** |
| • Avoid work during storm events |
| • Stabilize work areas prior to predicted storm events |

### 1.4.10 Operations

Operation of the AWPF is anticipated to be 24 hours a day, 7 days a week. An estimated 10 PWD operators would be employed at the facility, with approximately 7 staff members on-site at any one time. Some maintenance staff would be shared with other PWD operations. Operations activities would include:

- Monitoring – Numerous AWPF conditions would be monitored including chemical storage tank levels, water quality, equipment failure, and water volumes. A SCADA system would be operational at the AWPF. When conditions are observed outside of thresholds, alarm conditions would be triggered. When alarm conditions exist, plant operators would perform corrective actions. For example, the AWPF would automatically divert or overflow off-specification water to an on-site storage tank (minimum of 500,000 gallons or 2 hours of storage at 4.75 mgd) or to the sewer (minimum diversion pipe diameter of 21 inches).
- Maintenance – Process systems at the AWPF would require on-going routine maintenance to retain performance.
- Laboratory analyses – The Administration Building includes space for a water quality laboratory. Sample analyses to ensure water treatment efficacy would be on-going during operations.
- Reporting – Routine reports would be generated to document plant operating conditions.

## 1.5 APPLICABLE PLANS AND POLICIES

The City of Palmdale 2045 General Plan (2022a) and the Los Angeles County General Plan 2035 (2022) are the land use planning documents relevant for the proposed Project sites. The proposed site for the AWPF is located in the City of Palmdale on Parcel Numbers: 3025-024-900 and 3022-011-002. The City of Palmdale and Los Angeles County land use designations for the Project sites are described in Section 2.3.11.

## 1.6 PROJECT APPROVALS

Anticipated permits, approvals, and notifications to other agencies are summarized in Table 7.

**Table 7. Summary of Anticipated Permits and Approvals**

| Agency | Anticipated Permit or Approval |
|---|---|
| State Water Resources Control Board (SWRCB) | • National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2022-0057-DWQ, NPDES No. CAS000002). |
| SWRCB Division of Drinking Water (DDW) | • IPR permit<br>• Domestic Water Supply Permit Amendment |
| Lahontan Regional Water Quality Control Board (Regional Board) | • Waste Discharge and Water Recycling Requirements<br>• User Water Recycling Permit<br>• Title 22 Engineering Report<br>• Operations and Optimization Plan |
| California Department of Transportation (Caltrans) | • Transportation Permit for transportation of heavy construction equipment and/or materials which require the use of oversized transport vehicles on State highways |
| Los Angeles County Sanitation District (LACSD) | • Sewer Discharge Permit for use of the existing 39-inch "A" Relief trunk sewer in East Avenue P-8<br>• Industrial Wastewater Discharge Permit<br>• Lease agreement for use of oxidation ponds for brine disposal<br>• Purchase agreement for PWRP tertiary effluent<br>• Coordination regarding integration of proposed tertiary effluent pump station and pipeline |
| Los Angeles County Department of Public Works | • Standard Urban Storm Water Mitigation Plan |
| Los Angeles County Department of Public Health | • Cross Connection and Water Pollution Control Program compliance |
| Los Angeles County Fire Department (LACFD; Certified Unified Program Agency (CUPA) | • Fire Protection System Permit/Plan Check<br>• Hazardous Materials Review/Field Inspection<br>• Spill Prevention Control and Countermeasure Plan |
| Los Angeles County Airport Land Use Commission (ALUC) | • Coordination regarding construction near an airport |
| Los Angeles World Airport (LAWA) | • Easement (estimated width of 20 – 30 feet) for the proposed utility alignment for the tertiary effluent pipeline<br>• Easement for Well 37 |
| Antelope Valley Air Quality Management District (AVAQMD) | • California Air Resources Board Portable Equipment Registration Program (PERP) registration for use of portable diesel engines or an AVAQMD permit for temporary use during Project construction<br>• Compliance with AVAQMD Rule 401 regarding fugitive dust control during construction<br>• Permit to Construction, Permit to Operate for standby power generators for operations at the AWPF and the PWRP |
| California Department of Fish and Wildlife (CDFW) and/or United States Fish and Wildlife Service (USFWS) | • As mitigated, significant impacts to special status species or other biological resources are not anticipated for the proposed Project (see Section 2.3.4). However, if Candidate or Listed species are observed prior to or during construction of the Project, notifications to the CDFW and/or USFWS will be made as applicable. |

# Section 2
# Environmental Analysis

## 2.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would result in potentially significant impacts as indicated by the checklist on the following pages. However, mitigation measures have been identified to reduce impacts on these topics to less than significant levels.

| | | |
|---|---|---|
| ☒ Aesthetics | ☐ Greenhouse Gas Emissions | ☐ Population and Housing |
| ☐ Agriculture and Forest Resources | ☒ Geology and Soils | ☐ Public Services |
| ☐ Air Quality | ☒ Hazards and Hazardous Materials | ☐ Recreation |
| ☒ Biological Resources | ☒ Hydrology and Water Quality | ☒ Transportation |
| ☒ Cultural Resources<br>Tribal Cultural Resources | ☐ Land Use and Planning | ☐ Utilities and Service Systems |
| ☐ Energy | ☐ Mineral Resources | ☒ Wildfire |
| | ☒ Noise | |

## 2.2 AGENCY DETERMINATION

On the basis of this initial evaluation:

☐ I find that the project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the 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 applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the 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 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 project, nothing further is required.

Signature: _____ Title: Assistant General Manager

Printed Name: Scott L. Rogers Date: October 15, 2025

## 2.3 ENVIRONMENTAL CHECKLIST

### 2.3.1 Aesthetics

| Issues and Supporting Information Sources | Potentially Significant Impact | Less Than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| Would the project: | | | | |
| a) Have a substantial adverse effect on a scenic vista? | ☐ | ☒ | ☐ | ☐ |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | ☐ | ☐ | ☐ | ☒ |
| 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 a 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? | ☐ | ☒ | ☐ | ☐ |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | ☐ | ☒ | ☐ | ☐ |

**Discussion:** The Project is located within the Antelope Valley, an area with regional visual resources such as the San Gabriel Mountains to the southwest, Tehachapi Mountains to the northwest, the extensive flatlands of the Mojave Desert, and the hills and buttes of San Bernardino County. The AWPF is proposed for a vacant undeveloped lot; adjacent land uses include residential and commercial buildings to the south and west, the existing PWRP to the northeast, and the Palmdale Regional Airport to the north. Viewers of the proposed AWPF site include motorists, cyclists, and walkers at adjacent commercial businesses and residential areas.

Although SR-14 and SR138, which are both in the Project vicinity, are considered eligible scenic highways, there are no officially designated State Scenic Highways in the City (Caltrans 2025). The City of Palmdale 2045 General Plan (General Plan) includes a goal to preserve significant natural and constructed open space areas that give the city its distinct form (City of Palmdale 2022a). Section 17.100.190D of the City's Municipal Code requires that "development is designed in a manner that substantially retains the visual qualities and natural elevations of the significant ridgelines and prominent landforms forming the City's skyline backdrop and preserves those portions of the ridgelines visible from the valley floor, or adjacent valleys, as a scenic skyline backdrop to the city" (City of Palmdale 2025). Furthermore, Chapter 17.86 of the City's Municipal Code includes specific requirements for landscaping, lighting, walls and fences (City of Palmdale 2025).

The Los Angeles County General Plan 2035 Conservation and Natural Resources Element (2022) identifies goals and policies to protect scenic resources through land use regulations, such as

protecting ridgelines from incompatible development, reducing light pollution where feasible, and encouraging developments to be designed to create a consistent visual relationship with the natural terrain and vegetation. Chapter 22.80 of the County of Los Angeles Municipal Code establishes the Rural Outdoor Lighting District (ROLD), which includes the proposed locations for the brine ponds and the pump station.

a) **Less than Significant Impact with Mitigation Incorporated.** The Project area includes regionally designated visual resources (i.e., scenic vistas), such as the San Gabriel and Tehachapi Mountains. Construction of Project facilities would result in the modification of a vacant lot including installation of a new AWPF, injection wells and product water conveyance line, monitoring wells and production well, tertiary effluent pump station and pipeline, brine conveyance pipeline, and brine disposal ponds. The most publicly visible Project components would include the new AWPF which would consist of two buildings approximately 15-20 feet tall. However, public views from the Project site would be limited to the surrounding roadways, would be short-term and temporary during construction, and would not substantially obscure views from publicly accessible vantage points (e.g., San Gabriel Mountains and Tehachapi Mountains) during Project operations. Furthermore, consistent with the 2024 SWRP Update PEIR, the Project would implement mitigation measures AES-1, AES-2, and AES-3 requiring preparation of a landscape plan to screen facilities from public view, and designing aboveground buildings to minimize contrasting features and to blend with the surrounding landscape to the extent feasible. Therefore, impacts would be less than significant with mitigation incorporated.

b) **No Impact**. There are no officially designated State Scenic Highways within the Project area. Project parcels include the site for the proposed AWPF (vacant land), brine ponds (existing unused oxidation ponds), the PWRP (pump station location), Well 37 (vacant land) and pipelines within existing street rights-of-way and the LAWA parcel. These locations do not contain significant scenic resources such as trees, rock outcroppings, or historic buildings within a State Scenic Highway. Therefore, there would be no impact.

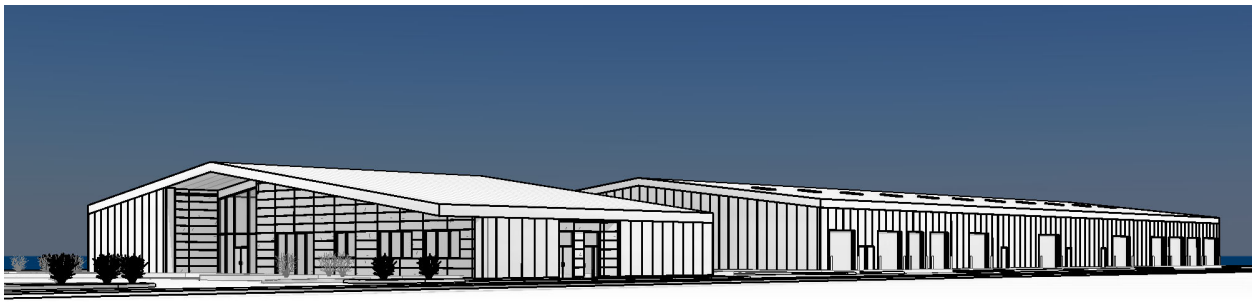
c) **Less than Significant Impact with Mitigation Incorporated.** The Project sites are located on vacant undeveloped parcels, unused oxidation ponds, and existing street rights-of-way which have manufacturing/industrial, office, utility, and airport-related land use designations (City of Palmdale 2022b, County of Los Angeles 2022). Most Project components (e.g., brine ponds, brine pipeline, Well 37, tertiary effluent pipeline, pump station, sewer pipeline) would be located in non-urbanized areas. However, the AWPF would be located immediately adjacent to an urbanized area to the south.

   Construction activities for the Project would include excavation, grading, and earthwork to support the layout of all facilities, yard piping, and equipment pads. Views of the Project site during construction would include approximately 36 construction workers, various construction equipment, and parked worker vehicles. The level of construction activity would alter views in the immediate area of the Project site for approximately 29 months. Although the AWPF and associated infrastructure would be substantially different than the existing open space, the visual impact of ground disturbance associated with Project construction would be short-term and temporary. In general, Project construction would be consistent with the

existing visual character of the surrounding Project area (e.g., commercial and light industrial land uses). Furthermore, mitigation measures AES-1, AES-2, and AES-3 would reduce impacts to the visual character to a less than significant level by incorporating design features for above-ground facilities that would blend structures with the surrounding landscape. Therefore, construction of the Project would result in a less than significant impact with mitigation incorporated.

Location of Project facilities would be exempt from applicable zoning and other regulations governing scenic quality pursuant to Government Code Section 53091. The most publicly visible Project components would include the two new AWPF buildings (approximately 15-20 feet tall). Conceptual design of the buildings is included in Figure 6. Development of the AWPF buildings would not substantially degrade the existing visual character of the Project area and would be consistent with allowable uses in the Office Flex zone and Employment Flex land use designation (City of Palmdale 2022b, 2023). Therefore, the operational impact on visual quality would be less than significant with mitigation incorporated.

From Southeast



From Northeast

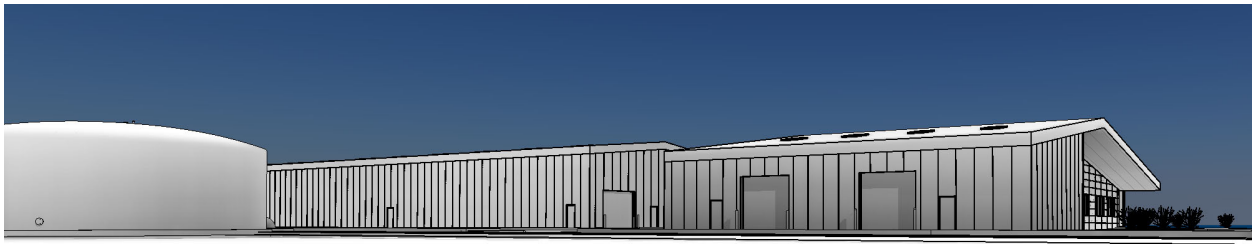


**Figure 6. AWPF Site Context Renderings**

d) **Less than Significant Impact with Mitigation Incorporated**. Construction activities would primarily occur during daylight hours. However, some nighttime construction could be required, such as 24-hour drilling of injection wells, and portions of the proposed pipelines that require road crossings. These areas would generally not be located in close proximity to residences. Furthermore, the Project would implement mitigation measures AES-4, AES-5 and AES-6 to minimize impacts. AES-4 would require any permanent lighting on buildings and/or structures to be shielded and directed downward to avoid light intrusion onto surrounding land uses. AES-5 would require nighttime construction lighting be shielded and pointed away from surrounding light-sensitive land uses. AES-6 would ensure the treatment plant is designed to

minimize glare or reflection, including non-glare exterior materials or coatings. Since the proposed lighting would be of limited duration and confined to the specific area of construction, impacts from light and glare that could affect day or nighttime views of the Project area during construction would be less than significant with mitigation incorporated.

During operations, permanent lighting may be installed on the exterior of some Project components (e.g., AWPF) for safety purposes as well as streetlights, perimeter lighting, and parking lighting. However, lighting would be designed to minimize light trespass without compromising requirements for adequate lighting for security and road safety. Since the brine ponds are proposed for an area within the Los Angeles County ROLD, security lighting, if deemed necessary, would meet the requirements of Ordinance No. 2012-0047 for shielding, height, motion sensors, and total lumen levels. Since Project operation would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the Project area, impacts would be less than significant with mitigation incorporated.

**Mitigation Measures**

With implementation of the following mitigation measures, Project-related impacts on aesthetics would be less than significant.

**AES-1 – Landscape Plan**. During Project design, a landscape plan shall be prepared for the proposed AWPF. The landscape plan shall include measures to restore disturbed areas by replanting trees and/or reseeding with a native seed mix typical of the surrounding area. Vegetation screening shall also be included in order to assist in shielding the proposed aboveground facilities from public vantage points.

**AES-2 – Pre-Construction Aesthetic Design**. Aboveground buildings/structures shall be designed to have similar aesthetic qualities to existing structures in the vicinity to minimize contrasting features in the visual landscape.

**AES-3 – Aboveground Building/Structure Design**. Aboveground buildings/structures shall be designed to have color palettes and vegetation screening as necessary to blend with the surrounding character of the site and to minimize contrasting features in the visual landscape.

**AES-4 – Permanent Exterior Lighting**. All new permanent exterior lighting associated with proposed Project components shall be shielded and directed downward to avoid any light intrusion to surrounding uses.

**AES-5 – Nighttime Construction Lighting**. Lighting used during nighttime construction, including any associated 24-hour well drilling, shall be shielded and pointed away from surrounding light-sensitive land uses.

**AES-6 – Non-Glare Design**. The proposed advanced water purification facility shall be designed to include non-glare exterior materials and coatings to minimize glare or reflection.

## 2.3.2 Agricultural and Forest Resources

| Issues and Supporting Information Sources | 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? | ☐ | ☐ | ☐ | ☒ |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☐ | ☒ |
| 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))? | ☐ | ☐ | ☐ | ☒ |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |
| 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? | ☐ | ☐ | ☐ | ☒ |

**Discussion:**

a) **No Impact.** The City's General Plan has no significant agricultural lands identified (City of Palmdale 2022a). According to the Farmland Mapping and Monitoring Program (FMMP), the Project components are located on lands classified Urban and Built-Up Land, Grazing Land, and Other Land (California Department of Conservation [CDOC] 2025). As such, the Project site is not located on land identified as farmland by the FMMP, the City of Palmdale's General Plan, or the County of Los Angeles General Plan. The proposed brine ponds would be located adjacent to Prime Farmland, but construction activities would not convert Prime Farmland to non-agricultural use. Operation of the injection wells and Well 37 would not affect groundwater production in such a way that would result in conversion of farmland to non-agricultural use. Therefore, the Project would have no impact on conversion of FMMP-designated Farmland.

b) **No Impact.** Project elements are located on land owned by PWD in the City of Palmdale (AWPF), on parcels within unincorporated Los Angeles County (LACSD parcel for brine ponds and PWRP for the pump station), on LAWA-owned land (portion of the tertiary effluent pipeline and Well 37) and within existing roadway rights-of-way. There are no Willamson Act lands in the Project area, the Project sites are not zoned or designated for agricultural uses, and there is no land designated as Forest or Timberland within the PWD service area as a whole (CDOC 2025). Therefore, the Project would have no impact on agricultural zoning or Williamson Act contracts.

c) d) and e) **No Impact.** Public Resources Code (PRC) Section 12220 (g) defines "Forest land" as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits (PRC 2008). The City of Palmdale is located approximately 2.5 miles north of the Angeles National Forest and contains no forest land. The Project elements are not located on parcels zoned as forested land and the Project would not result in conversion of forest land to non-forest use. Therefore, there would be no impact.

### 2.3.3 Air Quality

| Issues and Supporting Information Sources | 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? | ☐ | ☐ | ☒ | ☐ |
| 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? | ☐ | ☐ | ☒ | ☐ |
| c) Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☐ | ☒ | ☐ |
| d) Result in other emissions (such as those leading to odors) affecting a substantial number of people? | ☐ | ☐ | ☒ | ☐ |

**Discussion:** The Project site is located within the Antelope Valley Air Quality Management District (AVAQMD) which is responsible for managing air pollution in the northern desert portion of Los Angeles County. One of the roles of the AVAQMD is to reach attainment for the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) which are limits for criteria air pollutants. Criteria air pollutants include ozone ($O_3$), particulate matter less than 10 microns ($PM_{10}$), particulate matter less than 2.5 microns ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), and lead. NAAQS and CAAQS are designed to protect human health with a margin of safety. Areas in attainment for NAAQS and CAAQS are below the designated thresholds and areas of nonattainment have background levels of pollution above the thresholds. AVAQMD is in nonattainment for state and federal $O_3$ and state $PM_{10}$ (AVAQMD 2017).

a) **Less Than Significant Impact.** The purpose of an air quality plan is to limit the emissions of criteria air pollutants in order to reach attainment of the NAAQS. The applicable air quality plan within the AVAQMD is the Federal 70 parts per billion (ppb) Ozone Attainment Plan (Western Mojave Desert Nonattainment Area) adopted by AVAQMD in January 2023 (AVAQMD 2023). The Federal 70 ppb Ozone Attainment Plan establishes control measures for stationary, mobile, and other sources to reduce the emissions of ozone precursors (nitrogen oxides [NOx] and volatile organic compounds [VOC]). An individual project would comply with the applicable air quality plan if it does the following: (1) comply with all AVAQMD rules and regulations, (2) comply with the air quality plan's control measures, and (3) be consistent with the area's growth forecast (AVAQMD 2016).

   First, the Project would comply with all applicable rules and regulations established by AVAQMD. Specifically, the Project would comply with Rule 403, Fugitive Dust, during construction to reduce the amount of anthropogenic fugitive dust created on-site, and emergency generators on the Project site would be subject to Rule 201, Permit to Construct, and Rule 203, Permit to Operate. Second, the Project would comply with applicable control measures from the Federal 70 ppb Ozone Attainment Plan. Most control measures, such as locomotive regulations, would not be applicable to the Project. But the Project would comply

with the In-Use Off-Road Diesel-Fueled Fleets Regulation established by the California Air Resources Board (CARB). Third, the Project would not introduce any new housing or residents to the area, or otherwise induce population growth. Since the Project would not conflict with or obstruct implementation of the applicable air quality plan, the impact would be less than significant.

b) **Less Than Significant Impact.** Project emissions were calculated within the California Emissions Estimator Model (CalEEMod) version 2022.1.1.30 (see Appendix A). Emissions were calculated based on Project specific data provided within the Project description or based on modeling default assumptions. Emissions were compared to AVAQMD daily and annual thresholds to determine significance. Construction and operational emissions are discussed separately below.

**Construction Emissions**. Construction activities associated with the proposed Project would generate criteria pollutant emissions from the use of heavy, off-road equipment as well as construction worker commutes and material deliveries to the site. Construction-related emissions would be intermittent and temporary.

Estimated construction emissions associated with the proposed Project are shown in Table 8. As shown in the table, construction emissions fall below AVAQMD thresholds. Therefore, the proposed Project's construction emissions would not violate any air quality standard or result in a cumulatively considerable net increase of any criteria pollutant and the impact would be less than significant with implementation of standard BMPs noted below.

**Table 8. Construction Criteria Pollutant Emissions (Unmitigated)**

| Year | Emissions | | | | | |
|---|---|---|---|---|---|---|
| | VOC | NOx | $PM_{10}$ | $PM_{2.5}$ | CO | SOx |
| ***Daily Maximum Emissions (lbs/day)*** | | | | | | |
| 2027 | 6.23 | 43.8 | 2.89 | 2.08 | 120 | 0.19 |
| 2028 | 5.98 | 40.4 | 5.94 | 2.07 | 120 | 0.19 |
| 2029 | 1.86 | 12.3 | 0.76 | 0.36 | 17.2 | 0.03 |
| 2030 | 10.7 | 12.1 | 0.73 | 0.34 | 17.0 | 0.03 |
| ***AVAQMD Daily Thresholds (lbs/day)*** | ***137*** | ***137*** | ***82*** | ***65*** | ***548*** | ***137*** |
| ***Exceed Thresholds?*** | ***No*** | **No** | **No** | **No** | **No** | **No** |
| ***Annual Emissions (tons/year)*** | | | | | | |
| 2027 | 0.10 | 0.70 | 0.05 | 0.03 | 1.92 | <0.005 |
| 2028 | 0.26 | 2.15 | 0.16 | 0.08 | 3.85 | 0.01 |
| 2029 | 0.18 | 1.61 | 0.10 | 0.05 | 2.27 | <0.005 |
| 2030 | 0.14 | 0.27 | 0.02 | 0.01 | 0.39 | <0.005 |
| ***AVAQMD Annual Thresholds (tons/year)*** | ***25*** | ***25*** | ***15*** | ***12*** | ***100*** | ***25*** |

| Year | Emissions | | | | | |
|---|---|---|---|---|---|---|
| | VOC | NOx | $PM_{10}$ | $PM_{2.5}$ | CO | SOx |
| ***Exceed Thresholds?*** | **No** | **No** | **No** | **No** | **No** | **No** |

Source: Appendix A

**Operational Emissions**. Emissions during operation of the Project would be generated primarily from worker vehicle trips to and from the site, as well as from area and energy sources (Table 9). As shown below, operational emissions would not exceed AVAQMD thresholds at full Project buildout (10 mgd). Operation of Phase 1 would treat less water (4.75 mgd) and therefore generate fewer emissions. Therefore, the Project's operational emissions would not violate any air quality standard or result in a cumulatively considerable net increase of any criteria pollutant, and the impact would be less than significant.

**Table 9. Operational Criteria Pollutant Emissions**

| Source | Emissions | | | | | |
|---|---|---|---|---|---|---|
| | ROG | NOx | $PM_{10}$ | $PM_{2.5}$ | CO | SOx |
| ***Daily Maximum Emissions (lbs/day)*** | | | | | | |
| Mobile (lbs/day) | 0.98 | 0.61 | 1.36 | 0.35 | 6.79 | 0.01 |
| Area (lbs/day) | 1.11 | 0.01 | <0.005 | <0.005 | 1.60 | <0.005 |
| Stationary (lbs/day) | 47.5 | 38.6 | 1.39 | 1.39 | 123 | 0.05 |
| **Total (lbs/day)** | **49.6** | **39.2** | **2.75** | **1.74** | **132** | **0.07** |
| ***AVAQMD Daily Thresholds (lbs/day)*** | ***137*** | ***137*** | ***82*** | ***65*** | ***548*** | ***137*** |
| ***Exceed Thresholds?*** | **No** | **No** | **No** | **No** | **No** | **No** |
| ***Annual Emissions (tons/year)*** | | | | | | |
| Mobile (tons/year) | 0.11 | 0.09 | 0.17 | 0.04 | 0.74 | <0.005 |
| Area (tons/year) | 0.18 | <0.005 | <0.005 | <0.005 | 0.14 | <0.005 |
| Stationary (tons/year) | 0.26 | 0.21 | 0.01 | 0.01 | 0.69 | <0.005 |
| **Total (tons/year)** | **0.55** | **0.30** | **0.18** | **0.05** | **1.57** | **<0.005** |
| ***AVAQMD Annual Thresholds (tons/year)*** | ***25*** | ***25*** | ***15*** | ***12*** | ***100*** | ***25*** |
| ***Exceed Thresholds?*** | **No** | **No** | **No** | **No** | **No** | **No** |

Source: Appendix A.

c) **Less Than Significant Impact.** This discussion addresses whether the Project would expose sensitive receptors to construction-generated $PM_{10}$, naturally occurring asbestos (NOA), construction-generated diesel particulate matter (DPM), or operations-related toxic air contaminants (TACs).

According to CARB, some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, or duration of exposure to air

pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics. The nearest sensitive receptors are a school/day care located to the north on E Avenue P, a residence on 25th Street E, and schools and residences located to the south on E Avenue Q.

Construction Emissions

During construction of the Project, the potential exists for emissions of fugitive dust, NOA, and DPM to be released.

**Fugitive Dust**. $PM_{10}$ would be generated from site grading and other earth-moving activities. Most of this fugitive dust would remain localized and would be deposited on or near the Project site. However, the potential for impacts from fugitive dust exists unless control measures are implemented to reduce the emissions from the Project site. AVAQMD Rule 401, Fugitive Dust, establishes the minimum dust mitigation and control requirements along with the standards to be met from the activities that generate fugitive dust. Rule 401's minimum dust mitigation and control requirements must be used for all construction and grading activities. Additionally, as demonstrated in Table 8, $PM_{10}$ emissions from construction would not exceed the threshold of significance applied in this analysis. Therefore, emissions of fugitive dust from construction of the proposed Project would not adversely affect sensitive receptors.

**Naturally Occurring Asbestos**. Construction in areas of rock formations that contain NOA could release asbestos to the air and pose a health hazard. However, a review of areas more likely to have rock formations containing NOA in California indicates that there is no asbestos in the immediate Project area (USGS 2011). Therefore, construction of the Project would not expose sensitive receptors to NOA.

**Diesel Particulate Matter (DPM)**. Exposure to DPM from diesel vehicles and off-road construction equipment can result in health risks to nearby sensitive receptors. While the Project would involve the use of diesel fueled vehicles and off-road equipment, construction would be temporary. The Project would be required to comply with CARB's idling restrictions that would reduce DPM generating from diesel trucks and equipment. As shown in Table 8, the emissions of $PM_{10}$ and $PM_{2.5}$, which include exhaust emissions, would fall below AVAQMD significance thresholds. Therefore, the proposed Project would not expose receptors to significant levels of DPM with compliance with CARB restrictions.

Operational Emissions

The greatest potential for exposure to TACs during long-term operations is from the use of stationary generators that use diesel fuel, which produce DPM, and chemicals used on-site for water treatment. The Project would include two stationary generators for emergency use. The outdoor generator would be natural gas and therefore would not generate DPM. The emergency generator for the Process Building and Administration Building may be diesel powered. However, this generator would only be used in the event of power disruption and for routine

maintenance. Both generators would be subject to AVAQMD permitting which would set thresholds and best available control technology to reduce DPM as relevant.

During operation, the water treatment process would use sodium hypochlorite, ferrous sulfate, hydrogen peroxide, sodium hydroxide (NaOH), ferric chloride, magnesium chloride, soda ash, coagulant polymer, sludge dewatering polymer, sodium chloride, citric acid, and hydrochloric acid. NaOH has been identified as an air toxic by the Office of Environmental Health Hazard Assessment (OEHHA) and CARB as having potential noncancer health impacts (OEHHA 2025, CARB 1997). The NaOH will be used to adjust pH at the facility during treatment. No other chemicals were identified by OEHHA, CARB, or the United States Environmental Protection Agency as toxics.

According to AVAQMD, a significant health risk would occur if the Project results in a cancer risk greater than or equal to 10 in a million or there is a hazard index (non-cancerous risk) greater than or equal to 1 (AVAQMD 2016). NaOH is not a carcinogen, therefore it would not create a cancer risk to the public (USEPA 1988). Moreover, NaOH would not be used in high quantities and would not result in a hazard index above 1. Therefore, operation of the proposed Project would not be expected to expose nearby sensitive receptors to substantial amounts of TACs.

Overall, the health risk impacts from construction and operation of the proposed Project would be less than significant.

d) **Less than Significant Impact.** While offensive odors rarely cause any physical harm, they can still be unpleasant, leading to distress among the public and often generating citizen complaints. The occurrence and severity of odor impacts depends on numerous factors, including nature, frequency, and intensity of the source, the wind speed and direction, and the sensitivity of the receptor.

Construction activities associated with the proposed Project could result in short-term odorous emissions from diesel exhaust associated with diesel-fueled equipment. However, these emissions would be intermittent and would dissipate rapidly from the source.

Land uses typically considered as associated with the production of odors during operations include wastewater treatment facilities, waste disposal facilities, and agricultural operations. The Project is a regional water augmentation program using IPR by groundwater augmentation via direct injection. Therefore, the Project is not a traditional wastewater facility and does not include any land uses that are typically associated with emitting objectionable odors. Moreover, the Project would comply with existing AVAQMD rules, including Rule 402, Nuisance which prohibits the discharge of air contaminants that endanger the comfort, health, and safety of the public.

Therefore, the proposed Project would not result in other emissions, such as those leading to odors, affecting a substantial number of people. The impact would be less than significant.

**BMPs**

Construction and operation of the proposed Project would have less than significant impacts on air quality, therefore mitigation measures are not required. However, as noted in Section 1.4.9, the following BMPs would be implemented during Project construction to minimize fugitive dust emissions to the extent feasible.

- **Water Trucks**. To control dust emissions, water trucks would spray cleared and grubbed areas, soil stockpiles, and unimproved roadways during construction.
- **High Wind Events**. Construction activities would be stopped during sustained high wind events (i.e., a period or periods of time aggregating more than 3 minutes in any 60-minute period) greater than 20 mph.
- **Haul Trucks**. Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Haul trucks traveling along freeways or major roadways should be covered.
- **Street Sweeping**. Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- **Vehicle Speed Limit**. Limit vehicle speeds on unpaved roads to 15 mph.
- **Paving**. Roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

## 2.3.4 Biological Resources

| Issues and Supporting Information Sources | 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 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, marsh, vernal pool, coastal, 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 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? | ☐ | ☐ | ☒ | ☐ |

**Discussion:** Stantec conducted reconnaissance-level biological field surveys on May 8, 2024, and July 19, 2024, within 300 feet of the Project area for general wildlife, habitat mapping, and focused rare plant surveys. The Biological Study Area (BSA) is mapped as Figure 2 of Appendix B1 (Biological Resources Technical Report (BRTR)). The BRTR describes existing environmental conditions that occur within the BSA and evaluates the potential for biological resources to occur based on those conditions with an emphasis on special-status plant and wildlife species, wildlife corridors, and special status/sensitive natural communities. A full listing of plant and wildlife species observed during the surveys is included in Appendix B1.

Stantec also conducted a reconnaissance-level survey of aquatic resources on May 8, 2024, within accessible portions of the Project site and a surrounding 100-foot buffer area (Aquatic Resource Survey Area). The Aquatic Resources Delineation Report (ARDR) describes the existing aquatic resources that occur within the Survey Area and surrounding areas and evaluates the potential for aquatic resources to occur based on those conditions with an emphasis on jurisdictional waters (Appendix B2).

During these site visits, native and nonnative plant species, wildlife observations and/or applicable sign, habitat types, potentially jurisdictional aquatic resources, and community descriptions were recorded. Plant species were identified to the taxonomic level needed to adequately determine rarity and listing status. Aerial photos and maps to locate the Project boundary were utilized. A visual and auditory search was performed for birds and mammals which included investigation of diagnostic sign (i.e., track, scat, nests, and burrows). A species list was developed for the Project site for all observed wildlife and plant species.

Relevant databases were consulted for information on sensitive plant and wildlife species as well as natural communities that could occur within the Project area, including:

- California Natural Diversity Database (CNDDB) Rarefind 5 using a 10-mile search radius
- CDFW's Biogeographic Information and Observation System (BIOS)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California, Rare Plant ranks 1 and 2
- Calflora, information on California plants

Results of the field surveys, data reviews, and in-house knowledge are presented in the BRTR and ARDR (Appendix B) and summarized below.

**Vegetation**. The 2024 surveys resulted in the documentation of 65 total species of native and non-native plants within the BSA (see Appendix B for full list of species observed). Generally, mapping and descriptions of plant communities follows the classification system described in the second edition of A Manual of California Vegetation (MCVII) (Sawyer et al. 2009). As defined in MCVII, an alliance is defined as "a category of vegetation classification which describes repeating patterns of plants across a landscape. Each alliance is defined by plant species composition, and reflects the effects of local climate, soil, water, disturbance, and other environmental factors." Vegetation communities and land cover types mapped within the BSA are presented below in Table 10.

Species' scientific and common names correspond to those described in the second edition of the Jepson Manual (Baldwin et al. 2012). Within the BSA, four vegetation communities defined by Sawyer et al. (2009) and one additional land cover type, classified as disturbed/developed were mapped. Detailed descriptions of the plant communities and land cover types are presented in the BRTR (Appendix B).

**Table 10. Vegetation Community and Land Cover Types in the BSA**

| Vegetation Community / Land Cover Type | Total Acres in BSA |
|---|---|
| **Vegetation Communities** | |
| *Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance | 14.41 |
| *Brassica nigra* - *Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance | 242.50 |
| *Yucca brevifolia* Woodland Alliance | 35.89 |
| *Ericameria nauseosa* Shrubland Alliance | 21.69 |
| **Land Cover Types** | |
| Disturbed/Developed | 301.59 |
| **Total** | 616.09 |

**Common Wildlife**. A variety of common reptiles, birds, and small mammals were observed during the 2024 surveys within the BSA. Refer to Table 11 below for a list of all species observed; a discussion of other common wildlife species that, while not observed, have the potential to occur in the BSA is presented as part of the BRTR in Appendix B.

**Table 11. Wildlife Species Observed in the BSA**

| Scientific Name | Common Name | Notes |
|---|---|---|
| **Birds** | | |
| *Agelaius phoeniceus* | red-winged blackbird | |
| *Buteo jamaicensis* | red-tailed hawk | One red-tailed hawk nest was observed during the May site visit on the water tank in the southwest parcel of the BSA, near the proposed Project facilities. The nest was likely in incubation phase. During the July site visit, the nest had fledged and was no longer active. |
| *Columba livia* | rock pigeon | |
| *Corvus brachyrhynchos* | American crow | |
| *Corvus corax* | common raven | One common raven nest was observed in a Western Joshua tree across the street from the PWRP during the May site visit. It was likely active given the raven's level of agitation within 50 ft. During the July site visit, the nest had fallen off the tree and looked to have failed. |
| *Eremophila alpestris* | horned lark | |
| *Haemorhous mexicanus* | house finch | |
| *Mimus polyglottos* | Northern mockingbird | |
| *Sayornis saya* | Say's phoebe | |
| *Setophaga coronata* | yellow-rumped warbler | |
| *Sturnus vulgaris* | European starling | |
| *Zenaida macroura* | mourning dove | |
| **Mammals** | | |
| *Lepus californicus* | Black-tailed jackrabbit | |
| *Otospermophilus beecheyi* | California ground squirrel | |
| *Sylvilagus audubonii* | Desert cottontail | |

**Aquatic Resources**. A jurisdictional aquatic resources/wetlands delineation was conducted as part of a preliminary jurisdictional determination for the Project in 2024; the area surveyed included the Project area and a 100-ft survey buffer. Sample points/soil test pits were excavated to a depth of approximately 16 inches unless a restrictive layer was present. Hydrophytic vegetation and wetland hydrology indicators were also considered in the vicinity of these sampling locations. Percent cover estimates for vegetation were conducted by visually estimating absolute percent cover for each plant species within a sample plot. Potential jurisdictional aquatic resources were mapped and presented in the ARDR as part of Appendix B. A summary of the delineation is provided below in Table 12.

**Table 12. Preliminary Jurisdictional Waters Totals in the Aquatic Resources Study Area**

| Potential Jurisdictional Aquatic Resources | Acres* | Linear Feet* |
|---|---|---|
| **State/RWQCB** | | |
| Non-wetland Waters of the State (ephemeral drainage) | 0.27 | 11,945 |
| **CDFW** | | |
| Streambed | 0.25 | 10,964 |
| Riparian | 0.02 | 981 |

* Areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies.

**Special Status Biological Resources**. Designated Critical Habitat (DCH) is defined by the USFWS (2024b) as, "specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection." DCH may also include areas that are not currently occupied by the species but will be needed for its recovery. There is no DCH located within the BSA, and the closest occurrence is Arroyo toad DCH approximately 8.5 miles southeast of the BSA.

Special-status natural communities are defined by CDFW as, "communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects." All vegetation within the state is ranked with an "S" rank, however only those that are of special concern (S1-S3 rank) are generally evaluated under CEQA. One vegetation community within the BSA is considered to have special status: Joshua tree woodland. Joshua tree woodlands have a ranking of S3, meaning this community is vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

The BSA does not occur within a Natural Community Conservation Plan, but it does occur within the Western Joshua Tree Conservation Act range and the Palmdale Native Desert Vegetation Ordinance.

*Special-Status Plants*

Only one special-status plant (federal- and state-listed species and California Rare Plant Ranks (CRPR) 1-4 species), western Joshua tree (*Yucca brevifolia*) was observed within the BSA. This species was documented towards the northeast periphery of the BSA, bordering the proposed brine ponds (existing unused oxidation ponds), towards the periphery of the BSA along East Avenue P, along with other scattered locations throughout the remainder of the BSA. Refer to the BRTR in Appendix B for more details on the location and status of the species within the BSA.

*Special-Status Wildlife*

Loggerhead shrike (*Lanius ludovicianus*), a CDFW Species of Special Concern, was the only special-status wildlife species documented within the BSA. While not observed, other special-status wildlife species do have the potential to occur; refer to the BRTR in Appendix B for additional information on these species.

*Wildlife Corridors and Special Linkages*

The Project is surrounded by agricultural fields, open space, and neighborhoods/developments, and no mapped wildlife corridors were found to occur within the BSA; however, wildlife likely use both the natural and developed portions of the BSA on a regular basis during normal foraging, migration, nesting, and denning activities (USFWS 2024c). Additionally, both flowing drainages within the BSA may occasionally be used as water sources for wildlife during the hot summer months.

The BSA is a part of the Pacific Flyway, a major north-south flyway for migratory birds in America, extending from Alaska to Patagonia. Each year, at least one billion birds migrate along the Pacific Flyway (Audubon 2024).

a) **Less than Significant Impact with Mitigation Incorporated**. Special status plants and animals are discussed below.

**Special Status Plants**. Only one special status plant species, Western Joshua tree, was found to occur within the Project impact areas. This species is a candidate for state listing as threatened or endangered. Although not observed, two other special-status plant species were determined to have a moderate potential to occur. Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*) a CRPR 2B.2 species and Short-joint beavertail (*Opuntia basilaris var. brachyclada*) a CRPR1B.2 species are known from the region, and based on the on-site habitat, have a moderate potential to occur. All other special-status plant species known to occur in the general region were determined to have no or low potential to occur.

Direct impacts to listed or special-status plants could include trampling or crushing from heavy equipment, vehicles, or foot traffic, alterations to the native seed bank due to soil compaction, and modifications to existing hydrological conditions. Potential indirect impacts could include the disruption of native seed banks through soil alterations, the accumulation of fugitive dust, increased erosion and sediment transport, and the colonization of non-native, invasive plant species. Excessive dust can decrease or limit plant survivorship by decreasing photosynthetic output, reducing transpiration, and adversely affecting reproductive success. Ground-disturbing activities that would occur during the proposed Project can result in the proliferation and spread of non-native invasive plants to new areas. Because noxious weeds can permanently degrade rare plant and animal habitats, their proliferation could adversely affect listed plant species if any are present.

Operational impacts from routine maintenance and inspection would include trampling or crushing, increased erosion, exposure to fugitive dust, and the spread and colonization of noxious weeds.

If present during construction, impacts to listed plant species would be considered significant. Since the biological resources assessment was conducted in 2024 and construction is not anticipated to begin until the end of 2027, additional surveys would be conducted prior to construction. Implementation of mitigation measures BIO-1 through BIO-5 and BIO-15 would minimize impacts to special-status plant species. These measures include worker education describing the sensitive biological resources that occur on the

proposed Project site, implementation of BMPs to minimize and avoid impacts, and conducting biological monitoring during ground-disturbing and other construction-related activities. Implementation of these mitigation measures would reduce impacts to listed or special-status plants to a less than significant level.

**Special-Status Wildlife**. No state or federally listed wildlife species were observed on or near the proposed Project site. Once special-status avian species, loggerhead shrike (*Lanius ludovicianus*), a CDFW Species of Special Concern, was observed along the outer edges of the proposed brine ponds in the northeast portion of the proposed Project area. A variety of other special-status wildlife, while not observed, were determined to have a moderate or high potential to occur (Table 13).

**Table 13. Special-Status Wildlife with a Moderate or High Potential to Occur**

| Scientific Name | Common Name | Status | Potential to Occur |
|---|---|---|---|
| **Birds** | | | |
| *Athene cunicularia* | Burrowing owl | SC | High |
| *Charadrius montanus* | Mountain plover | SSC | Moderate |
| *Toxostoma lecontei* | Le Conte's thrasher | SSC | Moderate |
| **Mammals** | | | |
| *Xerospermophilus mohavensis* | Mohave ground squirrel | ST | High |
| **Invertebrates** | | | |
| *Bombus crotchii* | Crotch's bumble bee | SC | Moderate |
| *Bombus pensylvanicus* | American bumble bee | SA | Moderate |
| *Helminthoglypta fontiphila* | Soledad shoulderband | SA | Moderate |
| **Reptiles** | | | |
| *Anniella pulchra* | Northern California legless lizard | SSC | Moderate |
| *Arizona elegans occidentalis* | California glossy snake | SSC | Moderate |
| *Gopherus agassizii* | Desert tortoise | FT, ST | Moderate |
| *Phrynosoma blainvillii* | Coast horned lizard | SSC | Moderate |

Federal Rankings:
FT = Federally Threatened

State Rankings:
SSC = CDFW Species of Special Concern
ST = State Threatened
SA = CDFW Special Animal
SC = State Candidate for Listing

*Special-Status Invertebrates and Reptiles*

Construction activities associated with the proposed Project could result in the direct loss of sensitive invertebrates and reptiles should they be present. Given the ecology of these species and cryptic nature, it is likely that some or all of the species may occur in or near the proposed Project sites. Direct impacts could result from potential mechanical crushing during construction, fugitive dust, and general disturbance due to increased human activity. Proposed Project implementation may also result in permanent loss of habitat from the removal of debris piles or trampling of soft friable soils required for burrowing. Indirect impacts could include compaction of soils and the introduction of exotic plant species.

Operational impacts include increased human presence, the spread of noxious weeds due to the use of new access roads, and increased perch sites for avian predators. Inspection and maintenance could result in trampling or crushing of small invertebrates and reptiles by vehicular or foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, and the introduction of non-native, invasive plants due to increased human presence.

*Special-Status Birds*

Construction activities associated with the proposed Project could result in direct and indirect impacts to a variety of sensitive resident and migratory birds. With the exception of burrowing owl (state candidate for listing), direct impacts to most listed species are not anticipated because nesting habitat for most listed birds is not present on the Project sites.

Project activities have the potential to impact nesting birds through direct impacts such as ground-disturbing activities associated with construction of new infrastructure and increased human presence. During the breeding season, construction activities could result in the displacement of breeding birds and the abandonment of active nests. Potential indirect impacts could include the deterioration of habitat as a result of the spread of noxious weeds, increased noise levels from heavy equipment and injection well installation, exposure to fugitive dust, and human presence during repairs to the newly constructed infrastructure or routine inspection of the facilities. Weed management could also affect nesting.

During operations of the proposed Project, impacts to nesting birds would include increased human disturbance, exposure to fugitive dust, the spread of noxious weeds, and disruption of breeding or foraging activity due to routine inspection and maintenance activities. Weed abatement through herbicide application or mechanized tools could also affect nesting.

If Project construction were to occur during the avian nesting season (generally considered to be between February 15$^{th}$ through September 15$^{th}$; although some raptors species may nest as early as January) indirect impacts to nesting birds could occur; the MBTA of 1918 (16 USC 703-711) does not allow for take of migratory birds.

The MBTA makes it unlawful to possess, buy, sell, purchase, barter or "take" any migratory bird listed in Title 50 of the CFR Part 10. "Take" is defined as possession or destruction of migratory birds, their nests or eggs. Disturbances that cause nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the MBTA. The MBTA prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary. This act encompasses whole birds, parts of birds, and bird nests and eggs.

*Special Status Mammals*

No special-status mammal species were detected within proposed Project impact areas. The proposed Project area and adjacent habitats have the potential to support a variety of special-status mammals including the state listed Mohave ground squirrel. Direct impacts to these species would include mechanical crushing by vehicles and construction equipment, trampling, and loss of habitat. Construction disturbance can also result in the flushing of small animals from refugia which increases the predation risk for small rodents. Potential

indirect impacts include exposure to fugitive dust, alteration of soils, such as compaction, that could preclude burrowing, the spread of exotic weeds, and increased noise levels.

During operation of the proposed Project, impacts to sensitive mammals would include increased human disturbance, exposure to fugitive dust, the spread of noxious weeds, and disruption of breeding or foraging activity due to routine inspection and maintenance activities. Weed abatement through herbicide application or mechanized tools could also affect mammal species.

Construction of the proposed Project would remove or disturb vegetation and could subject sensitive mammals to mortality. Project activities that result in the degradation to habitat for or the loss of endangered, threatened, or other special-status animal species would be considered a significant adverse impact requiring mitigation. Mitigation measures BIO-1 and BIO-4 through BIO-15 shall be implemented to reduce impacts on sensitive wildlife. These measures include worker education describing the sensitive biological resources that occur on the proposed Project site, implementation of BMPs to minimize and avoid impacts, and conducting biological monitoring during ground-disturbing and other construction-related activities. Implementation of these mitigation measures would reduce impacts to listed or special-status animals to a less than significant level.

b) **Less than Significant Impact with Mitigation Incorporated**. Construction of the proposed Project would result in 164.33 acres of permanent and 18.45 acres of temporary disturbance to vegetation communities and land cover types (Table 14, Figure 7). The vast majority of these impacts are limited to disturbed/developed areas or non-native dominated vegetation communities. Temporary impacts to native vegetation would be limited to 1.21 acres of *Ericameria nauseosa* Shrubland Alliance.

One vegetation community within the proposed Project area is considered to have special status: Joshua tree woodland. Joshua tree woodlands have a ranking of S3, meaning this community is vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation. The proposed Project could permanently impact approximately 0.51 acres of Joshua tree woodland. However, detailed design of Project pipelines and the brine ponds (features where Joshua tree woodland is present) has not yet been completed. Therefore, a Joshua tree census would be completed in compliance with mitigation measure BIO-3, and Project elements would be designed to minimize impacts to Joshua trees to the extent feasible. Where impacts to Joshua trees cannot feasibly be avoided, tree relocation or payment of an in-lieu fee to CDFW would occur.

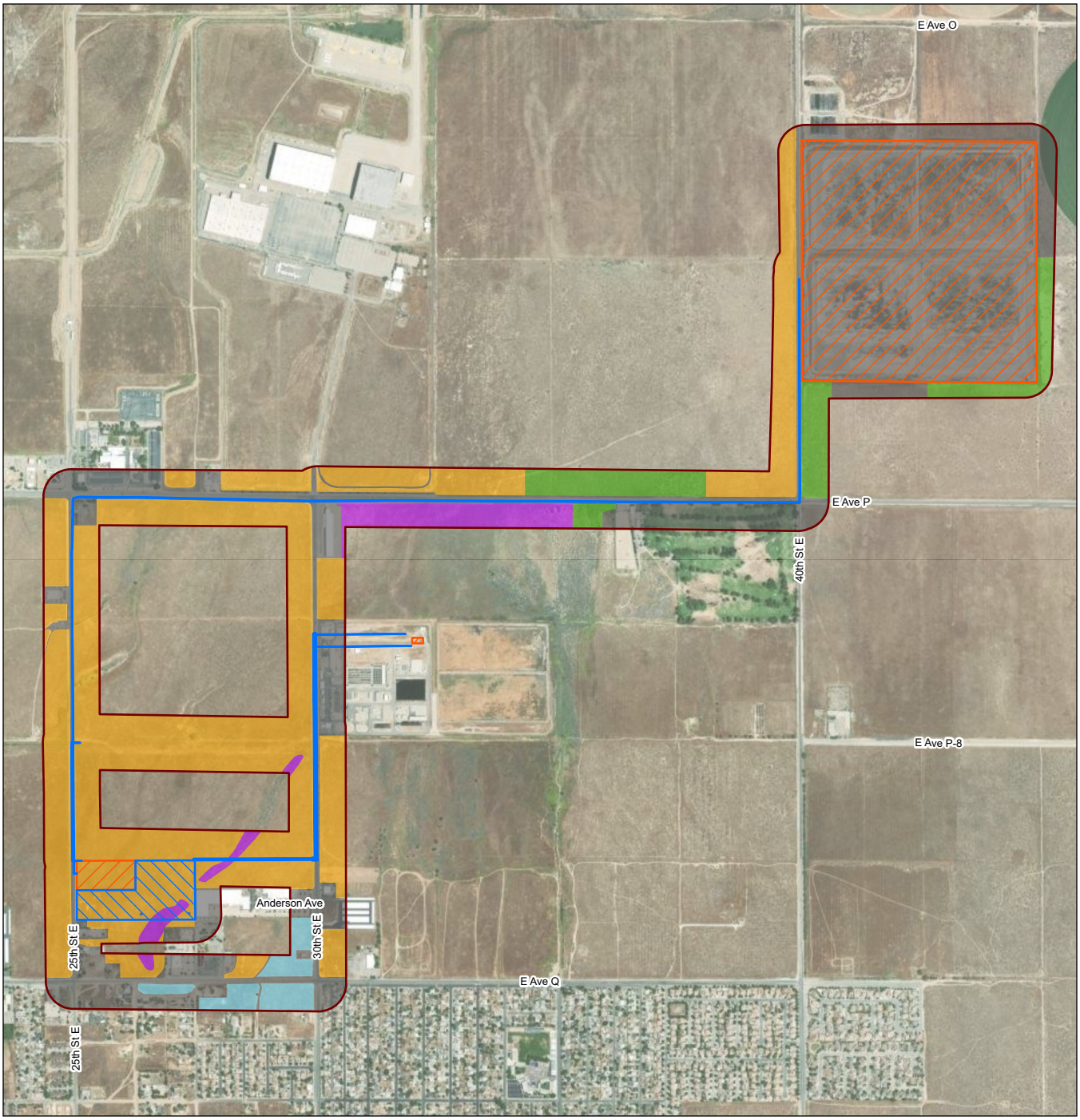
**Table 14. Proposed Project Impacts to Vegetation Communities and Land Cover Types**

| Vegetation Community / Land Cover Type | Project Impacts | |
|---|---|---|
| | Temporary (acres) | Permanent (acres) |
| **Vegetation Community** | | |
| *Brassica nigra* - *Centaurea* (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance | 14.24 | 4.87 |
| *Ericameria nauseosa* Shrubland Alliance | 1.21 | -- |
| *Yucca brevifolia* Woodland Alliance | -- | 0.51 |
| **Land Cover Type** | | |
| Disturbed/Developed | 2.99 | 158.96 |
| **Total** | **18.45** | **164.33** |

Construction of the proposed Project would remove vegetation, alter soil conditions, and potentially result in the loss of native seed banks. Construction activities could also result in the spread of noxious weeds within the proposed Project site and adjacent habitats. Vehicle travel on access roads and paved streets could result in increased fugitive dust to native vegetation in adjacent areas. Wind-blown dust can degrade soils and vegetation over a wide area. Dust can have deleterious physiological effects on plants and may affect their productivity and nutritional qualities. Fugitive dust can kill plants by burial and abrasion, interrupt natural processes of nutrient accumulation, and allow the loss of soil resources. The destruction of plants and soil crusts by windblown dust exacerbates the erodibility of soil and accelerates the loss of nutrients.

Operational impacts would occur during routine inspection and maintenance of the proposed Project. These impacts could include trampling or crushing of native vegetation by foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, and the introduction of non-native, invasive plants due to increased human presence on foot or equipment.

Because of their suitability to support several special-status species, the loss of and impacts to native habitat associated with the proposed Project would be considered a significant adverse impact. Implementation of mitigation measures BIO-3, BIO-4, BIO-5, BIO-15, and BIO-16 would reduce Project-related impacts to sensitive natural communities. These measures include worker education describing the sensitive biological resources that occur on the proposed Project site, implementation of BMPs to minimize and avoid impacts, compensation for unavoidable impacts, and conducting biological monitoring during ground-disturbing and other construction-related activities. Implementation of these mitigation measures would reduce impacts to sensitive natural communities to a less than significant level.




BRTR Biological Study Area

**Project Impact**

Temporary

Permanent

**BRTR Vegetation Communities**

Agriculture

*Avena spp. - Bromus spp.* Herbaceous Semi-Natural Alliance

*Brassica nigra - Centaurea* (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

*Ericameria nauseosa* Shrubland Alliance

*Yucca brevifolia* Woodland Alliance

**BRTR Land Cover Type**

Disturbed/Developed

***Notes***

**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2025.
**3.** Background:World Imagery: Maxar
World Ocean Base: Esri, GEBCO, Garmin, NaturalVue

0 850 1,700 Feet

(At original document size of 8.5x11)
1:20,400

N

Stantec

*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2025-09-08
TR by SET on 2025-09-08
IR by SG on 2025-09-08

*Client/Project*
184031611

Palmdale Water District
Pure Water Antelope Valley Project

*Figure No.*
**7**

*Title*
**Project Biological Resources Impacts**

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Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

c) **Less than Significant Impact with Mitigation Incorporated**. A formal delineation of jurisdictional wetlands, other "waters of the U.S.," waters of the State, and CDFW jurisdictional waters was conducted in 2024 and is available in Appendix B2. Based on the results of this delineation the proposed Project would not impact any potentially jurisdictional aquatic resources.

However, since the delineation was conducted in 2024 and Project construction is not anticipated to begin until late 2027, the condition of aquatic resources in the Project area could change. Should they occur, direct impacts to federal non-wetland Waters of the U.S. and CDFW jurisdictional waters could include the removal of native vegetation, the discharge of fill, degradation of water quality, and increased erosion and sediment transport. Potential indirect impacts could include alterations to the existing topographical and hydrological conditions and the introduction of non-native, invasive plant species. Operational impacts to wetland habitats would be similar to direct and potential indirect impacts.

As required by law, PWD would comply with the regulations regarding conducting Project activities in water courses and habitats under the jurisdiction of the State and federal government. Therefore, PWD would obtain required permits pursuant to Section 401 and 404 of the CWA, the State Porter- Cologne Act, and Fish and Game Code Section 1605. Due to the importance of jurisdictional habitats and ephemeral/perennial drainages and their suitability to support special-status species, the loss of these habitats associated with the proposed Project would be considered a significant adverse impact requiring mitigation.

Implementation of mitigation measures BIO-4, BIO-5, BIO-12, BIO-16, and BIO-17 would minimize impacts to sensitive natural communities. These measures include worker education describing the sensitive biological resources that occur on the proposed Project site, implementation of BMPs to minimize and avoid impacts, compensation for unavoidable impacts, and conducting biological monitoring during ground- disturbing and other construction-related activities. Implementation of these mitigation measures would reduce impacts to wetlands to a less than significant level.

d) **Less than Significant Impact**. Habitat fragmentation and isolation of natural areas ultimately results in the loss of native species within those communities. The ability for wildlife to move freely among populations is important to long-term genetic variation and demography. Fragmentation and isolation of natural habitat may cause loss of native species diversity in fragmented habitats. In the short term, wildlife movement may also be important to an animal's ability to occupy home ranges, if a species range extends across a potential movement barrier. These considerations are especially important for rare, threatened, or endangered species, and wide-ranging species such as large mammals, which exist in low population densities.

Direct impacts resulting from the construction of the proposed Project include the placement of physical structures such as pipelines and outbuildings. Ground- disturbing activities would be expected to interfere with terrestrial wildlife movement during construction of the proposed Project. The Project could also affect wildlife in adjacent habitats by interfering

with movement patterns or causing animals to temporarily avoid areas adjacent to the construction zone. More mobile species such as birds and larger mammals would likely disperse into adjacent habitat areas during ground disturbing activities.

Potential indirect impacts include human disturbance, colonization or expansion of invasive weeds, and vehicle traffic. Operational impacts would be the same as described for direct and potential indirect impacts.

Construction activities may temporarily limit terrestrial wildlife movement within the proposed Project area; however, the broad geographic range and habitat that occurs in the region would remain available to wildlife. The Project would not substantially interfere with the movement of any native resident or migratory fish, reptile, or amphibian species. Existing barriers to movement (i.e., landfill and associated structures) and surrounding land uses (i.e., residential and recreational) currently constrain or limit movement in the proposed Project area.

There are no known bird or bat migratory corridors that would be directly impeded by the proposed Project. Large concentrations of migrants are not known to utilize any specific portion of the proposed Project site and Project activities are not expected to preclude use of the area. Migrating birds would have access to native habitat communities within adjacent areas. Although species would be disrupted during certain activities, impacts to wildlife movement and migratory corridors from the proposed Project would be less than significant.

e) **Less than Significant Impact with Mitigation Incorporated**. The Palmdale Native Desert Vegetation Ordinance (City of Palmdale 1992) aims to protect and preserve desert vegetation, and particularly Joshua trees, so as to retain the unique natural desert aesthetics in some areas of the city, and to promote the general welfare of the community. Although it may not be feasible, practicable, or in the public interest to preserve all healthy desert vegetation regulated by the ordinance due to reasonable planning, developmental or property rights considerations, the design of development projects should strive to protect and maintain the most desirable and significant of the healthy desert vegetation in a manner consistent with the city general plan and CEQA. (Ord. 952 §2 (part) 1992). With implementation of mitigation measure BIO-3, the proposed Project would comply with requirements set forth in the ordinance, and impacts would be less than significant.

f) **Less than Significant Impact**. There only known adopted Habitat Conservations Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservations plan within the proposed Project area is the West Mojave Plan (WMP) prepared by the Bureau of Land Management (2004). The WMP is a habitat conservation plan and federal land use plan amendment that:

- Presents a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel (MGS) and nearly 100 other sensitive plants and animals and the natural communities of which they are a part.
- Provides a streamlined program for complying with the requirements of the California and federal Endangered Species Acts (CESA and FESA, respectively); the City of Palmdale is a collaborator on the plan.

Where applicable the proposed Project could comply with the requirements of the WMP, therefore, impacts would be less than significant.

**Mitigation Measures**

Implementation of the following mitigation measures, as relevant, would reduce impacts to biological resources to less than significant levels.

**BIO-1 Habitat Assessment Update**. Prior to ground-disturbing activities, the habitat assessment completed for the Project in 2024 shall be updated based on Project component siting determined during detailed design. Habitat suitable to support special-status plant species, special-status wildlife species, nesting bird species, sensitive plant communities, and/or native desert vegetation shall be mapped within 500 feet of each proposed Project component footprint. Where suitable habitat is present, implementation of Mitigation Measures BIO-2 through BIO-17 shall be required as relevant based on the resources identified.

**BIO-2 Special-Status Plant Surveys, Avoidance Measures, Mitigation and Monitoring Plan**. PWD shall retain a qualified biologist to conduct surveys for special-status plants (other than Joshua trees which are covered in mitigation measure BIO-3) prior to any vegetation removal, grubbing, or other construction activity within the proposed Project footprint. The surveys shall be floristic in nature and seasonally timed to coincide with the blooming periods of the following special-status species with potential to occur:

- short-joint beavertail
- sagebrush loeflingia

The surveys shall be conducted during the relevant target species' blooming periods no more than 2 years prior to construction. Special-status plant species identified on site shall be mapped onto a site-specific aerial photograph. Surveys shall be conducted in accordance with the most current CDFW and USFWS protocols. A report of the survey results shall be submitted to PWD for review and approval. If special-status plants other than western Joshua trees are detected during special-status plant surveys, the observed special-status plants shall be avoided through proposed Project design where feasible, and vegetation clearing within 50 feet (15 meters) of any identified special-status plant shall be conducted by hand by the construction contractor(s), if practicable. An avoidance buffer of at least 50 feet (15 meters), or other distance as approved by a qualified biologist, shall be established around any identified special-status plants that can be feasibly avoided, and the avoidance buffer shall be delineated with bright orange protective fencing. The avoidance buffers shall be maintained for the duration of construction activities at each construction site and shall be removed only after the conclusion of all grading, clearing, and construction activities at each construction site. If special-status plants other than western Joshua tree are detected during special-status plant surveys and would be impacted by proposed Project construction, PWD shall retain a qualified restoration specialist to develop a Special-Status Plant Mitigation and Monitoring Plan that provides for the on-site or off-site replacement of the species impacted by the proposed Project. The Special-Status Plant Mitigation and Monitoring Plan shall specify the following:

- A summary of impacts

- The location of the mitigation site
- Methods for harvesting seeds or salvaging and transplanting individuals to be impacted
- Measures for propagating plants or transferring living plants from the salvage site to the mitigation site
- Site preparation procedures for the mitigation site
- A schedule and action plan to maintain and monitor the mitigation site
- Criteria and performance standards by which to measure the success of the mitigation, including replacement of impacted plants at a minimum 1:1 ratio
- Measures to exclude unauthorized entry into the mitigation areas
- Contingency measures such as replanting or weeding if mitigation efforts are not successful
- The performance standards for the Special-Status Plant Mitigation and Monitoring Plan shall be, at a minimum, the following:
    - Within five years after introducing the plants to the mitigation site, the number of established, reproductive plants shall equal the number impacted during proposed Project construction; and
    - Restoration shall be considered successful after the success criteria have been met for a period of at least two years without any maintenance or remediation activities other than invasive species control.

The Special-Status Plant Mitigation and Monitoring Plan shall be initiated prior to Project construction (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation) and shall be implemented over a 5-year period. The plan may also be combined with the Habitat Revegetation, Restoration, and Monitoring Program described under Mitigation Measure BIO-16. Annual reports discussing the implementation and management of the Special-Status Plant Mitigation and Monitoring Plan shall be submitted to PWD for review and approval. Five years after the start of the mitigation for the proposed Project, a final report shall be submitted to PWD for review and approval and shall, at a minimum, discuss the implementation and management of the Special-Status Plant Mitigation and Monitoring Plan over the five-year period and indicate whether the Special-Status Plant Mitigation and Monitoring Plan has been successful based on the established performance standards. Should the success criteria be met before Year Five, the mitigation effort can be deemed complete.

**BIO-3 Joshua Tree Census Survey**. A western Joshua tree census survey shall be conducted for the proposed Project footprint by a qualified arborist in accordance with CDFW's Western Joshua Tree Census Instructions, which requires a census of all western Joshua trees within the proposed Project area and a 50-foot buffer. Impacts to western Joshua trees and within a minimum 50-foot buffer shall be avoided to the extent feasible. An avoidance buffer of at least 50 feet shall be established around western Joshua tree individuals that can be feasibly avoided. If a 50-foot buffer is not feasible, a reduced buffer can be established if a qualified desert native plant specialist and CDFW determine the reduced buffer would avoid direct impacts to

individual western Joshua tree(s). No activities shall occur within the buffer. The avoidance buffers shall be maintained for the duration of construction activities in each work area and shall be removed only after the conclusion of all grading, clearing, and construction activities at the proposed Project construction site.

For each dead or live western Joshua tree individual that cannot be avoided through proposed Project design, PWD shall implement one of the following measures:

- The western Joshua tree individual shall be trimmed or relocated under the guidance of a desert native plant specialist. Tree relocation shall be implemented in accordance with the following measures and CDFW-provided guidelines and relocation protocols, if made available prior to proposed Project construction, to assist the survival of the relocated tree:
  - The relocated western Joshua tree shall be placed in a suitable location and with proper orientation to improve its survival.
  - The western Joshua tree shall be relocated at a time that maximizes its survival, when feasible.
  - A desert native plant specialist shall be on site to oversee relocation of the tree.
- PWD shall submit payment of an in-lieu fee to CDFW pursuant to CDFW's standard mitigation fee structure for western Joshua tree in effect at the time of application for an Incidental Take Permit.

**BIO-4 Construction Worker Environmental Awareness Program**. PWD shall retain a qualified biologist to conduct a preconstruction WEAP training for all personnel working on the proposed Project. The WEAP shall aid workers in recognizing special-status species and regulated biological resources known to occur (e.g., western Joshua trees, sensitive natural communities, jurisdictional waters or wetlands) or potentially occurring on the proposed Project sites and focus on conditions and protocols necessary to avoid and minimize potential impacts to biological resources. All personnel associated with construction of the proposed Project shall attend the WEAP training prior to initiation of construction activities (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation). The training shall include information about the special-status species potentially occurring within the proposed Project site, identification of special-status species and habitats, a description of the regulatory status and general ecological characteristics of special-status resources, and a review of the limits of construction and measures required to avoid and minimize impacts to biological resources within the work area. A fact sheet conveying this information shall also be prepared for distribution to all contractors, their employees, and other personnel involved with construction. All employees working at the proposed Project site shall sign a form provided by the trainer documenting they have attended the WEAP and understand the information presented to them. The signed form shall be provided to PWD as documentation of training completion. The crew foreman shall be responsible for ensuring crew members adhere to the guidelines and restrictions designed to avoid impacts to special-status species and other regulated biological resources. If new personnel are brought onto the proposed Project after completion of the initial WEAP training, the training shall be conducted for all new personnel before they can participate in proposed Project construction activities. Construction personnel shall be instructed

to not directly harm any special-status species on site by halting activities until the species can move to off-site areas or contact a qualified biologist to move the species out of harm's way, if appropriate.

**BIO-5 Qualified Biological Monitor**. PWD shall retain a qualified biological monitor with relevant experience with the taxa and species in the Antelope Valley desert and mountain foothills for which pre-construction surveys, monitoring, or other support is required during proposed Project construction (potentially including, but not limited to, special-status plants, raptors, nesting birds, and those special-status species with potential to occur based on the results of surveys conducted prior to proposed Project initiation. The qualified biologist role may be satisfied by one or more individuals depending on qualifications and experience with one or more species and taxa. The qualified biologist shall be present during initial ground disturbance or vegetation removal activities and shall have the authority to temporarily stop work if one or more special-status species are observed that may be impacted by proposed Project activities. The biologist shall relocate special-status amphibian, reptile, or mammals present within anticipated proposed Project impact areas to suitable undisturbed habitat outside the areas directly and indirectly affected by construction activities. The biologist shall hold the requisite incidental take permits or authorizations for the capture and handling of the species, if applicable. The biologist shall recommend measures to ensure compliance with avoidance and minimization measures, applicable permit conditions, and conditions required for observed special-status species. When the biologist is present on site, they shall be responsible for:

- Verifying Project compliance with environmental mitigation measures and requirements
- Establishing lines of communication and reporting methods in coordination with the construction crew foreman and PWD
- Conducting pre-construction clearance sweeps for special-status species and nesting birds, as needed
- Documenting special-status species observations
- Recommending preventative or protective actions to avoid and minimize potential proposed Project impacts to regulated biological resources where feasible
- Recommending actions to be taken in the event of non-compliance
- Daily and weekly reporting of compliance

Monitoring logs documenting the above shall be submitted to PWD for review and approval for the duration of proposed Project construction.

**BIO-6 Desert Tortoise Avoidance, Minimization and Compensation Measures.** This mitigation measure is applicable to suitable habitat for desert tortoise within 500 feet of the Project sites based on the 2024 habitat assessment as updated by mitigation measure BIO-1. Focused protocol surveys shall be conducted by a qualified biologist following the protocol outlined in the most recent USFWS and/or CDFW protocol guidelines. These currently include: 2019 Preparing for Any Action That May Occur Within the Range of the Mojave Desert Tortoise (*Gopherus agassizii*). If any desert tortoise are observed during the focused surveys, these species and their habitat shall be avoided by the proposed Project. If avoidance of desert tortoise

is not feasible, and desert tortoise may be potentially impacted by the proposed Project, additional avoidance and mitigation measures will be required, such as constructing proposed Project facilities outside the breeding season, establishing a suitable buffer around known territories, and restricting activities around certain times of year. If the proposed Project results in permanent impacts to habitat occupied by desert tortoise, USFWS and CDFW shall be consulted to ensure compliance with the Endangered Species Act and/or requirements for avoidance, minimization, or mitigation measures (e.g., replacement of impacted occupied habitat at a minimum 1:1 ratio).

**BIO-7 Crotch's Bumble Bee Avoidance, Minimization, and Compensation Measures**. If Crotch's bumble bee is still considered a California Endangered Species Act (CESA) candidate species or has been listed as threatened or endangered under CESA at the time construction of proposed Project commences, PWD shall implement the following avoidance, minimization, and compensation measures for this species:

- A qualified biologist shall conduct a protocol-level presence/absence survey for Crotch's bumble bee in areas of the proposed Project site with suitable habitat during the peak active period for Crotch's bumble bee (highest detection probability) that occurs prior to the start of the proposed Project's initial ground disturbing activities (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation). The peak active period for Crotch's bumble bee in the Project area is anticipated to be April through June given the expected desiccation of Crotch's bumble bee floral resources within the Project area by mid-summer, though this timing could depend on annual climatic factors. Survey methodology shall be based on Section 4.1.1 of CDFW's Survey Considerations for CESA Candidate Bumble Bee Species (CDFW 2023b), or the most current CDFW guidance in effect at the time. Inaccessible areas outside of the proposed Project site can be surveyed using binoculars from the proposed Project edge or from public roads. The timing of the presence/absence survey can be phased with proposed Project build-out, if feasible.
- If construction starts one year or more after the conclusion of the surveys described above, PWD shall consult with CDFW as to whether additional surveys are required and shall retain a qualified biologist to conduct additional surveys if recommended by CDFW.
- If Crotch's bumble bee is present, the qualified biologist shall identify the location of nests in or adjacent to the proposed Project site to the extent feasible. Inaccessible land adjacent to the proposed Project site shall be observed using binoculars. If nests are identified within the proposed Project site or immediately adjacent to the site, a qualified biologist shall determine the need to establish a no-disturbance buffer around the nest, where feasible, to reduce the risk of disturbance or accidental take. The buffer shall provide at least 50 feet (15 meters) of clearance around active nest entrances. If proposed Project activities may result in disturbance or potential take, the qualified biologist, in coordination with CDFW, shall expand the buffer zone as necessary to prevent disturbance or take. If establishment of a no-disturbance buffer is feasible, construction activities shall not occur within the buffer until a qualified biologist determines the colony is no longer active (i.e., no Crotch's bumble bees are seen flying in or out of the nest for three consecutive days, indicating the colony has completed its nesting season and the next season's queens have dispersed from the colony). Once the nest has been determined to be inactive, construction activities within

the no-disturbance buffer(s) shall be allowed to resume. Otherwise, the no-disturbance buffer shall be maintained for the duration of proposed Project construction activities in each work area and shall be removed only after the conclusion of all grading, clearing, and construction activities at each construction site.

- If establishment of a no-disturbance buffer and/or avoidance of the nest is not feasible, the qualified biologist shall consult with CDFW regarding potential encroachment into the no-disturbance buffer and for proposed Project activities that may result in take of Crotch's bumble bee.
- If Crotch's bumble bee is determined to be present on the proposed Project site, floral resources associated with the species that will be removed or damaged by proposed Project activities in the areas of the proposed Project site where Crotch's bumble bee is detected and documented shall be replaced at a 1:1 ratio. Planning and implementation of suitable habitat replacement may be integrated into the Habitat Revegetation, Restoration, and Monitoring Program described under Mitigation Measure BIO-16.

**BIO-8 Burrowing Owl Breeding Season Survey and Foraging Habitat Mitigation**. PWD shall retain a qualified biologist to conduct focused breeding season surveys for burrowing owls in accordance with the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012), or the most current CDFW guidance in effect at the time. Surveys shall be conducted during the burrowing owl breeding season immediately prior to the start of proposed Project construction. The focused surveys shall be conducted by a qualified biologist in the portions of the proposed Project site with suitable burrowing owl habitat plus a 500-foot buffer (burrowing owl survey area). The surveys shall be conducted in the morning or evening to evaluate the presence/absence of burrowing owl during the nesting season. All potential burrowing owls and burrows with burrowing owl sign shall be recorded using a GPS unit capable of submeter accuracy. Observations shall be conducted to determine if individual owls and/or nesting pairs are present and their status/disposition (e.g., late winter migrant, actively nesting, single individual not nesting). Representative photos of the habitat, potential and occupied burrows, and vegetation within the burrowing owl survey area shall be taken and included as an appendix to the survey report. All vertebrate fauna detected in the burrowing owl survey area shall be recorded in field notes. Inaccessible areas of the burrowing owl survey area outside the proposed Project site shall be surveyed using binoculars and/or spotting scopes to determine if owls are present.

A survey report shall be prepared that includes survey methodology, survey results, an analysis of potential proposed Project impacts to actively nesting pairs, and a calculation of the compensatory mitigation for foraging habitat, if impacted. Late winter migrants and non-nesting individuals located outside of the proposed Project impact area shall not require habitat mitigation unless passive relocation is necessary. Maps showing burrow locations, a delineation of suitable habitat areas, and burrowing owls observed shall be included in the survey report.

If actively breeding owls are observed within 500 feet of proposed Project activities, PWD shall implement compensatory mitigation for impacts to foraging habitat based on the following methodology:

- A 500-foot buffer shall be established around each active nest burrow to indicate the primary foraging habitat area for each nesting pair.

- Permanent proposed Project disturbance areas shall be overlain onto the foraging buffer zone(s) to calculate the area(s) of habitat loss.
- Permanent foraging habitat loss shall be mitigated at a 1:1 ratio.

Compensatory mitigation for loss of foraging habitat shall be implemented on- or off-site and may include purchase of Conservation Bank credits, payment of an in-lieu fee to benefit burrowing owl, or permanent conservation and management of burrowing owl habitat through the recordation of a conservation easement, funding of a non-wasting endowment, and/or implementation of a Mitigation Land Management Plan based on the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Mitigation lands shall be identified through coordination with CDFW on, adjacent, or proximate to the impact site where practicable and where habitat is suitable to support burrowing owl.

**BIO-9 Burrowing Owl Pre-Construction Clearance Survey and Occupied Burrow Avoidance and Minimization Measures**. PWD shall retain a qualified biologist to conduct a pre-construction burrowing owl clearance survey of areas within the proposed Project site and a 500-foot buffer that contain suitable burrowing owl habitat to confirm presence/absence of burrowing owl individuals no more than 14 days prior to start of construction in each work area. The survey methodology shall be consistent with the methods outlined in the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). If no active breeding or wintering owls or evidence of occupied habitat is identified, then proposed Project construction in the work area may begin, and no further action is required.

If active breeding or wintering owls or evidence of occupied habitat is detected in the proposed Project work area or within a 500-foot buffer, PWD shall implement the following measures for mitigation of potential burrowing owl presence in the Project area in accordance with the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012):

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

*Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The qualified biologist shall prepare a passive relocation program in accordance with Appendix E (Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) of the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) and submit the passive relocation program to PWD and CDFW for review and approval prior to the commencement of ground disturbance activities. If required, a compensatory mitigation agreement shall be developed in coordination with CDFW prior to passive relocation of owls.

- Smaller non-disturbance buffers may be permitted in the winter (and sometimes breeding season) for the burrowing owl individuals if a noise and visual barrier, such as hay bale walls, is installed between the occupied burrowing owl burrow and construction activities, as long as the qualified biologist determines the reduced buffer will provide adequate protection.
- When a qualified biologist determines burrowing owls are no longer occupying the proposed Project site and passive relocation is complete, ground disturbing activities may begin. A final letter shall be prepared by a qualified biologist documenting the results of the passive relocation. The letter shall be submitted to CDFW.

**BIO-10 Swainson's Hawk Avoidance and Minimization Measures**. Construction activities shall be limited to the period between September 16 and February 28 to the extent feasible. If construction activities cannot be completed within this timeframe, PWD shall retain a qualified biologist(s) with Swainson's hawk survey experience to conduct a Swainson's hawk nest survey within the proposed Project site and a 0.5-mile buffer during the nesting season immediately prior to the commencement of proposed Project construction. While the proposed Project does not propose to construct renewable energy facilities, nest survey methods and timing shall follow those outlined in the CEC and CDFW protocol for the Antelope Valley (CDFW 2010) with the exception that the nest survey shall occur within a 0.5-mile buffer of the proposed Project site. A report documenting results of the survey shall be prepared and submitted to PWD for review and approval prior to commencement of proposed Project activities. If no Swainson's hawk nests are documented within 0.5 miles of the Project area, no additional action shall be required.
If an active Swainson's hawk nest is detected within 0.5 miles of the proposed Project site, PWD shall implement the following measures:

- Retain a qualified biologist to prepare a Swainson's Hawk Nest Monitoring and Mitigation Plan that incorporates the following measures to avoid and minimize impacts to Swainson's hawk nests in and near the construction areas during the breeding season (March 1 to September 15):

    - If nesting Swainson's hawks are detected within 0.5 miles of proposed Project activities during the breeding season, CDFW shall be consulted regarding the establishment of a no-disturbance buffer to avoid impacts to the active nest. Construction activities shall maintain a 0.25-mile no-disturbance buffer around an active nest unless a reduced buffer is approved in consultation with the qualified biologist and CDFW.

    - If construction activities are necessary within the buffer zone, PWD shall consult with CDFW as to the potential for take. Monitoring of the nest site by a qualified biologist and funding of Swainson's hawk recovery efforts may be necessary.

- If a hawk is found injured during proposed Project activities on the proposed Project site, the injured hawk shall be immediately relocated to a raptor recovery center approved by CDFW. The qualified biologist shall notify CDFW personnel via telephone or email, followed by a written report that includes the date, time, location, and circumstances of the incident.

PWD and its construction contractor(s) shall implement the provisions of the Swainson's Hawk Nest Monitoring and Mitigation Plan. A report documenting measures taken to avoid and minimize impacts to Swainson's hawk nests shall be prepared by the qualified biologist following the completion of proposed Project construction and submitted to PWD for review and approval.

**BIO-11 Mohave Ground Squirrel Avoidance and Minimization Measures**. PWD shall retain a qualified biologist to conduct a focused habitat assessment (visual survey) of the proposed Project sites following the CDFW's *Mohave Ground Squirrel Survey Guidelines* (CDFW 2023a) to assess the potential habitat suitability for the species. If suitable habitat is identified, protocol live-trapping surveys shall be conducted in areas of suitable habitat to assess the potential presence and relative abundance of Mohave ground squirrel within the proposed Project site. Pursuant to the protocol outlined in the *Mohave Ground Squirrel Survey Guidelines*, trapping surveys shall take place over three terms in specific timing windows in the period of March 15 and July 15 immediately prior to commencement of proposed Project activities. If construction starts one year or more after the conclusion of surveys, PWD shall consult with CDFW as to whether additional surveys are required and shall retain a qualified biologist to conduct additional surveys if recommended by CDFW. Findings of the habitat assessment and live-trapping surveys shall be documented in a report that also details survey methodology, timing, and surveyor qualifications. If no Mohave ground squirrels are discovered during the protocol surveys, no further action is required.

If Mohave ground squirrels are observed during the surveys, PWD shall retain a qualified biologist to develop a Mohave ground squirrel biological monitoring plan, in coordination with CDFW, that includes measures to avoid, minimize, and/or mitigate potential impacts as a result of proposed Project activities, including, but not limited to:

- A qualified biologist shall conduct pre-construction clearance surveys for Mohave ground squirrel no more than 30 days prior to the start of any ground-disturbing activities in areas of the proposed Project site that contain suitable habitat for the species, as documented in the Mohave ground squirrel habitat assessment and survey report. The survey shall cover 100 percent of the anticipated impact area intersecting suitable Mohave ground squirrel habitat and a 50-foot buffer (survey area). A qualified biologist shall document locations of potential Mohave ground squirrel burrows. A 50-foot no-disturbance buffer shall be established around suspected or known Mohave ground squirrel burrows. Proposed Project activities shall not be conducted within the no-disturbance buffer unless at the discretion of the qualified biologist. A report documenting the results of the survey, locations of suspected or known Mohave ground squirrel burrows, and recommended no-disturbance buffers shall be submitted to PWD for review and approval prior to commencement of proposed Project activities in the survey area.

- If burrows are identified during the survey that are suspected or known to be occupied by Mohave ground squirrel and cannot be avoided, the qualified biologist shall prepare a Mohave Ground Squirrel Relocation Plan outlining measures to relocate individual Mohave ground squirrels prior to construction start. The plan shall be submitted to PWD and CDFW for review and approval and shall be implemented prior to commencement of proposed Project activities in work areas with suspected or known Mohave ground squirrel burrows. The Plan shall outline measures for burrow excavation, handling of individuals, identification of proposed relocation areas, and release of relocated individuals after the conclusion of all grading, clearing, and construction activities. A report documenting relocation activities and outcomes shall be prepared by the qualified biologist and submitted to PWD and CDFW for review and approval after completion of relocation activities.
- Within occupied Mohave ground squirrel habitat (as determined by the results of the focused habitat assessment and live trapping survey results as well as the pre-construction clearance survey results), the area of disturbance of vegetation and soils shall be the minimum required for the proposed Project. Clearing of vegetation and grading shall be minimized. Wherever practicable, rather than clearing vegetation and grading access routes, equipment and vehicles shall use existing surfaces or previously disturbed areas. Where grading is necessary, surface soils shall be stockpiled and replaced following construction. To the extent practicable, disturbance of shrubs and surface soils due to stockpiling shall be minimized. A qualified biologist shall monitor proposed Project activities during initial ground disturbance in suitable Mohave ground squirrel habitat. The qualified biologist shall work with the construction foreman and crew to implement and achieve compliance with the Mohave ground squirrel biological monitoring plan prepared for the proposed Project.

**BIO-12 General Best Management Practices**. PWD shall require construction contractor(s) and their personnel to adhere to the following general BMPs during construction:

- Construction-related vehicles shall observe a 15-mile-per-hour speed limit within the unpaved limits of construction.
- All open trenches or excavations shall be fenced and/or sloped to prevent entrapment of wildlife species.
- All food-related trash items such as wrappers, cans, bottles, and food scraps generated during construction shall be disposed of in closed containers only and removed daily from the construction site.
- No deliberate feeding of wildlife shall be allowed.
- No pets shall be allowed on the construction site.
- No firearms shall be allowed on the construction site.
- Vehicle or equipment maintenance shall be performed in designated staging areas.
- Access to the construction area outside of established work hours for the proposed Palmdale Ditch Conversion project shall be prohibited.

- If construction must occur at night (i.e., between dusk and dawn), all lighting shall be shielded and directed downward to minimize the potential for glare or spillover.
- During construction, heavy equipment shall be operated in accordance with standard BMPs. All equipment used on-site shall be properly maintained to avoid leaks of oil, fuel, or residues. Provisions shall be in place to remediate accidental spills.
- While encounters with special-status species are not anticipated, any worker who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped shall immediately report the incident to the construction foreman or biological monitor. The construction foreman or biological monitor shall immediately notify PWD.

**BIO-13 Work Limit Delineation**. PWD shall clearly identify work area limits on design and construction plans and shall require its construction contractor(s) to delineate and clearly mark approved construction work area limits with flagging or temporary orange construction fencing in the field prior to initial ground disturbing activities (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation). The marked boundaries shall be maintained for the duration of construction activities in each work area and shall be clearly visible to personnel on foot and by heavy equipment operators. Fencing or other barriers shall be placed on the impact side of the work area limit (i.e., within the construction site boundaries) to reduce the potential for encroachment and additional vegetation loss within adjacent open space. Fencing shall be installed pursuant to the approved construction and grading plans. Prior to initial ground disturbing activities (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation), the biological monitor (if required under Mitigation Measure BIO-5) shall verify the limits of construction have been properly staked and are readily identifiable. Employees shall strictly limit their activities and vehicles to the designated construction area, staging areas, and routes of travel. Intrusion by unauthorized vehicles outside of construction limits shall be prohibited, with control exercised by an on-site foreman. All temporary fencing shall be removed only after the conclusion of all grading, clearing, and construction activities at each construction site.

**BIO-14 Nesting Bird Surveys and Avoidance and Minimization Measures**. Proposed Project construction activities shall occur outside of the bird breeding season (February 1 to August 31) to the extent practicable. If construction must commence within the bird breeding season, PWD shall retain a qualified biologist to conduct a pre-construction nesting bird survey within a 500-foot radius of the Project site no more than seven days prior to initiation of ground disturbance (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation). If the proposed Project is phased or construction activities stop for more than one week, a subsequent pre-construction nesting bird survey shall be conducted prior to each phase of construction, if initiated during the bird breeding season.

Pre-construction nesting bird surveys shall be conducted during the time of day when birds are active and shall factor in sufficient time to perform this survey adequately and completely. A brief report of the nesting bird survey results, if applicable, shall be submitted to PWD for review and approval prior to ground disturbance and/or vegetation removal activities.

If no nesting birds are observed during pre-construction surveys, no further action is required. If nests are found, an appropriate avoidance buffer of up to 300 feet for passerine (perching birds) nests and up to 500 feet for active, non-listed raptor nests shall be determined by the qualified biologist and demarcated with bright orange construction fencing or other suitable flagging. Active nests shall be monitored at a minimum of once per week until a qualified biologist has determined the birds have fledged and are no longer reliant upon the nest or parental care for survival. No construction activity shall occur within this buffer until the qualified biologist confirms the breeding/nesting is completed and all the young have fledged.

**BIO-15 Invasive Plant Species Control Measures**. PWD shall require the construction contractor(s) and their construction personnel to ensure equipment is free of invasive plant seeds, propagules, and any material which may contain them (e.g., soil). For purposes of this mitigation measure, invasive plant species shall include all species with a California Invasive Plant Council rating of moderate or high. Prior to entering the construction site, equipment shall be inspected to confirm it is free of mud, dirt, and debris. Tire track stations shall be installed at construction site entrances and exits. Staging areas and access routes shall avoid weed infestations, and infestations within the work area(s) shall be flagged and avoided to the maximum extent feasible. Only certified weed-free materials (e.g., fiber rolls, straw, and fill) shall be used during construction.

**BIO-16 Sensitive Natural Communities and Jurisdictional Features Avoidance, Minimization Measures**. Sensitive natural communities and jurisdictional features identified for avoidance within the proposed Project site shall be demarcated using brightly colored flagging, as necessary, and avoided to the extent feasible during proposed Project construction. The marked boundaries shall be maintained for the duration of proposed Project construction activities in each work area and shall be clearly visible to personnel on foot and by heavy equipment operators. Construction personnel shall be instructed to avoid these areas as much as feasible. All temporary flagging shall be removed only after the conclusion of all grading, clearing, and construction activities at each construction site. Compliance with this measure shall be documented in the biological monitoring report, if required under Mitigation Measure BIO-5.

In addition, PWD shall require its construction contractor(s) and their personnel to implement the following measures:

- Any material/spoils generated from construction shall be located away from sensitive natural communities and jurisdictional features and protected from stormwater run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.
- Materials, hand-held equipment and other non-heavy or non-vehicle equipment shall be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage from contaminating the ground and generally at least 50 feet from sensitive natural communities and jurisdictional areas.
- Any spillage of material shall be stopped if it can be done safely. The contaminated area shall be cleaned, and any contaminated materials shall be properly disposed of. For all

spills, the Project foreman and biological monitor (if required under Mitigation Measure BIO-5) shall be notified.

If impacts to sensitive natural communities cannot be avoided, PWD shall identify compensatory mitigation prior to disturbance of the features. Mitigation may take the form of permittee-responsible, on-site or off-site mitigation or the purchase of credits from an approved mitigation bank or through applicant-sponsored mitigation (e.g., purchase and/or dedication of land for mitigation). If required, compensatory mitigation for unavoidable impacts to sensitive vegetation communities shall be accomplished at a minimum ratio of 1:1; however, the final ratio shall be determined and approved by CDFW. If on-site or off-site restoration would occur, PWD shall retain a qualified biologist to develop a Habitat Revegetation, Restoration, and Monitoring Program and submitted for CDFW approval prior to the commencement of proposed Project construction (including, but not limited to, site preparation, staging and mobilization, vegetation clearance/mowing/trimming, grading, and excavation). At a minimum, the program shall include the following:

- A description of the purpose and goals of the restoration
- Identification of success criteria and performance standards
- Methods of site preparation, including topsoil salvage and replacement procedures
- Irrigation plan and schedule
- Best Management Practices (BMPs)
- Maintenance and monitoring program
- Adaptive management strategies
- Key stakeholders and responsible parties
- Funding
- Contingencies

**BIO-17 Aquatic Resources Delineation and Compensatory Mitigation**. If impacts to jurisdictional waters and wetlands cannot be avoided, PWD shall identify compensatory mitigation prior to disturbance of the features. Compensatory mitigation for impacts to jurisdictional waters and wetlands shall be provided at a minimum 1:1 ratio, unless a higher ratio is required by Lahontan RWQCB, CDFW, and/or USACE. Mitigation may take the form of permittee-responsible, on-site or off-site mitigation or the purchase of credits from an approved mitigation bank. If on-site or off-site mitigation is proposed, a Compensatory Mitigation Plan shall be prepared that outlines the compensatory mitigation in coordination with the Lahontan RWQCB, CDFW, and/or USACE. If on-site mitigation is proposed, the Compensatory Mitigation Plan can be integrated with the Habitat Revegetation, Restoration, and Monitoring Program described in Mitigation Measure BIO-16 and shall identify those portions of the site, such as relocated drainage routes, that contain suitable characteristics (e.g., hydrology) for restoration. Determination of mitigation adequacy shall be based on comparison of the restored habitat with similar, undisturbed habitat in the site vicinity. The Compensatory Mitigation Plan shall include remedial measures if performance criteria are not met. If the Compensatory

Mitigation Plan is not integrated with the Habitat Revegetation, Restoration, and Monitoring Program described in Mitigation Measure BIO-16, the same reporting requirements shall apply for monitoring and evaluation of Compensatory Mitigation Plan implementation as detailed in Mitigation Measure BIO-16.

If off-site mitigation is proposed, off-site land shall be preserved through a deed restriction or conservation easement and the Compensatory Mitigation Plan shall identify an approach for funding assurance for the long-term management of the conserved land.

### 2.3.5 Cultural Resources

| Issues and Supporting Information Sources | 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 as defined in §15064.5? | ☐ | ☐ | ☐ | ☒ |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? | ☐ | ☒ | ☐ | ☐ |
| c) Disturb any human remains, including those interred outside of formal cemeteries? | ☐ | ☒ | ☐ | ☐ |

**Discussion**: The SWRP PEIR identified mitigation measures CUL-1 through CUL-9 for the protection of cultural resources. Measures CUL-1 (Qualified Archaeologist) and CUL-3 (Cultural Resources Assessment) have been implemented for Pure Water AV. Since the proposed Project would not demolish or alter buildings over 45 years in age, SWRP mitigation measure CUL-2 (Historic Resources Assessment) is not relevant to Pure Water AV. The results of the cultural resources assessment completed for the Project did not identify an area of cultural sensitivity. Therefore, SWRP mitigation measure CUL-5 (Archaeological Resource Monitoring) is not warranted for the Project. The Palmdale Ditch is not within the proposed Project area for Pure Water AV and any related construction is associated with the separate Palmdale Ditch Conversion Project. Therefore, SWRP mitigation measure CUL-8 (Historic American Engineering Record) is not relevant to Pure Water AV. Additional relevant mitigation measures including mitigation measures recommended by the Yuhaaviatam of San Manuel Nation (YSMN) for unexpected discoveries, and unexpected discovery of human remains or funerary objects (consistent with SWRP mitigation measures CUL-4, CUL-6, CUL-7 and CUL-9) are defined at the end of this section.

Consistent with mitigation measure CUL-1 and CUL-3 of the SWRP, a Stantec archaeologist meeting the minimum professional qualifications standards (PQS) set forth by the Secretary of the Interior (SOI) (codified in 36 Code of Federal Regulations [CFR] Part 61; 48 FR 44738-44739) (Qualified Archaeologist) conducted a cultural resources assessment for the proposed Project in 2024. The results of the investigation are summarized below and relevant documentation will be filed with the South-Central Coastal Information Center. To protect archaeological resources present in the Project area, the cultural resources report is on file with PWD but is not appended to the Initial Study. The confidentiality of records and information pertaining to the location, character, or ownership of archaeological sites and historic properties will be maintained consistent with National Historic Preservation Act (NHPA) Section 304, Archeological Resources Protection Act (ARPA) Section 9, and California Government Code 6254.10, as applicable.

**Precontact Period.** Throughout the precontact period, many groups occupied the Mojave Desert. Although long-term habitation sites in the foothills and near rocky buttes have been found to contain significant subsurface depth, most archaeological sites on the valley floor are sparse

surface scatters without subsurface components. Given the rarity of developed cultural middens, Mojave chronologies have relied on temporally diagnostic artifacts, such as projectile points, or upon the presence/absence of other temporal indicators, such as groundstone.

**Ethnographic Overview**. The homelands of multiple California indigenous groups converge at Antelope Valley, from the Kitanemuk to the north, the Serrano to the east, the Tongva to the south, and the Tataviam to the southwest. The field notes of Smithsonian ethnographer John P. Harrington, collected in the first quarter of the 20th century, indicate that neighboring Tribal groups whose core territories were located elsewhere utilized or traveled through the Antelope Valley occasionally and intermittently. Indeed, archaeological and ethnohistoric sources indicate that the Antelope Valley was an active hub of exchange and communication between coastal populations to the south and the west, interior populations living in the southern San Joaquin Valley to the north, and the Great Basin groups to the east. Harrington's field notes document extensive cultural exchanges (including trade, intermarriage, ceremonial exchanges, and conflict) between coastal, southern, and central California during the Spanish Period and into the historical era. Archaeological data indicate that these networks predated the mission system, characterizing interethnic relations during the precontact period. Southwestern Anasazi pottery sherds (including Tuzigoot White on Red, Flagstaff Black on White, and Wupatki Black on White—all from the Verde River area southwest of Flagstaff) have been found at the Barrel Springs site in the southern foothills of the Antelope Valley, indicating trade networks extending well into the southwest region. Because the Project area is situated in the southern portion of Antelope Valley, this review focuses on the lifeways of the Tataviam and Serrano peoples.

The Tataviam ancestral home stretches from the Liebre and Sawmill Mountains to the upper reaches of the Santa Clara River drainage in Los Angeles and Kern Counties. At the time of European contact, major Tataviam settlements were located along Piru and Castaic Creeks as well as within Antelope Valley along the foothills of Sierra Pelona Ridge (Johnson and Earle 1990). Like the neighboring Chumash, Gabrieliño, and Kitanemuk groups, the Tataviam adopted a hunting and foraging subsistence strategy and did not farm or practice animal husbandry. As with many California indigenous groups (Lightfoot and Parrish 2009), the Tataviam homeland offered a range of environments spanning the steep canyons of the San Gabriel Mountains to the flat desert floor of the Antelope Valley that allowed for a diverse range of resources to be exploited throughout the year. The Tataviam diet included yucca buds, acorns, sage seeds, and juniper berries and they hunted deer, small mammals, and likely antelope (King and Blackburn 1978). The native language of the Tataviam may have been of the Takic family, and it likely diverged from various other languages in the family as late as 1000 BP. The language was mutually exclusive at the onset of the historic period and unrecognizable to neighboring groups. Relatively little historical information regarding the group is available, although their population at the time of historic contact is estimated to have been around 1,000 (King and Blackburn 1978).

The Serrano ethnonym refers to California indigenous groups that occupied the San Gabriel Mountains (Mountain Serrano) and the western Mojave Desert (Desert Serrano or Vanyume) (Sutton and Earle 2017). While Desert Serrano settlements are mostly associated with the Mojave River, Sutton and Earle (2017:8) report Serrano villages as far west as the Palmdale vicinity. The Desert Serrano occupied villages for longer periods than their eastern and northern Mojave Desert contemporaries and consequently had larger and more intricately developed villages (Sutton and

Earle 2017). Features associated with Desert Serrano villages include dance houses, cemeteries, and circular houses with sunken floors excavated into the ground and finished with walls of bunched grasses or sedges (Sutton and Earle 2017). The relationship between Serrano villages is complex, with culturally-mediated spatial organization by clan and marriage affiliation, as well as economic ties that moved large quantities of acorns from mountainous regions northward across the desert floor (Sutton and Earle 2017). With the development of the Franciscan mission system, numerous Serrano people were relocated to the missions between 1800 and 1820. Earle suggests that small Numic-speaking groups of Chemehuevi-Southern Paiute affiliation migrated into the western Mojave Desert from the east and settled across the valley and the San Gabriel Mountains from the 1840s to 1890. More detailed overviews of the ethnography and ethnohistory of the region are available in Heizer (1978). Significant ethnohistoric data on the Tribal groups in the region can also be found in the unpublished ethnographic notes of John Peabody Harrington on file at the Smithsonian Institution. Multiple modern Tribal government organizations represent Serrano and Tataviam people.

**Historic Overview**. The "historic period" in the Antelope Valley is generally understood to begin with the passage of Spaniards through the region in the mid- to late 18th century. Captain Pedro Fages was the first recorded European to visit the Antelope Valley in 1772. However, the most well-known early entrada was that of Francisco Garcés. He was charged by the San Fernando mission to search out apostate Indians in the Antelope Valley in early 1776.

Fortunately, he left a detailed account of his journey through the region, and these records provide some of the earliest accounts of the native inhabitants of the area (notably, the Chemeheuvi, Kitanemuk, and Kawaiisu), as well as his stay at Willow Springs (near current-day Rosamond). Over the next 100 years, several small expeditions traveled through the region, including Jedediah Smith (1827), Kit Carson (1830), and perhaps most well-known, the John C. Fremont Expedition (1844), which undertook the first significant survey of the various resources of the region (Greenwood and McIntyre 1980).

Euro-American settlement began with the construction of the Southern Pacific Railroad, which laid tracks through the valley in 1876, connecting Los Angeles to San Francisco. The two cities of Lancaster and Palmdale originated in the late 1880s, following penetration by the Southern Pacific Railroad and its chain of stations and small settlements. Settlers flooded the valley between the late 1870s and the turn of the 20th century. Lancaster was the first stable community in the region, created in 1884 when a real estate developer named M.L. Wicks purchased six sections of land from the Southern Pacific Railroad and established a small farming community. By the turn of the 20th century, Lancaster had become a prosperous and rapidly growing town.

Four events played critical roles in the settling of Antelope Valley. The first was the construction of the Southern Pacific Railroad, which provided essential infrastructure and transportation. The second significant event was the 1877 Desert Lands Act, which granted title of government-held lands to private citizens at an affordable price. Third, and equally important, was the 1887 Wright Irrigation Act, which established irrigation districts and agricultural colonies. The fourth event was the completion of the California-Los Angeles Aqueduct system in 1913, which brought reliable water supplies into the region for domestic and agricultural uses.

While agriculture continued as a major industry in the Antelope Valley through the 20th century, the military, mining, and aerospace industries have had a significant impact on the Antelope Valley and its communities. Originally opened as Muroc Field in 1933, Edwards Air Force Base, located approximately 10 miles northeast of Palmdale, witnessed numerous historic advances in aeronautics and is a long-standing hub for aerospace contractors, including Lockheed Martin and Northrup Grumman. The early 20th century was the heyday for gold and silver mining in the volcanic buttes north of Rosamond and the Rio Tinto Borax Mine has been a major global source of borax since it was discovered in 1913 (Shumway et al. 1980).

**Records Searches.** A CHRIS cultural resources records search was completed on May 2, 2023, for the proposed Project by the South Central Coastal Information Center (SCCIC) at California State University, Fullerton. The SCCIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of cultural resources records and reports for Los Angeles County. The records search included a review of all previous cultural resource studies and previously recorded cultural resources (historic and precontact) within a 0.25-mile radius of the proposed Project. In addition, the Built Environment Resource Directory (BERD) was consulted, which includes architectural resources that are eligible for, or listed in, the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR).

The records search results identified 18 previous cultural resources studies within a 0.25-mile radius of the proposed Project. Of these, 10 partially overlap with the proposed Project site. The SCCIC records search identified four previously recorded cultural resources within a 0.25-mile radius of the proposed Project, one of which intersects the proposed Project. The historic-period resource is recorded on the east side of 30th Street adjacent to a proposed pipeline within the Project site. When recorded in 2011, it consisted of a sparse scatter of ceramics and glass fragments and a melamine bowl extending in an area 230-feet-long and 30-feet-wide along the road shoulder. The remaining three cultural resources in the search area consist of two isolated precontact artifacts and a historic-period refuse deposit.

Stantec requested a review of the NAHC's Sacred Lands File (SLF). The NAHC maintains the confidential SLF, which documents sites of traditional, cultural, or religious value to Native American tribes. In a letter dated January 13, 2023, the NAHC reported that the results of the SLF search were negative.

Stantec reviewed USGS topographic maps and historical aerial imagery of the proposed Project site and vicinity to characterize the historical land uses of the area and to determine a potential association for the previously recorded historic archaeological site. The earliest topographic map reviewed was from 1915 and shows the proposed Project site and vicinity as largely undeveloped, with early alignments of roads within the proposed Project site present, including 30th Street, 40th Street, and Avenue Q (USGS 1915). Notably, the 1915 topographic map shows a structure depicted near the location of the previously recorded resource on the east side of 30th Street. The structure is no longer present on topographic maps published in the mid-20th century (USGS 1958).

The oldest aerial image reviewed is from 1940 (UC Santa Barbara Framefinder 1940) and shows the area as rural, scrub habitat with some parcels developed with orchards or other row crops. The

structure shown on the 1915 topographic map near the previously recorded site is no longer present.

**Field Survey**. On April 15 through 17, 2024, Stantec archaeologists Sandra Hollispeasy and Curtis Alcantar, completed an intensive pedestrian survey of all accessible undeveloped areas of the proposed Project site. The survey was completed using 15-meter-wide (~49 feet) or less pedestrian transects across areas where soil was visible. Where present, exposed subsurface sediments (for example, in rodent burrows) were visually examined for cultural resources or midden soils. Surface visibility was variable, with portions of the survey area obscured by asphalt, development, or grasses.

No cultural resources were identified in the proposed Project site. The location of a previously recorded historic trash scatter was intensively surveyed, and no evidence of the site was identified. This resource is believed to have been removed or otherwise destroyed.

a) **No Impact.** No historical resources were identified in the study area for the cultural assessment. Therefore, the Project would have no impacts on historical resources.

b) **Less than Significant Impact with Mitigation Incorporated**. Stantec's study consisted of background research, including a records search at the SCCIC and NAHC; a review of historical topographic maps and aerial imagery; Tribal consultation; and a field survey. The records search identified one cultural resource in the proposed Project site, consisting of historic-period trash scatter, possibly representing a roadside trash dump. The cultural resources survey did not identify the site, and the resource is assumed to be destroyed. The study did not identify any precontact or historic-period cultural resources in the proposed Project corridor. Therefore, the proposed Project is not anticipated to impact cultural resources, including those that qualify as "historical resources" under CEQA (CEQA Guidelines Section 15064.5(a)). However, excavation and earthwork for the proposed Project have the potential to disturb previously unknown cultural resources. Implementation of the mitigation measures noted below would reduce impacts on cultural resources to less than significant levels.

c) **Less than Significant Impact with Mitigation Incorporated**. No recorded cemeteries are known for the Project area. In the unexpected event that human remains are discovered during Project construction or operation, mitigation measure CUL-4 would be implemented. With implementation of CUL-4, Project-related impacts on human remains and associated funerary objects potentially present in the Project area would be less than significant.

**Mitigation Measures**

With implementation of the following mitigation measures, Project-related impacts on cultural resources would be less than significant.

**CUL-1 Construction Worker Cultural Resources Sensitivity Training**. Consistent with SWRP PEIR mitigation measure CUL-4, for Project components involving ground disturbance, the Qualified Archaeologist shall implement a cultural resources sensitivity training program. The Qualified Archaeologist, or their designee, shall instruct all construction personnel of the types of

cultural materials that may be encountered, cultural sensitivity issues, applicable laws protecting cultural resources, the proper treatment procedures to be enacted in the event of an inadvertent discovery of cultural materials or human remains, and confidentiality of discoveries. Tribal representatives from each of the tribes consulting on the proposed Project shall be allowed to attend and/or participate in the training should they elect to and shall be given a minimum of 10 days notice prior to the training. In the event that construction crews are phased, additional trainings shall be conducted for new construction personnel. The PWD, or their construction contractor(s), shall ensure construction personnel are made available for and attend the training. PWD shall retain documentation demonstrating attendance.

**CUL -2 Archaeological Resources Discoveries**. Consistent with SWRP PEIR mitigation measure CUL-6, in the event that cultural resources are unexpectedly encountered during ground-disturbing activities, work within 60 feet of the find shall halt, an Environmentally Sensitive Area physical demarcation/barrier installed, and a Qualified Archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) contacted immediately to evaluate the resource. If the Qualified Archaeologist determines the resource to be Native American in origin, then a representative from the tribes consulting on the proposed Project shall also be contacted to participate in the evaluation of the resource. If the qualified archaeologist and/or representative from the tribes consulting on the Project determines it to be appropriate, archaeological testing for CRHR/NRHP eligibility shall be completed. If the resource proves to be eligible for the CRHR/NRHP and significant impacts to the resource cannot be avoided via project redesign, a Qualified Archaeologist shall prepare a data recovery plan tailored to the physical nature and characteristics of the resource, pursuant to the requirements of CEQA Guidelines Section 15126.4(b)(3)(C). Should the find be deemed Native American in origin, all plans for analysis shall be reviewed and approved by PWD (and LACSD or LAWA depending on land ownership) and the tribes consulting on the proposed Project prior to implementation, and all removed material shall be temporarily curated on site. The data recovery plan shall identify data recovery excavation methods, measurable objectives, and data thresholds to reduce any significant impacts to the resource. Pursuant to the data recovery plan, the Qualified Archaeologist and Native American representative(s) from the tribes consulting on the proposed Project, as appropriate, shall recover and document the scientifically consequential information that justifies the resource's significance. PWD shall review and approve the treatment plan and archaeological testing as appropriate, and the resulting documentation shall be submitted to the regional repository of the CHRIS, pursuant to CEQA Guidelines Section 15126.4(b)(3)(C).

**CUL-3 Curation and Disposition of Cultural Materials**. Consistent with SWRP PEIR mitigation measure CUL-7, PWD shall work with the tribes consulting on the Project to determine the final disposition of any cultural materials removed. However, if the tribes consulting on the Project are not in agreement on the final disposition, PWD shall rebury the artifacts within the Project site in a location free from future disturbance and share the location with the tribes consulting on the Project. Should a collection require curation, the tribes consulting on the Project shall be given the opportunity to approve the curation facility but must still meet the standards of 36 CFR 79. All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the Qualified Archaeologist and submitted to PWD (and LACSD or LAWA, depending on land ownership) and the tribes consulting on the Project for their review and comment. A copy of the final report and all site/isolate records shall be submitted to

PWD (and LACSD or LAWA, depending on land jurisdiction), the tribes consulting on the Project, and the South Central Coastal Information Center. Disposition of Native American human remains and associated funerary objects, or grave goods shall be determined by the landowner in consultation with the PWD and the Most Likely Descendant (MLD).

The PWD shall curate all eligible historic-period archaeological material, or portions thereof at the discretion of the Qualified Archaeologist, at a repository accredited by the American Association of Museums that meets the standards outlined in 36 CFR 79.9. If no accredited repository accepts the collection, then PWD may curate it at a non-accredited repository as long as it meets the minimum standards set forth by 36 CFR 79.9. If neither an accredited nor a non-accredited repository accepts the collection, then PWD may offer the collection to a public, non-profit institution with a research interest in the materials, or to a local school or historical society in the area for educational purposes.

**CUL-4 Inadvertent Discovery of Human Remains**. Consistent with SWRP PEIR mitigation measure CUL-9, if human remains are encountered, then PWD shall halt work in the vicinity (within 100 feet) of the discovery and contact the County Coroner in accordance with Public Resources Code section 5097.98 and Health and Safety Code section 7050.5. If the County Coroner determines the remains are Native American, then the Coroner shall notify the California Native American Heritage Commission in accordance with Health and Safety Code subdivision 7050.5(c), and Public Resources Code section 5097.98. The California Native American Heritage Commission shall designate a Most Likely Descendant for the remains per Public Resources Code section 5097.98. Until the landowner has conferred with the Most Likely Descendant, the construction contractor(s) shall ensure the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities take into account the possibility of multiple burials.

## 2.3.6 Energy

| Issues and Supporting Information Sources | 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? | ☐ | ☐ | ☒ | ☐ |
| b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? | ☐ | ☐ | ☒ | ☐ |

**Discussion**: PWD purchases energy from SCE, Energy for Palmdale's Independent Choice (EPIC, a community choice aggregator), and Southern California Gas Company (SCGC). SCE produces and purchases its energy from a mix of conventional and renewable sources. Energy procured through EPIC is from hydroelectric, wind, and solar. PWD is also a power generator, operating solar array systems at the PWD headquarters building and at a tank site.

Local planning documents related to energy use include the City of Palmdale Energy Action Plan (2011) which focuses on the City's commitment to achieve energy efficiency and independence by reducing greenhouse gas emissions (GHG) consistent with state legislation. The objective of the Plan is to bridge the gap between the City's growth forecast and the state's recommended energy reduction targets, including reduction of GHG emissions by an additional 80 percent by 2050. Current conservation efforts include implementing interior and exterior efficient lighting and HVAC upgrades across City facilities, installing solar panels to generate renewable, carbon-free energy, installing publicly accessible electric vehicle (EV) chargers, and moving forward with EPIC, to supply carbon-free electricity to City residents and businesses.

The Los Angeles County General Plan 2035 Conservation and Natural Resources Element (County of Los Angeles 2022) guides the long-term conservation of natural resources in the County including energy resources. The Natural Resources Element addresses the use and management of valuable energy and mineral resources in the unincorporated areas, and the importance of sustaining and maintaining these resources for future users. County goals and policies related to energy resources are:

**GOAL C/NR 12:** Sustainable management of renewable and non-renewable energy resources.

- **Policy C/NR 12.1:** Encourage the production and use of renewable energy resources.
- **Policy C/NR 12.2:** Encourage the effective management of energy resources, such as ensuring adequate reserves to meet peak demands.
- **Policy C/NR12.3:** Encourage distributed systems that use existing infrastructure and reduce environmental impacts.

a) **Less Than Significant Impact.** The short-term construction and long-term operation of the proposed Project will require the consumption of energy for construction, water treatment and conveyance, building operations, and routine maintenance.

**Construction**. Construction would involve the short-term use of non-renewable fossil fuels and electricity for various types of construction equipment and vehicles. Construction would take approximately 29 months, starting in approximately late 2027. Construction equipment would be powered by diesel, gasoline, or propane for heavy equipment, and personal vehicles would require electric power, gasoline or diesel fuel. Temporary electric power for as-necessary lighting and electronic equipment would be required.

Construction equipment would be subject to USEPA Construction Equipment Fuel Efficiency Standard, which would minimize inefficient, wasteful, or unnecessary fuel consumption. Additionally, the construction contractor would be required to comply with CCR Title 13 Sections 2449 and 2485, which prohibit diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than 5 minutes. Idling restrictions would reduce air pollutant emission as well as minimize unnecessary fuel consumption.

Energy consumption during construction would have a nominal effect on local and regional energy supplies. Since construction would be temporary and in compliance with existing energy efficiency regulations, it would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Construction-related energy impacts would be less than significant.

**Operation**. Advanced water treatment by RO and MF is an energy intensive process. Operational electricity consumption for the Project would be provided by SCE and is estimated at 20.178 GWh/yr for Phase 1 (4.75 mgd) and 32.773 GWh/yr for Phase 2 (10 mgd). Two different options have been considered to supply the new facility with the necessary electrical power: existing utility lines adjacent to the plant via a new overhead or underground SCE utility service connection, or from a new substation from SCE built on or nearby the site. The final choice of power source would be defined during detailed design and in collaboration with SCE. A standby generator would be installed at the AWPF to support human safety loads: lighting, HVAC, and flush pumps within the Process Building and Administration Building. SCE-approved, pad-mounted transformers are anticipated to supply two local MCCs, pumps, lighting, and control equipment. A dedicated electrical room will be used to house the necessary electrical equipment including MCCs, VFDs and control equipment. PWD would continue to work closely with SCE and EPIC to ensure energy consumption is not wasteful and can be supplied by the existing distribution infrastructure.

Energy demand for Pure Water AV would be offset by reduced demand for imported water supply. In a study by the University of California, Los Angeles (California Energy Commission 2023) analyzing energy use for direct potable reuse (IPR was not considered in this study), raw water augmentation was found to be relatively energy efficient when compared to imports and desalination as it avoids large uphill pumping energy costs. Treated water augmentation, however, was shown to be as energy intensive as imports to Los Angeles County. Specifically, for PWRP, the energy needed to supply 6.7 mgd from an alternative water source was

described as 21.354 GWh/yr for the Colorado River Aqueduct, 27.452 GWh/yr for the SWP, and 29.391 GWh/yr for desalination. The Pacific Institute (2021) estimated that the energy demand for imported water sources are up to 4,200 kWh/acre-ft for SWP (approximately 22 GWh/yr at 4.75 mgd) and 2,300 kWh/acre-ft (approximately 12 GWh/yr at 4.75 mgd) for Colorado River for conveyance and treatment. Based on these data, energy use for the Project could be similar to the energy demand for a similar volume of imported or desalinated water, or potentially even less in the case of SWP imports.

In addition to the power demand for water treatment processes, the proposed Process and Administration buildings and the proposed pump station would require energy for Project operations. Energy efficiency features included in Project design include:

- HVAC equipment would be designed to perform at, or above, code required minimum efficiency levels, and according to the latest rules and regulations of the International Energy Conservation Code and U.S Department of Energy.
- Buildings would be designed for energy efficiency per the 2025 California Energy Code (Energy Efficiency Standards)
- Exterior wall assemblies would be designed to meet or exceed minimum requirements of the California Energy Efficiency Standards.
- Roof assemblies would be designed to meet or exceed minimum requirements of the California Energy Efficiency Standards.
- Ductwork conveying mechanically conditioned air would be insulated in accordance with applicable International Energy Conservation Code requirements.
- Lighting systems would comply with the California Energy Code and UL certification requirements.

The proposed Process and Administration buildings would incorporate efficient heating and cooling equipment, lighting, appliances, electronics, and plumbing fixtures to keep energy and water use to a minimum. With incorporation of energy efficient design features, energy use would not be wasteful or inefficient.

Operation of Pure Water AV would increase energy consumption for PWD operations over existing conditions. However, overall, the Project would be consistent with existing policies for energy efficiency and Project operational energy demand would be offset by reduced demand for imported water. Since operation of the Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources, impacts would be less than significant.

b) **Less Than Significant Impact.** Neither PWD nor the County has adopted a plan for renewable energy or energy efficiency that is applicable to the proposed Project, and PWD's energy consumption does not fall within the purview of the City's Energy Action Plan (2011), which focuses on City government operations. Therefore, no local plans for renewable energy or energy efficiency are applicable to the proposed Project. However, the goals of the Energy Action Plan (2011) include reducing water consumption to achieve energy conservation. Water goals include:

    1. Reduce municipal water consumption to reduce energy consumption and conserve water resources.

2. Continue to educate the public about water conservation and showcase municipal water conservation projects.
3. Facilitate a 20% reduction in water use by 2020 to exceed the 20X2020 initiative to reduce energy consumed for water conveyance and treatment.
4. Work with regional partners to stabilize water supplies and conservation capabilities.

The proposed Project includes a new recycled water pipeline to connect the proposed PWRP pump station to the existing recycled water distribution system. This element of the Project would be consistent with the water conservation goals of the Energy Action Plan. The overall project would be consistent with goal 2.4 to stabilize water supplies for PWD customers. The Project would maximize the use of recycled water within PWD's service area to reduce the current demand for imported water and limit the need for more imported water in the future. The Project would increase energy use for recycled water treatment and conveyance locally, but offset energy associated with imported water pumping and conveyance. Furthermore, increasing water levels within the Antelope Valley groundwater basin would serve to decrease energy demand for pumping.

During construction of the Project, the construction contractor would comply with applicable State and local regulations governing energy efficiency. Compliance with CARB construction vehicle rules aimed at pollutant emissions reductions would also reduce construction vehicle idling which would reduce energy demand for Project construction. Since temporary energy use during construction would be consistent with relevant energy policies, impacts would be less than significant.

While operation of the Project would require energy for treatment processes, conveyance, and buildings, the Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Therefore, potential impacts related to energy planning would be less than significant.

**Mitigation Measures**

As noted above, the Project design includes energy efficient equipment and features, consistent with SWRP PEIR mitigation measure ENE-1: Energy Efficient Equipment. However, since operation of the AWPF is anticipated to be 24/7, shifting of energy demand to off-peak periods would not be feasible for facility operation. As a recycled water project, the Project is consistent with SWRP PEIR mitigation measure ENE-2: Promotion of Recycled Water. Since impacts related to energy planning would be less than significant, additional mitigation measures are not required.

## 2.3.7 Geology and Soils

| Issues and Supporting Information Sources | Potentially Significant Impact | Less Than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| Would the project: | | | | |
| a) Expose people or structures to 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. | ☐ | ☒ | ☐ | ☐ |
| ii) Strong seismic ground shaking? | ☐ | ☒ | ☐ | ☐ |
| iii) Seismic-related ground failure, including liquefaction? | ☐ | ☐ | ☒ | ☐ |
| iv) Landslides? | ☐ | ☐ | ☐ | ☒ |
| b) Result in substantial soil erosion or the loss of topsoil? | ☐ | ☒ | ☐ | ☐ |
| 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? | ☐ | ☒ | ☐ | ☐ |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) creating substantial risks to life or property? | ☐ | ☒ | ☐ | ☐ |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems, where sewers are not available for the disposal of wastewater? | ☐ | ☐ | ☐ | ☒ |
| f) Directly or indirection destroy a unique paleontological resource or site or unique geologic feature? | ☐ | ☒ | ☐ | ☐ |

**Discussion**: A geotechnical investigation report was prepared for the PWD Demonstration facility (Kleinfelder 2022); the study area included the proposed AWPF site. Relevant information from this report is included below. A separate geotechnical investigation will be conducted during design phase of the Pure Water AV Project facilities.

The Project area is located at the western edge of the Mojave Desert geomorphic province where it abuts the San Gabriel Mountains. The Project area is in the Antelope Valley, a wedge-shaped basin situated between the intersecting Garlock and San Andreas Faults and the Tehachapi and San Gabriel Mountains, opening eastward into the Mojave Desert. Runoff from these mountains is transported by ephemeral stream channels (e.g., Amargosa Creek and Little Rock Wash) to the valley floor. The elevation of the Antelope Valley surface is between 2,270-3,500 feet above msl and generally slopes gently towards playas (i.e., Rosamond Dry Lake and Rogers Dry Lake) to the north and northeast of the Project area (Kleinfelder 2022). Antelope Valley is characterized by surficial alluvial sediments shed off the surrounding mountains that overlie a sequence of lacustrine, nonmarine, volcanic, and marine deposits in the subsurface dating from the Pleistocene

to the Paleozoic (Wiese and Fine 1950). The surficial geology of the Antelope Valley consists of relatively thin and discontinuous deposits of relatively recent alluvium and more extensive older alluvial fans that cover the valley and overlie lacustrine deposits from the Pleistocene (Ponti 1985).

a)-i) and a)-ii) **Less Than Significant Impact with Mitigation Incorporated.** While the Project area is located within a seismically active region known for active faults and historic seismicity, the proposed Project sites are not located within a delineated State of California Alquist-Priolo Earthquake Fault Zone (EFZ) (CGS 2018). The closest EFZ crosses the southern part of the City of Palmdale, approximately 2 miles south-southwest of the proposed AWPF site. The EFZ contains four fault splays of the Mojave Section of the San Andreas Fault Zone. The fault splays, from north to south, include the Cemetery fault, the Little Rock fault, the main branch of the San Andreas fault, and the Nadeau fault. All of these fault splays are Holocene-active and capable of rupturing individually or collectively during an earthquake. While fault rupture potential at the proposed AWPF site is generally considered low, the potential for strong seismic shaking is likely to occur during the design life of the proposed Project (Kleinfelder 2022). However, this hazard is common across California, and the effects of ground shaking would be reduced with adherence to current seismic design requirements per the American Society of Civil Engineers, building codes, and standard engineering practices. For example, all structural steel would be designed per the American Institute of Steel Construction "Manual of Steel Construction," 15th Edition, and per the American Institute of Steel Construction (AISC) "Seismic Design Manual," 3rd Edition. Injection and production wells would be constructed in accordance with Department of Water Resources (DWR) well standards and pipelines would be constructed in accordance with AWWA/ANSI standards. With preparation of a Project-specific geotechnical report to describe design features to mitigate the impacts of potential seismic damage (mitigation measure GEO-1), Project construction and operation would not cause potential substantial adverse effects. Impacts related to potential fault rupture and seismic ground shaking would be less than significant with mitigation incorporated.

a)-iii) **Less Than Significant Impact.** Liquefaction describes a phenomenon in which saturated, cohesionless soils temporarily lose shear strength (liquefy) due to increased pore water pressures induced by strong, cyclic ground motions during an earthquake. Structures founded on or above potentially liquefiable soils may experience bearing capacity failures due to the temporary loss of foundation support, vertical settlements (both total and differential), and/or undergo lateral spreading. A majority of the Project area north of the San Andreas fault, including the proposed AWPF site, is not located within a State and County Hazard Zone for liquefaction (CGS 2023; Pridmore 2003). Because the depth to groundwater north of the EFZ is deep, the potential for liquefaction at the site is considered low (Kleinfelder 2022). Geotechnical engineering analyses would be conducted to develop recommendations for design and construction of Project components. With implementation of the design recommendations, impacts on proposed structures from liquefaction would be less than significant.

a)-iv) **No Impact.** Landslides occur on slopes when soil and base material lose strength, frequently triggered from intense rain or seismic events. The Project area is not located in a designated Earthquake-Induced Landslide Hazard Zone (CGS 2023; and Silva et al. 2003).

The nearest designated landslide hazard zone is south of the Project area in the foothills of the San Gabriel Mountains. Due to the relatively gentle sloping terrain and lack of adverse geologic structure or existing landslides, the potential for damage due to mass wasting or earthquake induced landslides is considered nil (Kleinfelder 2022). Construction and operation of the Project would have no impacts related to landslides.

b) **Less Than Significant Impact with Mitigation Incorporated**. Excavation and earthwork required to install Project facilities have the potential to temporarily increase soil erosion from disturbed areas. Since BMPs would be implemented in accordance with a SWPPP (see Section 1.4.3), wind and water erosion of soils during construction would be minimized. mitigation measure GEO-2 would further ensure topsoil materials excavated during construction are reused and maintained onsite to the extent feasible, and that topsoil stockpiles are wetted, thereby minimizing topsoil loss. Additionally, all disturbed areas for construction of Project pipelines would be restored to pre-existing conditions. Operation of the Project would not disturb soils or result in increased soil erosion or loss of topsoil. Overall, as mitigated, impacts related to soil erosion and loss of topsoil would be less than significant.

c) **Less Than Significant Impact with Mitigation Incorporated.** As discussed above, the Project sites are not located within any landslide or liquefaction zones. Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. The reduction in groundwater levels in the Palmdale area (more than 200 feet since the early 20$^{th}$ century) has resulted in as much as 6.6 feet of land subsidence in portions of the Antelope Valley Groundwater Basin (Kleinfelder 2022). Per the current mapping by the USGS (2022), the nearest area of subsidence is approximately 4.5 miles north and northeast of the Project area. Current subsidence monitoring is occurring throughout the Antelope Valley, primarily north of the Project area (Todd Groundwater 2022). No reported subsidence has occurred within the Project area. Therefore, the potential for subsidence hazard within the Project area is considered to be low to moderate (Kleinfelder 2022). Mitigation measure GEO-1 requires completion of a geotechnical report that includes an assessment of subsidence risk and recommendations to mitigate subsidence risks. Therefore, as mitigated, impacts from Project constructure would be less than significant. Operation of Pure Water AV would replenish the Antelope Valley Groundwater Basin, reducing subsidence potential, a beneficial impact.

d) **Less Than Significant Impact with Mitigation Incorporated.** Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell) due to variations in moisture content. The proposed AWPF site contains Adelanto coarse sandy loam, very deep, well drained soils that formed in granitic parent material on alluvial fans and plains (USDA-NRCS). While these soils have low potential for soil expansion, design of Project facilities would incorporate design recommendations related to expansive soils. With implementation of mitigation measure GEO-1, Project facilities would be designed in accordance with a site-specific geotechnical investigation. With completion of this additional analysis and incorporation of design recommendations, impacts related to expansive soils would be less than significant as mitigated.

e) **No Impact.** The proposed Project would not include the installation of septic tanks or alternative wastewater disposal systems. Therefore, there would be no impacts related to suitability of soils for septic tanks or alternative wastewater disposal systems.

f) **Less than Significant Impact with Mitigation Incorporated.** Fossils are evidence of ancient life, and as such are nonrenewable. This includes the remains of the body of an organism, such as bones, skin impressions, shell, or leaves, as well as traces of an organism's activity, such as footprints or burrows, called trace fossils (Society of Vertebrate Paleontology [SVP] 2010). Fossils are generally considered to be at least 5,000 years in age, dating to the middle Holocene or older (SVP 2010). While CEQA does not define a significance threshold for paleontological resources, the standards of the SVP are often used to establish what constitutes a "unique" paleontological resource for the purposes of CEQA:

> 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 considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years). [SVP 2010: 11].

Using this definition, the concept of scientific significance is included in the definition of paleontological resources; thus, not all fossils are considered to be paleontological resources. The threshold for scientific importance varies with factors such as geologic unit, geographic area, the current state of scientific research, and may also vary between different agencies (Murphey et al. 2019). Paleontological studies have developed criteria for the assessment of scientific significance of fossil discoveries (e.g., Murphey et al. 2019; Scott and Springer 2003).

Because fossil localities occur within a geologic unit and are typically identified after they are exposed through natural or artificial means, paleontologists evaluate the potential for a geologic unit to yield paleontological resources as a means of assessing a project's potential impacts. The SVP (2010) paleontological potential scale is designed to inform the development of appropriate mitigation measures for the protection of paleontological resources and is widely accepted as an industry standard in paleontological mitigation (Murphey et al. 2019; Scott and Springer 2003). This scale classes geologic units as having high, low, or no paleontological potential based on the possibility of encountering scientifically important fossils.

**Project Area Geology and Paleontology**. A review of geologic mapping indicates the Project area is underlain by two types of surficial sediments, distinguished by their age (Figure 8). Modern alluvium and alluvial fans that date from the Recent to the Holocene are mapped in the southwestern and eastern portions of Project area (Olson and Hernandez 2013). The surficial parts of this unit are Recent in age and therefore too young to preserve fossils, per the guidelines of the SVP (2010). As such they have low paleontological potential. However, they span the Holocene in age, and so deeper portions of this unit are of an age to preserve fossils. The second age category of sediments in the Project area are young alluvial fan deposits that date from the middle to early Holocene (Olson and Hernandez 2013). These sediments are mapped across the central Project area and likely underlie the modern surficial sediments

across the remainder of the Project area (Olson and Hernandez 2013). As these deposits are middle Holocene or older, they may preserve fossils throughout their extent.

A review of the scientific literature, the online records of the University of California Museum of Paleontology (UCMP), and records from the Natural History Museum of Los Angeles County (LACM) indicates a variety of paleontological resources are known from similar geologic settings in the region, including in the vicinity of the Project. The records of the LACM (2025) indicate they have several Pleistocene and early Holocene-aged localities in greater Palmdale and Lancaster, the closest of which are under 10 miles from the Project area (Table 15). The closest locality is approximately 7 miles northwest of the Project area in Lancaster and produced a camel fossil (LACM 2025). A more diverse Pleistocene locality 9.4 miles northwest of the Project area yielded a variety of taxa including camel, rabbit, rodents, and lizards (LACM 2025). Localities from the early Holocene include a gopher from 9.9 miles southeast of the Project area, a lizard form 16.2 miles to the southeast, and rabbit and rodent fossils from 16.2 miles to the southeast (LACM 2025).

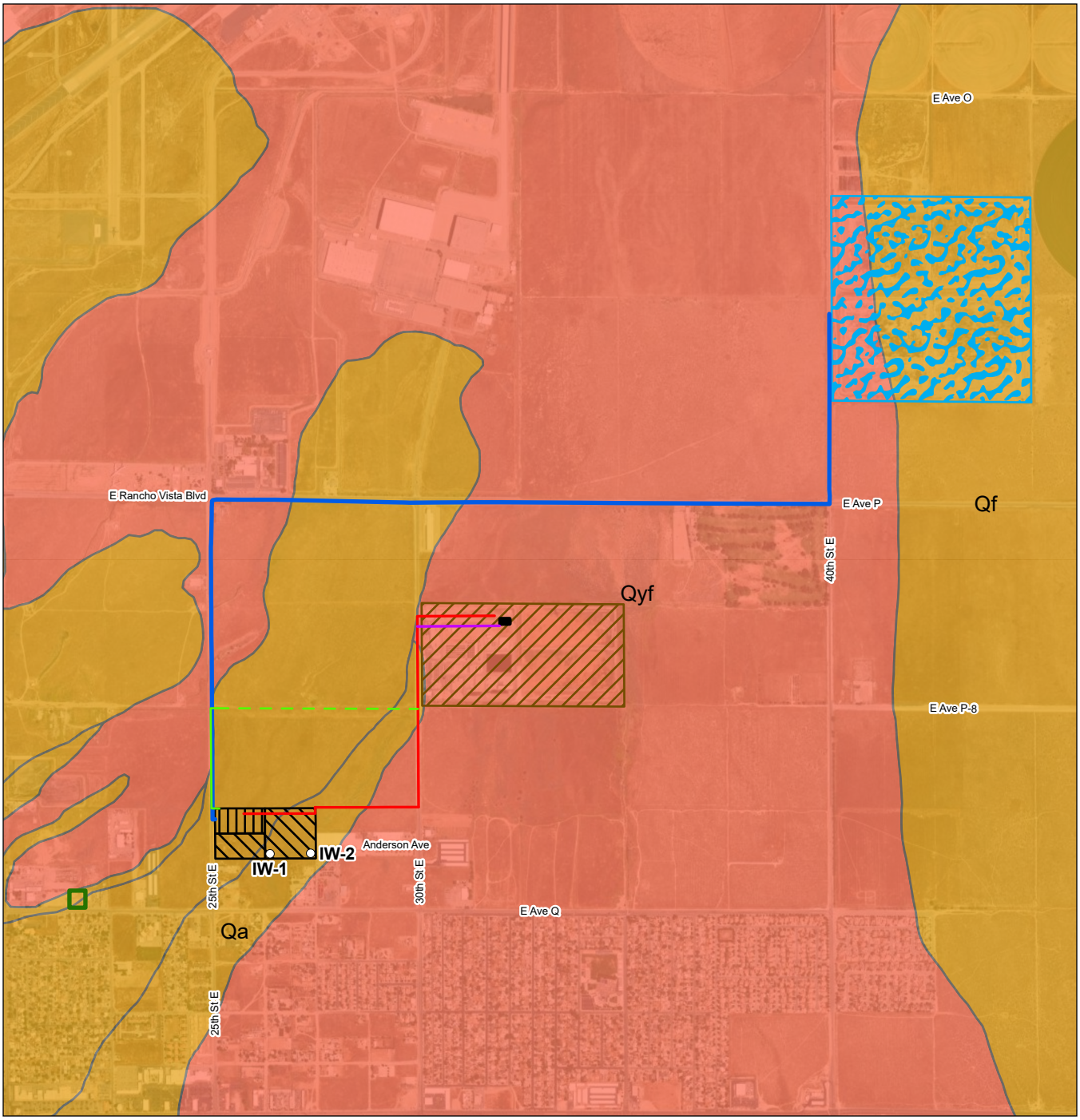
The online database of the UCMP (2025) contains records of 92 Holocene or Pleistocene-aged fossil localities from the Los Angeles, Kern, and San Bernardino County that are nonmarine and not assigned to a formal geologic unit and therefore may represent discoveries from similar geologic units as those in the Project area. The majority of these, 67 sites, preserved invertebrates, with 10 preserving plants and 13 preserving vertebrates (UCMP 2025). While place names are not provided for most of these sites, some are from Tehachapi and Red Rock Canyon, on the north side of Antelope Valley, and one is from the Arvin County Landfill (UCMP 2025). This site has been published in the scientific literature as a distinct suite of fossils defined as the Arvin Landfill Local Fauna, comprised of small mammals such as mice and rats, one canid, one amphibian, and one reptile (Fay and Thiessen 1993). While the site is on the north side of the El Tejon Range, the geologic setting within a broad alluvial plain bordered fault-bounded mountains is the same as that of the Project area, and the fauna reported are similar to those reported in the LACM (2025) records search.

Additional sites reported in the scientific literature include the discovery of a fossil locality in the nearby community of Rosamond during the course of a land development project. The locality is approximately 19 miles northwest of the Project area and contains fossil material from a variety of Pleistocene taxa including Columbian mammoth, horse, bison, giant ground sloth, and camel (Wilkerson 2011). The fossils were discovered in lacustrine deposits present at shallow depths below alluvial deposits (Wilkerson 2011). Ice Age taxa have been recovered from early Holocene and Pleistocene-aged deposits in Los Angeles County, San Bernardino County, and Kern County, including in the vicinity of the Project, yielding a variety of megafauna such as mammoth, camel, horse, pronghorn, deer, sheep, bison, and tortoise, as well as smaller animals such as birds, lizards, snakes, and rodents (Jefferson 1989, 1991a, 1991b; Scott and Cox 2008).

The SWRP PEIR assessed the upper layers of the Recent to Holocene-aged deposits as having low paleontological potential, increasing to high potential at approximately 4 feet bgs (Woodard & Curran 2024). As these older, high sensitivity units are mapped at the surface in the central portion of the Project area, the paleontological sensitivity of these deposits is high beginning at the surface.

**Table 15. Natural History Museum of Los Angeles County Records Search Summary**

| Locality Number | Formation | Age | Taxa | Approximate Location |
|---|---|---|---|---|
| LACM VP 7884 | Unknown formation (fluvial brown clayey silt) | Pleistocene | Camel (*Camelops hesternus*) | 7.25 miles northwest of the Project area from 4 feet bgs |
| LACM VP 7853 | Unknown formation (sandy loess under a dune deposit strand, sandy siltstone, siltstone to clayey siltstone) | Pleistocene | Rabbit (*Sylvagus*), camel family (Camelidae), antelope squirrel (*Ammospermophilus*), kangaroo rat (*Dipodymus*), pocket mouse (*Perognathus*), pack rat (*Neotoma*), deer mouse (*Peromyscus*), vole family (Microtinae), iguana (*Dipsosaurus*), pocket gopher (*Thomomys*), spiny lizard (*Sceloporus*), side blotched lizard (*Uta*), colubrid snakes (*Trimorphodon, Masticophis, Phyllorhynchus*), night lizard (*Xantusia*), western alligator lizard (*Elgaria*), toothy skinks (*Plestiodon*), whiptail lizard (*Aspidocelis*), spiny lizards (Phrynosomatidae), smelt (Osmeridae) | 9.4 miles northwest of the Project area from 3-11 feet bgs |
| LACM VP 5946 | Unknown formation | Early Holocene | Lizard (*Gambelia wislizenii*) | 15.4 miles southeast of the Project area from surface to 9 feet bgs |
| LACM VP 5947 | Unknown formation | Early Holocene | Pocket gopher (*Thomomys*) | 9.9 miles southeast of the Project area from surface to 9 feet bgs |
| LACM VP 5952 | Unknown formation | Early Holocene | Rabbit (*Sylvilagus*); pocket mouse (*Chaetodippus*); kangaroo rat (*Dipodomys*) | 16.2 miles southeast of the Project area from surface to 9 feet bgs |




- Proposed Injection Well (Approximate Location)
- Existing Sewer Pipeline
- Proposed Brine Pipeline
- Proposed Sewer Pipeline
- Proposed Tertiary Effluent Pipeline
- Proposed Recycled Water Pipeline
- Existing Demonstration Facility
- Proposed Brine Ponds (Existing Oxidation Ponds)
- Existing Palmdale Water Reclamation Plant (PWRP)
- Proposed Advanced Water Purification Facility (AWPF)
- Proposed Advanced Water Purification Facility (AWPF) Staging Areas
- Proposed Pump Station

**Paleontological Potential**

- low-to-high, increasing with depth
- high

Qa - modern alluvium
Qf - modern alluvial fan
Qyf - younger alluvial fan

0 1,000 2,000 Feet
(At original document size of 8.5x11)
1:24,000

N

Stantec

*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2025-09-08
TR by SET on 2025-09-08
IR by SG on 2025-09-08

*Client/Project*
Palmdale Water District
Pure Water Antelope Valley

184031611

*Figure No.*
**8**

*Title*
**Geology Map**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2025.
**3.** Background:World Imagery: Earthstar Geographics
World Ocean Base: Esri, GEBCO, Garmin, NaturalVue

U:\18401_proposals\184031611_Palmdale_FieldMap\Pro_Maps\Pro_Maps2.aprx Revised: 2025-10-03 By: dalaw

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Operation of the Project would not involve new excavations. Therefore, the potential impacts of Project construction on paleontological resources are reviewed. The proposed Project will include drilling for injection, production and monitoring wells, grading associated with brine pond construction, excavating for foundation construction, and trenching for utility installation. Current Project plans specify well drilling will extend to depths ranging from 500 feet to 800 feet bgs at a maximum diameter of 24 inches. Ground disturbance from grading is anticipated to be limited to a few feet in depth. Foundation excavations are anticipated to extend up to 10 feet bgs and trenching for utilities to range between 8 feet and 17 feet bgs. In the eastern and southwestern Project area, under portions of the brine ponds and pipeline, and the tertiary effluent pipeline, as well as underlying most of the AWPF and associated staging areas and the sewer pipeline, these activities may encounter paleontological resources once depths of disturbance exceed 4 feet bgs. In the remainder of the Project area, underlying the western side of the brine ponds, most of the brine pipeline, and a portion of the tertiary effluent pipeline, ground disturbance may encounter paleontological resources beginning at the surface.

Ground disturbance that encounters paleontological resources may damage or destroy them, thus posing a potential direct adverse impact to paleontological resources for the purposes of CEQA. This Project is not expected to pose indirect impacts to paleontological resources, as the Project is not expected to contribute to increased erosion that could expose additional resources outside the Project footprint or beyond the duration of construction. Should the Project cause direct adverse impacts, they would contribute to cumulative impacts to paleontological resources in the region.

A successful mitigation program is one which provides for the identification and appropriate treatment of paleontological resources. Important components are therefore worker training, so the construction personnel are aware of their obligations and actions to take in the event they discover a fossil, as well as oversight by trained paleontologists. Paleontological monitoring is the most common mitigation tool, during which a trained paleontologist observes construction activities and halts construction temporarily to inspect the exposed sediments. Monitoring by experienced paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if they are scientifically important, successful mitigation and salvage efforts may be undertaken to prevent adverse impacts to these resources.

The ability to apply mitigation is tied to the nature of the ground disturbing activity. Construction monitoring therefore requires a paleontologist to be able to observe either cuts into the ground, such as the sidewalls of trenches or a graded ground surface, or to observe spoils piles, such as from drilling or trenching. The diameter of the drill is an important consideration for the successful application of monitoring; in general, the larger the auger, the higher the probability that salvageable macrofossils can be brought to the surface. Also of importance is the size of the encountered fossils and the style of preservation. Large vertebrate fossils are unlikely to be recovered from small diameter augers, while invertebrates and microvertebrates may well be salvaged. The records of paleontological localities discussed above show that the majority of paleontological resources collected from the vicinity of the Project area are micro-vertebrate fossils such as rodents, lizards, and snakes. As such fossils

are much smaller than the 24-inch diameter planned for augering, they may well be brought to the surface relatively undamaged such that they can be salvaged for curation.

As the methods of ground disturbance planned for this Project produce cuts, spoils, or, in some cases, both, they are ideal targets of construction monitoring as a successful means of reducing potential impacts on paleontological resources to a less than significant level. With implementation of mitigation measure PALEO-1, Project-related impacts on paleontological resources would be less than significant.

**Mitigation Measures**

With implementation of the following mitigation measure, Project-related impacts on geology and soils would be less than significant.

**GEO-1 Geotechnical Investigation Report**. A licensed geologist or engineer shall perform a design-level geotechnical investigation prior to construction, which shall include evaluation of fault ruptures and soil and slope stability hazards such as strong seismic ground-shaking, liquefaction, landslides, and soil expansion. Based on the results of the geotechnical investigations, appropriate support and protection measures shall be designed and implemented to maintain the stability of soils and slopes adjacent to work areas during and after construction. Therefore, impacts would be less than significant with mitigation incorporated.

**GEO-2 – Topsoil Materials**. During Project construction, excavated topsoil materials shall be reused and maintained onsite to the extent possible. Topsoil stockpiles shall be wetted, thereby minimizing topsoil loss.

**PALEO-1 - Paleontological Resources Avoidance and Monitoring**. PWD shall avoid impacts, if feasible, on areas identified as having a high potential to contain significant paleontological resources. This includes the entirety of the Project area in excess of 4 feet depth and portions of the Project area mapped as young alluvial fan deposits at the surface. For these high sensitivity paleontological areas that are planned for excavation, PWD shall implement the following measures during ground-disturbing construction activities in previously undisturbed sediments within the Project area:

- **Qualified Professional Paleontologist.** Prior to the start of Project construction activities, PWD shall retain a Qualified Professional Paleontologist, as defined by the Society of Vertebrate Paleontology (SVP 2010). The Qualified Professional Paleontologist shall draft a Paleontological Resources Mitigation and Monitoring Plan, which shall direct mitigation measures related to paleontological resources.
- **Paleontological Worker Environmental Awareness Program.** Prior to the start of ground-disturbing construction activities, the Qualified Professional Paleontologist (see SVP 2010) or their designee shall conduct a paleontological Worker Environmental Awareness Program training for all construction personnel regarding the appearance of fossils and the procedures to follow should fossils be discovered.
- **Paleontological Monitoring.** Full-time paleontological monitoring shall be conducted during ground disturbance within previously undisturbed geologic units assigned low to

high paleontological sensitivity once activities reach 4 feet bgs. Full-time paleontological monitoring shall be conducted during ground disturbance within previously undisturbed geologic units assigned high paleontological sensitivity beginning at the surface.

- Bulk matrix sampling may be necessary to recover microfossils (i.e., fossils too small to be easily recognized within the matrix) from the Project area, as directed by the Qualified Professional Paleontologist.
- In the event of a fossil discovery by the paleontological monitor or construction personnel, all construction activity within 50 feet of the find shall cease, and the Qualified Professional Paleontologist shall evaluate the find. If the fossil is not scientifically significant, then construction activity may resume. If it is determined the fossil is scientifically significant, a fossil salvage shall be completed and the fossil shall be prepared and curated as deemed appropriate by the Qualified Professional Paleontologist.
- The Qualified Professional Paleontologist may recommend monitoring be reduced in frequency or ceased entirely based on geologic observations. Such decisions shall be subject to review and approval by PWD.

- **Final Paleontological Mitigation Report.** Upon completion of ground-disturbing activities (or laboratory preparation and curation of fossils, if necessary), the Qualified Professional Paleontologist shall prepare a final report describing the results of the paleontological monitoring efforts. The report shall be submitted to PWD and, if fossil curation occurred, the designated scientific institution.

### 2.3.8 Greenhouse Gas Emissions

| Issues and Supporting Information Sources | 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? | ☐ | ☐ | ☒ | ☐ |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ☒ | ☐ |

**Discussion:** GHGs absorb and emit radiation within the thermal infrared range. When radiation from the sun reaches the Earth's surface, some of it is reflected back into the atmosphere as infrared radiation (heat). GHGs absorb this infrared radiation and trap the heat in the atmosphere. Over time, the amount of energy from the sun to the Earth's surface should be approximately equal to the amount of energy radiated back into space, leaving the temperature of the earth's surface roughly constant. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. This phenomenon is known as the greenhouse effect.

Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride ($NF_3$) and sulfur hexafluoride ($SF_6$). Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. Often, estimates of GHG emissions are presented in carbon dioxide equivalents ($CO_2e$), which weigh each gas by its global warming potential (GWP).

GHG emissions are predominantly associated with activities related to energy production; changes in land use, such as deforestation and land clearing; industrial sources; agricultural activities; transportation; waste and wastewater generation; and commercial and residential land uses. Worldwide, energy production, including the burning of coal, natural gas, and oil for electricity and heat, is the largest single source of global GHG emissions.

a) **Less Than Significant Impact**. As discussed in Section 15064.4 of the CEQA Guidelines, the determination of the significance of GHG emissions calls for careful determination by the lead agency consistent with CEQA Guidelines Section 15064. CEQA Guidelines Section 15064.4 further states that a lead agency should make a good faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project.

   Emissions were calculated within CalEEMod and compared to AVAQMD thresholds. AVAQMD has established an annual GHG threshold of 100,000 short tons per year (90,718 Metric tons per year (MT/year) and 548,000 pounds per day (AVAQMD 2016). AVAQMD's threshold was developed to meet the mandate of AB 32 for emissions to be reduced to 1990

levels by 2020. As the Project would not be fully constructed until 2030, the analysis uses an adjusted threshold to account for the anthropogenic GHG emissions reductions required under SB 32 and AB 1279. SB 32 requires a 40 percent reduction below 1990 levels by 2030 and AB 1279 requires that anthropogenic GHG emissions are reduced to 85 percent below 1990 levels by 2045. Therefore, this analysis uses an adjusted thresholds of 15,000 CO2e short tons per year (13,608 Metric Tons [MT]) for AB 1279.

Project construction and operational GHG emissions were estimated with CalEEMod. Modeling assumptions are described in Appendix A.

**Construction Emission Inventory**. Construction GHGs would be emitted from off-road construction equipment and vehicle travel by workers and material deliveries to the Project site. The estimated construction GHG emissions are shown in Table 16. Because construction GHG emissions are temporary, they are typically amortized over the life of the project and added to operational emissions (SCAQMD 2008). The lifetime of the proposed Project was assumed to be 30 years.

**Table 16. Construction Greenhouse Gas Emissions**

| Year | Annual Emissions ($MTCO_2e/yr$) |
|---|---|
| 2027 | 304 |
| 2028 | 699 |
| 2029 | 391 |
| 2030 | 67.5 |
| **Total** | **1,462** |
| ***Amortized Emissions*** | ***48.72*** |

**Operational Emission Inventory**. Operational or long-term emissions occur over the life of the proposed Project. Operational activities of the proposed Project would generate GHG emissions from area and energy sources, stationary equipment, and employee vehicle trips to and from the Project site (Table 17).

**Table 17. Operational Greenhouse Gas Emissions**

| Source | Annual Emissions ($MTCO_2e/yr$) |
|---|---|
| Mobile | 160 |
| Area | 0.54 |
| Energy | 3,903 |
| Water | 17.5 |
| Waste | 14.3 |
| Refrigeration | 1.59 |
| Stationary | 34 |
| **Subtotal** | **4,131** |
| Amortized Construction | 48.72 |
| **Total** | **4,180** |

| Source | Annual Emissions ($MTCO_2e$/yr) |
|---|---|
| MDAQMD Adjusted Thresholds for 2045 | 13,608 |
| ***Exceed?*** | ***No*** |

Source: Appendix A

As shown in Table 17, the Project would not exceed the GHG thresholds used in this analysis; therefore, the proposed Project would not generate GHG emissions that may have a significant impact on the environment, and impacts would be less than significant.

b) **Less than Significant Impact.** Pursuant to Appendix G of the CEQA Guidelines, a significant GHG impact is identified if the Project could conflict with applicable GHG reduction plans, policies, or regulations. The Project would be subject to complying with the California Air Resources Board (CARB) 2022 Scoping Plan which includes measures adopted for the purpose of reducing GHG emissions.

CARB approved the 2022 Scoping Plan in December 2022. The 2022 Scoping Plan builds upon previous iterations of State scoping plans to achieve carbon neutrality and reduce anthropogenic GHG emissions 85 percent below 1990 levels no later than 2045, as directed by AB 1279 (CARB 2022a). Table 18 identifies and evaluates Project consistency with the Scoping Plan policies that may be relevant to the proposed Project.

**Table 18. Project Consistency with 2022 Scoping Plan Greenhouse Gas Reduction Strategies**

| Measure | Consistency Determination |
|---|---|
| Deploy ZEVs and reduce driving demand | **Consistent.** The Project is a regional water augmentation program using IPR by groundwater augmentation via direct injection. The Project would not generate a large amount of vehicle trips. Vehicles traveling to the site would be subject to CARB rules and regulations such as the Advanced Clean Truck regulations which would promote ZEV trucks. Additionally, the Project would provide at least 2 EV parking spaces for employees. |
| Coordinate supply of liquid fossil fuels with declining CA fuel demand | **Not Applicable.** This measure is aimed at petroleum refineries and fossil fuel extraction operations. |
| Generate clean electricity | **Consistent.** The proposed Project would use electricity to treat IPR to augment groundwater. All stationary equipment used on the site, excluding emergency generators, would be electric. Electricity would be supplied by SCE which is subject to the State's Renewable Portfolio Standard which mandates that at least 60% of the electricity sold by utilities is renewable by 2030 and 100% by 2045. Therefore, since the Project is anticipated to go online after 2030, at least 60% of the electricity provided to the site would be from clean sources. Moreover, while the Project would not directly generate clean electricity, the Project would allow for a sustainable source of groundwater in the region which would reduce the electricity required to transport water from other areas to Palmdale. |
| Decarbonize Buildings | **Consistent.** The structures would comply with all relevant provisions of the California Green Building Code and, as shown in Table 17, emissions would not contribute substantially to regional carbon emissions. |
| Decarbonize Industrial Energy Supply | **Not Applicable.** The Project is a regional water augmentation program using IPR by groundwater augmentation via direct injection. The Project is not an industrial development. |

| Measure | Consistency Determination |
|---|---|
| Reduce non-combustion emissions (Methane) | **Consistent.** The proposed Project would not include any land uses that generate significant levels of methane, such as landfills or dairy farms. |
| Reduce non-combustion emissions (Hydrofluorocarbons [HFCs]) | **Consistent.** The proposed Project would comply with all state regulations governing short-lived climate pollutants (SLCPs), including HFCs. |
| Compensate for remaining emissions | **Not Applicable.** This measure is aimed at the state government to reduce statewide emissions to meet AB 1279 goals. The proposed Project would not interfere with this goal. |

Source: CARB 2022a

The proposed Project would be consistent with the applicable strategies recommended in the 2022 Scoping Plan. Therefore, the proposed Project would not conflict with an applicable plan adopted for the purpose of reducing GHG emissions; therefore, impacts would be considered less than significant.

## 2.3.9 Hazards and Hazardous Materials

| Issues and Supporting Information Sources | 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? | ☐ | ☒ | ☐ | ☐ |
| 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? | ☐ | ☒ | ☐ | ☐ |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | ☐ | ☒ | ☐ | ☐ |
| 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? | ☐ | ☐ | ☐ | ☒ |
| 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 for people residing or working in the project area? | ☐ | ☐ | ☒ | ☐ |
| f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | ☐ | ☒ | ☐ | ☐ |
| g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? | ☐ | ☐ | ☐ | ☒ |

**Discussion:** With the exception of the existing PWRP, hazardous materials are not currently used or stored on the Project sites.

a) **Less than Significant Impact with Mitigation Incorporated**. During construction, commonly used hazardous substances, such as gasoline, diesel fuel, lubricating oil, grease, solvents, adhesives, and paints would be temporarily used. Construction equipment that would contain oil, gasoline, or other fluids, and would likely be stored onsite and transported during the construction period. Accidental release of these materials could occur during routine transport, disposal, or use and could potentially injure construction workers, contaminate soil, and/or affect nearby groundwater or surface water bodies. Impacts associated with accidental release, although localized, could potentially create a significant hazard to the public or the environment. However, these types of materials are not acutely hazardous, and all storage, handling, and disposal of these materials are regulated by the California Department of Toxic Substances Control, Occupational Safety & Health Administration, and the Los Angeles County Fire Department. The transport, use, and disposal of construction-related hazardous materials would occur in conformance with applicable federal, State, and local regulations governing such activities. Additionally, as

described in mitigation measure HAZ-1, a Hazardous Materials Management and Spill Prevention and Control Plan would be developed and implemented during Project construction to limit the risks of hazardous material use and transport. With compliance with applicable regulations for the transport, storage, use and disposal of hazardous materials, and development of the Plan per HAZ-1, impacts related to hazardous materials during project construction would be less than significant as mitigated.

Fuels for vehicles and equipment, diesel for standby power generation, and routine maintenance chemicals (lubricants, solvents) would be required for Project operation. Water treatment processes would require various chemicals for treatment, biofouling control, scale prevention, cleaning, and post treatment (Table 19). Chemical storage and feed systems for the AWPF would consist of chemical storage units (e.g., tanks/totes), secondary containment of chemical storage units, chemical metering pumps, and chemical transfer pumps. Anticipated bulk chemical storage for Phase 1 (4.75 mgd AWPF) is described in Table 20.

**Table 19. Pure Water AV Anticipated Water Treatment Chemical Use**

| Chemical | Application Point(s) | Dose (mg/L) | Purpose |
|---|---|---|---|
| Ammonium Sulfate (40%) | MF Feed | 0.25-1.25 (as N) | MF and RO biofouling control |
| Sodium Hypochlorite (12.5%) | MF Feed | 1-5 (as Cl2) | MF and RO biofouling control |
| | UV/AOP Feed | 2.5-5 | Oxidant for AOP |
| | MF CIP System | 500 (MC); 3,500 (RC) | MF CIP |
| Antiscalant (100%) | Primary RO Feed | 2-4 | Scale prevention |
| | CCRO Feed | 1-5 | Scale Prevention |
| Sulfuric Acid (93%) | Primary RO Feed | 50-100 | Scale prevention |
| | CCRO Feed | 1-20 | Scale prevention |
| | UV/AOP Feed | As needed (not part of storage) | As needed pH adjustment for AOP |
| | MF CIP System | ~5,000 | MF cleaning and neutralization |
| | RO CIP System | ~5,000 | RO cleaning and neutralization |
| Sodium Hydroxide (25%) | MF CIP System | 1,000 | MF cleaning and neutralization |
| | RO CIP System | 20,000 | RO cleaning and neutralization |
| | Product Water | 27-66 | Post Treatment (pH, alkalinity, LSI) |
| Calcium Chloride | Product Water | 15-188 | Post Treatment (LSI) |
| Citric Acid (50%) | MF CIP System | 1,000 | MF cleaning |
| | RO CIP System | 20,000 | RO cleaning |
| Sodium Bisulfite (38%) | MF CIP System | 183 (MC); 1,284 (RC) | MF CIP Neutralization |

**Table 20. Pure Water AV Anticipated Bulk Chemical Storage**

| Chemical | Daily Usage, Average (Max) (gpd) | Storage Duration, Average (Max) (days) | Storage Type (Tank/Tote) | No. of Storage Units | Capacity per Tank/Tote (gal) |
|---|---|---|---|---|---|
| Ammonium Sulfate[1,2] (40%) | 34 (56) | 96 (59) | Tank | 2 | 2,050 |
| Sodium Hypochlorite[1,2] (12.5%) | 248 (315) | 16 (13) | Tank | 2 | 2,550 |
| Antiscalant (100%) | 8 (16) | 60 (30) | Tote | 2 | 300 |
| Sulfuric Acid[1] (93%) | 196 (261) | 19 (14) | Tank | 1 | 4,600 |
| Sodium Hydroxide[1] (25%) | 589 (880) | 14 (10) | Tank | 2 | 5,300 |
| Calcium Chloride[1] (35%) | 505 (1,632) | 32 (10) | Tank | 2 | 8,000 |
| Citric Acid (50%)[3] | 25 | 32 | Tote | 3 | 330 |
| Sodium Bisulfite (38%)[3] | 0.5 | 83 | Drum | 1 | 55 |

[1]Assumed minimum delivery volumes for AWPF chemicals stored in tanks are as follows: sodium hypochlorite (5,000 gal), ammonium sulfate (4000 gal), sulfuric acid (2,800 gal), sodium hydroxide (3,600 gal), and calcium chloride (4,500 gal).
[2]Single truck delivery will need to be split between duty/standby tanks.
[3] Daily usage is calculated based on discrete events where 30-105 gallons of citric are used and 0.4-2 gallons of sodium bisulfite are used.
gpd – gallons per day; gal - gallons

Project storage vessels would be designed to ensure hazardous materials would be properly contained and not spill or leak. Design features to manage chemical use, ensure proper facility operation, and prevent accidental release of chemicals at the AWPF would include:

- Secondary containment of hazardous liquids would be designed in accordance with National Fire Protection Association (NFPA) standards, the Uniform Fire Code, and requirements of the Los Angeles County Fire Department.
- Linings, coatings, and proper ventilations would be provided in accordance with the properties of the specific liquid being contained.
- Chemical lines will have airgaps or reduced pressure backflow preventor systems.
- A Cross Connection Control Plan would be developed which identifies points in the AWPF of potential cross control vulnerability between potable water, recycled water, chemical lines, or other non-potable systems.
- The chemical storage tank levels would be continuously transmitted to the master plant control system (PCS). The PCS would relay real-time chemical tank level data to vendor systems requiring the chemicals. Chemical levels would be monitored by operators and inform the schedule of chemical deliveries to maintain levels above critical thresholds. If low chemical levels are detected, interlocks may be triggered across process systems. Low chemical levels may also result in a system-wide interlock, initiating a shutdown of the AWPF.
- Chemical delivery zones at the AWPF have been located to minimize interference with routine operations and to provide direct access from perimeter roads.
- In areas where chemical storage is required, primary access for vehicle entry would be fenced and gated. Secondary access immediately into chemical storage areas would, at a minimum, include a chain-link fence enclosure with lockable gates.

- The chemical unloading area would be constructed of concrete and sealed in accordance with Los Angeles County Fire Department requirements to ensure containment of potential spills.
- Chemical storage and use areas will have eyewash stations with a flow switch for remote alarming.

With implementation of these design measures to manage chemical use and compliance with relevant federal, State, and local regulations, operation of the proposed Project would not pose a significant hazard to the public or the environment. Impacts during Project operation related to the routine transport, use and handling of hazardous materials would be less than significant.

b) **Less Than Significant Impact with Mitigation Incorporated.** As described above, construction activities would involve transport, storage, and use of hazardous materials such as gasoline, diesel fuel, lubricating oil, grease, solvents, adhesives, and paints. If not properly handled, accidental release of these substances could expose construction workers, degrade soils, or become entrained in stormwater runoff, resulting in adverse effects on the public or the environment. However, Cal/OSHA regulations provide for the proper labeling, storage, and handling of hazardous materials to reduce the potential harmful health effects that could result from worker exposure to hazardous materials. Additionally, PWD would implement mitigation measure HAZ-1, which would develop a Hazardous Materials Management and Spill Prevention and Control Plan to limit the risk of hazardous materials use. With compliance with applicable regulations for the transport, storage, use and disposal of hazardous materials, and development of the Plan per HAZ-1, impacts related to reasonably foreseeable upset accident conditions involving the release of hazardous materials during Project construction would be less than significant as mitigated.

Operation of the Project could pose a hazard to the environment through the accidental release of hazardous materials, such as chemical spills from storage tanks, leaks from piping systems, or malfunctioning dosing pumps. As described above, the proposed Project would incorporate design elements to enable the safe handling and storage of the hazardous materials required to carry out the treatment processes at the AWPF. Additionally, regular maintenance and inspections, staff training, and monitoring systems would further reduce the potential for accidental releases of hazardous materials. Chemical deliveries would be regulated by CalEPA and the California Emergency Management Agency, with enforcement by the California Highway Patrol and Caltrans. With incorporation of safe handling and storage measures for hazardous materials and compliance with existing federal, State, and local regulations, operational impacts related to reasonably foreseeable upset accident conditions involving the release of hazardous materials would be less than significant.

c) **Less than Significant Impact with Mitigation Incorporated.** The closest school to PWD's 20-acre parcel proposed for the AWPF is the Palmdale SOAR High School, located approximately 0.20 miles away at 2270 E Ave Q. The Process Building at the AWPF and associated chemical storage and use would be approximately 0.29 miles from the High School property. Construction of the proposed Project would involve the handling of materials such as fuels, lubricating fluids, and solvents, which can emit toxic air pollutants. The proposed

Project would comply with applicable federal, State, and local regulations related to the transport, use, and disposal of hazardous materials during construction. Additionally, implementation of mitigation measure HAZ-1 would reduce the risk of accidental hazardous material releases, and mitigation measure HAZ-2 would ensure notification to schools within 1 mile of Project facilities. Therefore, impacts during Project construction would be less than significant with mitigation incorporated.

Operation of the AWPF would be slightly outside 0.25 mile of Palmdale SOAR High School. The proposed Project would require routine transport, use of chemicals for treatment, and possible storage of diesel fuel. With implementation of the design features described above to manage chemical use, and compliance with relevant federal, State, and local regulations, operation of the proposed Project would not pose a significant hazard to a school. Impacts during Project operation would be less than significant.

d) **No Impact.** Section 65962.5 of the California Government Code requires the California Environmental Protection Agency (CalEPA) to update a list of known hazardous materials sites, which is also called the "Cortese List." The sites on the Cortese List are designated by the SWRCB, the Integrated Waste Management Board, and the Department of Toxic Substances Control (DTSC).

The Project sites are not included on any hazardous waste site lists including the DTSC EnviroStor database, the SWRCB's GeoTracker site (2025), CalEPA's list of solid waste disposal sites identified by the Water Board with waste constituents above hazardous waste levels outside of the waste management unit (2025), the United States Environmental Protection Agency's database of regulated facilities (2025), or other lists compiled pursuant to Section 65962.5 of the Government Code. The closest active site is Air Force Plant 42, (a research and development facility) which is approximately 1 mile away. A groundwater treatment system for the remediation of Trichloroethylene (TCE) is currently in operation at the site. Since no Cortese List sites are present within 1,000 feet of the Project sites, and since recharge of the groundwater basin with purified recycled water would not adversely impact existing groundwater treatment, construction and operation of the Project would have no impact related to hazardous waste sites.

e) **Less Than Significant Impact**. The pump station at the PWRP, Well 37 brine ponds, and segments of Project pipelines would be constructed within the Palmdale Regional Airport influence area but outside the 65 Community Noise Equivalent Level (CNEL) noise contour for the airport (LACALUC 2004). The proposed site for the AWPF would be outside the airport influence area and 65 CNEL noise contour. Construction of the Project would temporarily expose construction workers to airport noise, but below 65 CNEL. Operations staff at the AWPF would also be exposed to airport noise, but below 65 CNEL. The Project would not result in new residences near the airport, nor would it create long-term employment within the airport 65 CNEL noise contour. Since the proposed Project would not expose residences or workers to excessive aircraft noise or airport-related safety hazards, impacts would be less than significant.

f) **Less Than Significant Impact with Mitigation Incorporated**. Fire protection and police services within the Project area are provided by the LACFD and Los Angeles County Sheriff's Department. During construction, temporary lane closures or detours associated with pipeline installation in existing roadway rights-of-way (e.g., 30th Street East, Avenue P, and 40th Street East) could delay emergency response times or disrupt emergency service delivery if not properly managed. mitigation measure TRA-1 would require the preparation and implementation of a Traffic Management Plan (TMP) that includes coordination with emergency service providers at least one month prior to construction, advance public notifications, and measures to maintain emergency access at all times. The TMP would also identify alternate routes and staging practices to avoid blocking critical corridors. As mitigated, construction-related impacts on emergency response and evacuation would be less than significant.

During operations, vehicular access to the AWPF site would be from 25th Street East via gated entrances and internal service roads. The Project would be designed to allow proper ingress and egress and comply with LACFD requirements for emergency vehicle turning radii and fire apparatus access. Similarly, site security features (e.g., motorized gates) would be designed to allow emergency override access. The Project does not propose new public road closures or geometric changes that would conflict with emergency response routes or adopted emergency plans. Pipelines would be installed underground within existing rights-of-way, so they would not obstruct emergency access once construction is complete. With compliance with LACFD design standards, the Project would not result in inadequate emergency access. During Project operations, PWD staff would be present at the AWPF and occasionally visit the brine ponds, wells, and pipeline locations for periodic maintenance. These routine activities would not interfere with an adopted emergency response plan or emergency evacuation plan. Operations-related impacts on emergency response and evacuation would be less than significant.

g) **No Impact**. The proposed Project elements are not located in or near SRAs or lands classified as very high FHSZ in the LRA. Project facilities are water treatment, injection and conveyance facilities, wells, and ponds for brine disposal. Development of these Project elements would reduce onsite vegetation for the construction of the proposed buildings, pump station, wells, and brine disposal ponds. No steep slopes are present or would be created as a result of the proposed Project. Construction and operation of these infrastructure elements would have no impact on the existing moderate risk of wildfire. Therefore, the Project would have no impact regarding the exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires.

**Mitigation Measures**

With implementation of the following mitigation measures, Project impacts related to hazardous materials would be less than significant.

**HAZ-1 – Hazardous Materials Management Spill Prevention and Control Plan**. Prior to the start of construction, PWD shall require its construction contractor(s) to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a Project-specific contingency plan for hazardous materials and waste operations. The Plan shall be applicable to all construction activities and shall establish policies and procedures according to federal and

California OSHA regulations for hazardous materials. Elements of the Plan shall include, but not be limited to:

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

**HAZ-2 – School Notification**. Prior to the start of Project construction within 1 mile of a school, PWD will notify relevant schools regarding the construction schedule.

## 2.3.10 Hydrology and Water Quality

| Issues and Supporting Information Sources | 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 groundwater quality? | ☐ | ☐ | ☒ | ☐ |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin? | ☐ | ☒ | ☐ | ☐ |
| 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 offsite? | ☐ | ☒ | ☐ | ☐ |
| ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite? | ☐ | ☒ | ☐ | ☐ |
| iii) Create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or? | ☐ | ☒ | ☐ | ☐ |
| iv) Impede or redirect flood flows? | ☐ | ☒ | ☐ | ☐ |
| d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? | ☐ | ☐ | ☒ | ☐ |
| e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? | ☐ | ☐ | ☒ | ☐ |

**Discussion**: The Project area is located in the South Lahontan Hydrologic Region, within the Antelope Hydrologic Unit, one of 29 drainage areas designated for the South Lahontan Hydrologic Basin in the Lahontan RWQCB Water Quality Control Plan (Basin Plan, as amended through 2025). The Project area is located within the Antelope Valley Groundwater Basin, a basin within the southwestern Mojave Desert, nearly 40 miles north-northeast of Los Angeles, California. Three primary aquifers – the upper, middle, and lower – occur in the Antelope Valley Groundwater Basin. The upper and middle aquifers are the primary water-bearing aquifers in the Project area and PWD existing potable water wells are completed in these layers above a clay unit.

Drillers' logs for wells completed in the Project area indicate basin-fill deposits of the upper and middle aquifers extend to a depth of approximately 850 to 1,000 feet bgs and are predominantly a mixture of sand and gravel with interbedded clay deposits in some areas. Coarse-grained sediments

comprise approximately 30 to 90 percent of the geologic materials encountered during well drilling, with an average percentage of approximately 70 percent.

Groundwater in the upper and middle aquifers is unconfined beneath the Project area and constitutes an unconfined groundwater system. Groundwater generally flows northward toward a pumping depression that extends beneath and to the northwest of the Project area (Todd Groundwater 2025). In the Project area depth to groundwater varies between approximately 380 ft bgs near Avenue Q to 530 ft bgs in the vicinity of Avenue P-8 and 20th Street East (Todd Groundwater 2025). Owing to the increased depth to groundwater and the abundance of sand and gravel beneath the Project area, geologic and hydrogeologic conditions appear to be favorable for the injection of advanced treated recycled water.

Since groundwater extractions have exceeded the Antelope Valley Groundwater Basin's natural recharge, an adjudication process has defined groundwater rights for the Basin's users to equal the safe or sustainable yield of the Basin (PWD 2021). On December 23, 2015, a Stipulated Judgement created a five-member Watermaster Board of Directors and appointed the Antelope Valley Watermaster Engineer. The Antelope Valley Watermaster Engineer is responsible for monitoring the groundwater basin to ensure groundwater pumping is appropriately sustained by groundwater recharge. Per the Judgement, PWD has a native groundwater production right of 2,769 AFY. PWD has been in full compliance with the Judgement, pumping within its final adjudication right since 2016. In addition to its groundwater production right, PWD is also entitled to a share of the unused federal reserved right, which averages 1,450 AFY, and return flow credit of 39 percent of all imported water served to its customers. Return flow credits are calculated on a 5-year rolling average and are available to PWD following imported water delivery or after banked imported water has been pumped. Return flow credits are projected to decrease from 4,220 AFY in 2025 and 4,100 AFY in 2050 (PWD 2023a).

a) **Less than Significant Impact**.

**Construction**. Anticipated construction activities would require grading, excavation, and other soil disturbing activities, which could result in soil erosion and the migration of soil and sediment in stormwater runoff to downstream surface waters and storm drains. Drilling would be required for injection and monitoring well installation, and installation of proposed pipelines would involve trenching using a conventional cut and cover technique. With groundwater depths over 300 feet bgs, dewatering during Project construction is not anticipated. Construction activities could introduce sediment and chemicals to runoff. Fuels, lubricants, and other hazardous materials associated with construction equipment could adversely impact water quality if spilled or stored improperly. Since the proposed Project would be constructed on over 1 acre, a SWPPP would be prepared which will include BMPs designed to prevent impacts to water quality. Table 6 summarizes typical stormwater BMPs. With the implementation of the BMPs outlined in the Project-specific SWPPP, impacts on surface water quality during Project construction would be less than significant.

**Operation**. Beneficial uses and water quality objectives are specified in the Basin Plan prepared by the Lahontan Regional. Beneficial uses designated for Antelope Valley Basin groundwater are: municipal and domestic supply, agricultural supply, and freshwater

replenishment. Water quality objectives that apply to all groundwater in the Lahontan region are: coliform bacteria, chemical constituents, radioactivity, and taste and odor.

*AWPF Feed Water Quality*

The PWRP effluent meets CCR Title 22 Water Recycling Criteria for disinfected tertiary effluent and would be the feed water for the AWPF. Table 21 summarizes the expected feed water quality to the AWPF and includes the key water quality parameters most relevant to the sizing of the MF, RO, and UV/AOP systems. The data set spans from 2017 to 2025. A special sampling campaign was conducted from September 2023 to April 2025 to obtain water quality data to guide the design of the AWPF. Additional water quality data will continue to be collected during the operation of the demonstration facility (anticipated to begin operation in 2026).

**Table 21. Expected Feed Water Quality to AWPF**

| Constituent | Unit | Average | Minimum | Maximum | 90th Percentile | Count |
|---|---|---|---|---|---|---|
| 1,4-Dioxane [1] | µg/L | ND (<0.40) | ND (<0.40) | ND (<0.40) | ND (<0.40) | 18 |
| Alkalinity, Total [1] | mg/L | 104 | 85 | 156 | 120 | 22 |
| Aluminum [1] | µg/L | 9.5 | 6.4 | 10.6 | <10 | 18 |
| Ammonia, Total [1] | mg/L-N | 1.4 | 0.74 | 5.5 | 1.9 | 24 |
| Barium [1] | µg/L | 21.0 | 13.9 | 25.4 | 24.8 | 18 |
| Boron [1] | mg/L | 0.289 | 0.182 | 0.389 | 0.376 | 18 |
| Bromide [1] | mg/L | ND (<0.200) | ND (<0.200) | ND (<0.200) | ND (<0.200) | 18 |
| Calcium[2] | mg/L | 34.5 | 24.5 | 42.3 | 39.4 | 34 |
| Chloride[2] | mg/L | 145 | 107 | 180 | 166 | 32 |
| Fluoride [1] | mg/L | 0.189 | 0.145 | 0.281 | 0.219 | 18 |
| Iron[1] | mg/L | 0.077 | 0.032 | 0.243 | 0.102 | 16 |
| Magnesium[2] | mg/L | 8.8 | 5.0 | 12.9 | 11.2 | 35 |
| Manganese[1] | µg/L | 21.5 | 14.1 | 35.4 | 26.9 | 18 |
| Nitrate[2] | mg/L-N | 2.3 | 0.5 | 8.9 | 3.6 | 107 |
| Nitrite[2] | mg/L-N | 0.13 | 0.03 | 0.95 | 0.30 | 85 |
| N-nitrosodimethylamine (NDMA)[3] | ng/L | 27 | 6.9 | 84 | 57 | 7 |
| N-nitrosodiethylamine (NDEA)[3] | ng/L | ND (<10) | ND (<10) | ND (<10) | ND (<10) | 6 |
| pH[1] | s.u. | 7.3 | 6.8 | 8.2 | 7.7 | 24 |
| Potassium[1] | mg/L | 15.5 | 13.6 | 17.3 | 16.8 | 18 |
| Phosphate, Total[1] | mg/L | 1.8 | 0.54 | 4.0 | 3.1 | 24 |
| Silica[1] | mg/L | 13.6 | 11.2 | 17.8 | 15.6 | 18 |
| Sodium[2] | mg/L | 119 | 95.3 | 14139 | 1341 | 34 |
| Strontium[1] | µg/L | 287 | 222 | 344 | 322 | 18 |
| Sulfate[2] | mg/L | 68.3 | 49.4 | 90.0 | 83.0 | 34 |
| Total Dissolved Solids (TDS)[1] | mg/L | 465 | 388 | 593 | 490 | 17 |
| Temperature[4] | °C | 23.0 | 14.5 | 30.1 | 27.5 | 261 |
| Total Organic Carbon (TOC)[1] | mg/L | 6.9 | 5.7 | 8.0 | 7.6 | 18 |

[1] Based on water quality data collected from March 2023 to April 2025 as part of special sampling campaign.
[2] Based on water quality data collected from February 2017 to April 2025.
[3] Based on water quality data collected after switching to emulsion polymer, ranging from August 2024 to April 2025.
[4] Based on weekly temperature data from January 2017 to December 2021.
mg/L = milligrams per liter; ND = non-detect; ng/L = nanograms per liter; s.u. = standard unit; µg/L = micrograms per liter

*Groundwater Modeling*

Groundwater flow simulations for the proposed injection wells were presented in the technical memorandum entitled *Summary of Numerical Groundwater Model Results – Pure Water Antelope Valley Technical Memorandum* (Stantec and Montgomery & Associates 2023). Groundwater flow modeling was developed to assess whether the injection of tertiary treated wastewater would meet Title 22 IPR regulations. Title 22 regulations require a minimum of 2 months of underground retention time and allow for up to 6 months of log virus reduction credit. Modeling scenarios indicated that underground retention times for the initial phase (4.75 mgd) and ultimate buildout (10.0 mgd) scenarios exceed the 2-month requirement. The modeling results also indicated that underground retention times for the initial phase and ultimate buildout scenarios exceed 6 months to qualify for the maximum credit. Modeling results indicated that operating injection wells on the PWD 20-acre parcel would result in manageable groundwater level mounding and is conceptually feasible. The technical memorandum recommended that:

- Site-specific testing be conducted to assess injection feasibility and estimate injection capacity
- A tracer test be completed to assist with model parameters and future Title 22 permitting
- A site characterization plan be prepared to guide field activities

The site characterization work is currently underway to assess the feasibility of injecting treated water at operational rates using injection wells located on the PWD 20-acre parcel as recommended in the modeling results. This work will include test well construction, monitoring well construction, pumping and injection tests, and a tracer test. In addition to meeting the primary goal of assessing injection well feasibility, the site characterization will provide essential site-specific hydrogeologic data to enhance the groundwater model, refine the estimate of underground retention time, and develop a preliminary understanding of geochemical conditions that could affect the water quality in PWD's groundwater production wells. It is expected that construction and testing described in the work plan will be completed by the end of 2026. The results of the injection testing will be utilized for full-scale well design and well siting.

All recycled water produced and used for groundwater recharge would meet the IPR standards per CCR Title 22 (PWD 2023b). It is expected that recycled water produced by the Pure Water AV Project could be of higher quality than existing groundwater sources (PWD 2023b). Additionally, recycled water will be directly injected into the Antelope Valley Groundwater Basin, which will move any existing contaminants further from drinking water extraction wells (PWD 2023b). PWD monitors drinking water constituents consistent with federal and State laws and treats groundwater with chlorine before being pumped into the distribution systems, ensuring that drinking water meets State and federal water quality standards (PWD 2021; PWD 2022). Additionally, PWD would be required to obtain a permit for waste discharges into the LACSD system. Therefore, impacts on water quality from Project operation would be less than significant.

b) **Less than Significant Impact with Mitigation Incorporated**.

**Construction**. Groundwater discharges associated with well installation and testing would comply with the Lahontan Regional Board Limited Threat Discharges permit. Compliance includes designation of a discharge disposal site and implementation of BMPs to control discharges. Drainage systems in the City either drain to earthen channels or retention basins, and thus any discharged groundwater would either evaporate or eventually percolate into the Antelope Valley Groundwater Basin. Impacts associated with construction groundwater discharges during well drilling would be less than significant.

**Operation**. The Project includes installation of buildings and internal roadways at the AWPF site which would increase impervious surface area, however, the majority of the 20-acre parcel would remain undeveloped open space. The proposed pump station at the PWRP and the injection, production, and monitoring wells would slightly increase impervious surface area. The brine ponds would be lined which would increase impervious area at the existing oxidation pond site. Once installed, proposed Project pipelines would be buried and would not affect stormwater percolation along the alignments. Stormwater flows would be managed onsite and reductions to groundwater recharge, if any, would be less than significant. The Project also includes minor potable water use for employees at the AWPF and process water demand. These water volumes would not substantially deplete groundwater supplies and impacts would be less than significant.

Operation of the AWPF and injection of the product water to the Antelope Valley Groundwater Basin would increase groundwater supplies by approximately 4.75 mgd in Phase 1 and 10.0 mgd in Phase 2. The Project is beneficial for groundwater supplies and sustainable groundwater management of the Antelope Valley Groundwater Basin.

PWD would coordinate with the Antelope Valley Watermaster for installation and operation of Well 37. In accordance with mitigation measure HYD-1, the Antelope Valley Watermaster Engineer would ensure operational criteria for the wells do not result in a net deficit in aquifer volume or a lowering of the local groundwater table such that the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted. With incorporation of mitigation, impacts on groundwater volumes would be less than significant.

c) i, ii, iii, iv **Less than Significant Impact with Mitigation Incorporated**.

**Construction**. Project construction would not alter the course of a stream or river. However, excavation and earthwork of new facilities would result in minor localized changes to drainage patterns in the immediate vicinity of the construction area and potentially erosion and siltation on- and off-site. Construction of the AWPF and the brine ponds would require grading and earthwork on approximately 100 acres. The construction of injection wells would include site preparation, mobilization of equipment to the well site, well drilling, installation of the well casing, gravel packing, and finishing with a cement seal. Construction of the recycled water pipelines would involve trenching. Removal of vegetation at excavation areas would expose bare soil that could be eroded during rainfall events. If runoff from rainfall flows over

construction sites, the runoff can transport sediment and other pollutants such as building materials, concrete washout, paint, fuel, oil, and solvents into the stormwater system. Fuels, lubricants, and hazardous materials associated with construction equipment could adversely affect water quality if spilled or stored improperly. A Project-specific SWPPP would document erosion and sediment control BMPs to be incorporated during construction of Project facilities.

**Operation**. Project operation would not alter the course of a stream or river. However, the Project would include installation of facilities (AWPF, lined brine pods, wells, and pump station) which would increase impervious area at the Project sites which would alter site drainage. Drainage for the proposed Project would be designed in accordance with the City of Palmdale Public Works Standards and the Los Angeles County Hydrology Manual. The proposed grading and drainage improvements would ensure that post-development runoff is conveyed safely and efficiently to approved discharge points without adverse impacts to downstream properties or public infrastructure. The general drainage pattern across the AWPF site flows from southwest to northeast. This existing drainage pattern would be maintained as part of Project grading and drainage design. Proposed Low Impact Development (LID) facilities would be strategically located north of the project site to treat and manage roadway and site runoff. LID measures would be defined during final design and may include drainage swales and basins that utilize natural treatment systems to promote infiltration, pollutant removal, and flow attenuation.

On-site and off-site drainage facilities would be designed to accommodate the 50-year storm event in compliance with City requirements. Surface runoff will be collected via a network of swales, catch basins, and underground storm drain pipelines designed per current hydraulic design standards. The drainage system would direct flow toward the designated public right-of-way and/or approved drainage facilities consistent with the City's Master Plan of Drainage.

LID and stormwater quality compliance measures would be incorporated into the Project design to meet the requirements of the City's Municipal Separate Storm Sewer System (MS4) permit. BMPs, such as bioretention planters, infiltration areas, and vegetated swales, would be provided to treat and reduce runoff in accordance with the City of Palmdale SUSMP/LID Manual.

Hydrology and hydraulic calculations would be prepared to demonstrate that the proposed system meets required capacities and that peak flow rates do not exceed pre-development conditions. Drainage design for the Project would comply with Palmdale Municipal Code Chapter 14.05 (Stormwater Management and Discharge Control Ordinance) and provide long-term stormwater conveyance and water quality protection.

Implementation of mitigation measure HYD-2 would require PWD to complete a drainage study and develop a drainage plan to verify that drainage would not contribute to runoff that would result in flooding. mitigation measure HYD-2 would ensure that any alteration to site drainage would not result in onsite or offsite flooding. Therefore, Project alternations to site drainage would not result in onsite or offsite flooding and impacts would be less than significant with mitigation incorporated. With implementation of these drainage management

facilities and BMPs, operational impacts on erosion, drainage patterns and stormwater would be less than significant.

d) **Less than Significant Impact**. The proposed AWPF site is located within Zone X (0.2% Annual Chance Flood Hazard) as identified by FEMA Flood Insurance Rate Map (FIRM) Panel 06037C0700F, effective September 26, 2008. This designation indicates an area of minimal flood hazard, outside the Special Flood Hazard Area (SFHA), and subject to a 500-year storm event. No regulatory base flood elevation (BFE) is established for this site. The site is suitable for development under current FEMA floodplain regulations, with no additional flood mitigation measures required beyond standard drainage design practices.

Project facilities would not be located in a tsunami or seiche zone based on the CDOC's Tsunami Hazard Area Map (CDOC n.d.). The proposed Project would be in the zone of possible inundation due to dam failure at the Littlerock Dam and Palmdale Dam. However, construction of Project facilities would not increase the risk of pollutant release due to inundation as construction would comply to seismic standards set forth by the American Water Works Association and the California Building Code, which include required safety factors to prevent catastrophic failures. Therefore, impacts would be less than significant.

e) **Less than Significant Impact**. The state of California adopted the Sustainable Groundwater Management Act (SGMA) in 2014 to mandate sustainable groundwater development. This legislation mandates avoidance of adverse groundwater conditions by defining what constitutes an adverse condition (a minimum threshold) and by requiring avoidance of the adverse condition by management action. The Antelope Valley Groundwater Basin has been adjudicated since 2015 and is exempt from the requirements of SGMA. The proposed Project would replenish the Antelope Valley Groundwater Basin, a beneficial impact. The Project would not alter or conflict with the Judgement and PWD would continue to comply with the Judgement set forth in 2015.

Project compliance with the Basin Plan is described above. Operation of the Project would not conflict or obstruct implementation of a Water Quality Plan or a GSP. The Project would produce and inject purified water that meets Title 22 Standards, complying with State regulations. Therefore, impacts on water resources planning would be less than significant.

**Mitigation Measures**

With implementation of the following mitigation measures, Project-related impacts on hydrology and water quality would be less than significant.

**HYD-1 Material Harm Review.** PWD shall coordinate with the Antelope Valley Watermaster Engineer and conduct a material harm review of the proposed groundwater Well 37 and groundwater rights. The Antelope Valley Watermaster Engineer would ensure operational criteria for the wells do not result in a net deficit in aquifer volume or a lowering of the local groundwater table such that the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted. This analysis

will be completed as part of a groundwater storage agreement application process through the Antelope Valley Watermaster.

**HYD-2 Drainage Plan.** PWD shall complete drainage assessment and design in accordance with all applicable laws, regulations, and best management practices. The assessment and design shall be submitted as a drainage plan to appropriate jurisdictions to verify that drainage would not contribute to runoff that would result in flooding.

## 2.3.11 Land Use and Planning

| Issues and Supporting Information Sources | Potentially Significant Impact | Less Than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| Would the project: | | | | |
| a) Physically divide an established community? | ☐ | ☐ | ☐ | ☒ |
| 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? | ☐ | ☐ | ☒ | ☐ |

**Discussion:** Existing zoning and land use designations for the Project parcels are defined by the City of Palmdale and County of Los Angeles:

- AWPF and purified water injection wells – City of Palmdale (APNs 3022-011-002, 3022-011-003)
  - Zone Office Flex
  - Land Use Designation Employment Flex
- Brine Ponds – Unincorporated Los Angeles County (APN 3025-024-900)
  - Zone M-1.5 (Restricted Heavy Manufacturing) [Prezone Utilities per City of Palmdale]
  - Land Use Designation P - Public and Semi-Public [Utilities per City of Palmdale]
  - Rural Outdoor Lighting District
  - Within Palmdale Regional Airport Area of Influence
- PWRP – Unincorporated Los Angeles County (APN 3022-007-900)
  - Zone M-1.5 (Restricted Heavy Manufacturing) [Utilities per City of Palmdale]
  - Land Use Designation P - Public and Semi-Public [Public Facilities - Civic per City of Palmdale]
  - Rural Outdoor Lighting District
  - Within Palmdale Regional Airport Area of Influence
- Tertiary Effluent Pipeline (portion on parcel to the north of the AWPF owned by LAWA, Unincorporated Los Angeles County APN 3022-006-272)
  - Zone M-1.5 (Restricted Heavy Manufacturing) [Prezone Aerospace Industrial per City of Palmdale]
  - Land Use Designation P - Public and Semi-Public [Aerospace Industrial per City of Palmdale]
  - Rural Outdoor Lighting District
  - Within Palmdale Regional Airport Area of Influence
- Well 37 – Unincorporated Los Angeles County APN 3022-006-270
  - Zone M-2.5 (Aircraft and Heavy Manufacturing) [Prezone Aerospace Industrial per City of Palmdale]
  - Land Use Designation P - Public and Semi-Public [Aerospace Industrial per City of Palmdale]
  - Rural Outdoor Lighting District

- Within Palmdale Regional Airport Area of Influence

Transmission lines, water storage tanks, and supportive buildings and structures are allowed uses within the Utilities zone. Mixed-use development of lighter industrial uses and more intensive service, retail, and commercial uses are allowed uses within the Employment Flex designation. Mixed-use development of office/flex uses and supportive service, retail, and commercial uses are allowed uses within the Office Flex zone. The Aerospace Industrial zone allows many uses, such as intensive manufacturing, production, repair, and distribution, that are not suitable adjacent to other sensitive uses (City of Palmdale 2023). The Restricted Heavy Manufacturing Zone (Zone M-1.5) allows for light and restricted heavy industry, repair, wholesale, and packaging, including manufacture, assembly, distribution, and storage of goods with low to medium nuisance impacts, but excluding raw-materials production, processing, or bulk handling (Los Angeles County Code Section 22.22.010). However, utilities such as the proposed Project elements are generally allowed in any zone. Additionally, pursuant to California Government Code Section 53091, the building and zoning ordinances of a county or city do not apply to the location or construction of facilities for production, generation, storage, treatment, or transmission of water or wastewater by a local agency.

The City of Palmdale's General Plan Sustainability, Climate Action, and Resilience Element; Palmdale Water District's SWRP Update (2023); Los Angeles County's Water Plan (2023); and Antelope Valley's Integrated Regional Water Management (IRWM) Plan (2019) are planning documents that have helped identify the community's water needs and priorities. The Project directly aligns with the SWRP Update which includes a plan for developing and diversifying PWD's water supply through 2050. To sustainably meet future water demands and address existing groundwater overdraft, the SWRP examines maximizing PWD imported water supplies for internal water storage, purified recycled water injection (such as proposed by the Project), well rehabilitation and/or replacement of existing wells, new wells, and local supply enhancements. The Project would predominantly serve residents within the PWD service area, and in the long-term would positively impact local residents due to the benefits that potable reuse would have on the local Antelope Valley Groundwater Basin.

a) **No Impact**. The physical division of an established community refers to the construction of features that impact mobility within an existing community or between a community and outlying area, such as interstate highways, railroad tracks, or permanent removal of a means of access, such as a local road or bridge. Although the proposed Project pipelines are linear features, they would be installed underground and would not permanently divide an established community. Other Project elements (AWPF, wells) would be limited to the PWD 20-acre parcel and immediately adjacent area, the brine ponds would be limited to the area of existing unused oxidation ponds, and the pump station would be located on vacant land at the existing PWRP. Construction and operation of these Project elements would not physically divide an established community. Therefore, no impacts would occur.

b) **Less than Significant Impact**. According to City and County designations, Project components would be located within Office Flex, Utilities, Aerospace Industrial and Restricted Heavy Manufacturing zones. The County may conduct ministerial site plan review if the brine ponds (located in the County M-1.5 zone) are considered facilities accessory to the storage and

distribution of water (County Table 22.22.030-B). Construction and operation of the brine ponds would occur on the same parcel previously used as wastewater oxidation ponds. No substantial change in land use is proposed. The proposed pump station and portions of the Project pipelines would be located at the existing PWRP, an existing wastewater treatment plant; no change in land use is proposed. Well 37 would be a replacement for an adjacent well located on a LAWA-owned open space parcel. The AWPF would represent a change in land use on PWD's 20-acre parcel, from vacant to water treatment facility. However, since the building and zoning ordinances of a county or city do not apply to the location or construction of water facilities by a local agency, the Project would not conflict with zoning and land use designations by the City of Palmdale or County of Los Angeles. The Project would also support the City's goal of increasing the municipal reuse of local recycled water (City of Palmdale 2022a).

The pump station at the PWRP, brine ponds, Well 37, and some of the proposed Project pipelines would be within the Airport Influence Area (AIA) for Palmdale Regional Airport. The Los Angeles County Airport Land Use Plan includes policies and programs that apply to Palmdale Regional Airport, including prohibiting uses which would attract large concentrations of birds, emit smoke, or which may otherwise affect safe air navigation. Construction of facilities within the AIA has the potential to disrupt airport operations due to construction equipment (e.g., cranes) which could pose temporary hazards to aviation within the AIA. PWD would coordinate with the County of Los Angeles Airport Land Use Commission (ALUC) and Federal Aviation Administration (FAA) and prepare an airport construction safety plan that would identify best management practices to be used before Project construction. The FAA requires anyone proposing to build a structure near an airport to submit Form 7460 which initiates the FAA obstruction evaluation/airport airspace analysis process. PWD would notify the Palmdale Regional Airport of proposed construction activities in advance and participate in the FAA's 7460 process so that the proposed construction equipment does not pose hazards to aviation.

Operation of the Project would include discharge of brine for evaporation at the brine ponds. However, due to the salinity of the water to be discharged at the brine ponds, attraction of large numbers of birds would not be anticipated. Additionally, the parcel proposed for the brine ponds was previously used for oxidation ponds. With coordination with federal and local airport authorities to ensure facility locations and heights would not pose a hazard to aviation, conflict with the ALUP and impacts to land use planning would be less than significant.

## 2.3.12 Mineral Resources

| Issues and Supporting Information Sources | 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? | ☐ | ☐ | ☐ | ☒ |
| 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? | ☐ | ☐ | ☐ | ☒ |

**Discussion:** As mapped by the California Department of Conservation Division of Mine Reclamation (2025), mines near the Project area include Palmdale mine (ID 91-19-0020) located approximately 6.5 miles southeast of the Project site and 75th Street Quarry (ID 91-19-0049) located approximately 9.5 miles southeast of the Project site. The City of Palmdale General Plan 2045 includes a Mineral Resource Zone (Production-Consumption region) designation, covering Palmdale and Lancaster. The Mineral Resource Zone includes sand and gravel deposits from alluvial fans, specifically the Little Rock Fan and Big Rock Creek Fan.

California's Surface Mining and Reclamation Act of 1975 (SMARA) requires the State Geologist to classify land into mineral resource zones based on the known or inferred mineral resource potential of that land. The California Department of Conservation's Mineral Resources Program provides data about California's varied non-fuel mineral resources, and information about active and historic mining activities throughout the state.

The City of Palmdale has adopted its own SMARA-certified ordinance and zoning designations. As such, the City of Palmdale is the Lead Agency for the processing of surface mining reclamation plan applications on private lands. All surface mining operations that disturb greater than 1 acre or move more than 1,000 cubic yards must have an approved reclamation plan before the start of mining activity. Reclamation plans are required by SMARA to assure that:

- Adverse environmental effects are prevented or minimized and mined lands are reclaimed to a useable condition readily adaptable for alternate land uses.
- Production and conservation of minerals are encouraged, while considering recreation, watershed, wildlife, aesthetic, range and forage values.
- Residual hazards to public health and safety are eliminated.

a) **No Impact.** The Project sites are not currently used for the purpose of mineral extraction, and the Project sites are not designated as areas of known mineral resources. Furthermore, the Project would not include any mineral extraction activities. Therefore, construction and operation of the Project would not result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state, and no impacts would occur.

b) **No Impact**. No mineral resource recovery sites are delineated for the Project sites in a General Plan, specific plan, or any other land use plan prepared by the City of Palmdale or the County of Los Angeles. Therefore, no impacts would occur.

## 2.3.13 Noise

| Issues and Supporting Information Sources | 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? | ☐ | ☒ | ☐ | ☐ |
| b) Generation of excessive groundborne vibration or groundborne noise levels? | ☐ | ☒ | ☐ | ☐ |
| 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 2 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? | ☐ | ☐ | ☒ | ☐ |

**Discussion:** Proposed Project elements are located within the incorporated area of the City of Palmdale (AWPF and pipeline segments) and the unincorporated area of Los Angeles County (brine ponds, pump station at the PWRP, Well 37, and pipeline segments). The proposed AWPF site is undeveloped and ambient noise results from transportation (roadway traffic noise and the adjacent airport) and agricultural and industrial activities on nearby parcels. The brine ponds and existing site for the proposed pump station at the PWRP are located on parcels surrounded by open space and agriculture. Existing vibration sources at the Project sites include heavy vehicle use on area roadways.

Chapter 8.28 of the City of Palmdale Municipal Code (Noise Ordinance) governs construction and operational noise for various land uses and regulates the impact of offensive noise from various sources. The Municipal Code's Noise Ordinance does not contain any specific limits, but rather states that "It shall be unlawful for any person to willfully make or continue, or cause or to be made or continued, any loud, unnecessary, or unusual noise…" According to Section 8.28.030, no person shall perform any construction or repair work on any Sunday, or any other day after 8:00 p.m. or before 6:30 a.m., in any residential zone or within 500 feet of any residence, hotel, motel or recreational vehicle park. According to Section 8.28.070, construction work or excavation by a public utility may also be exempt from the noise level limits for the preservation of life or property and where such necessity makes it necessary to construct, repair, or excavate during the prohibited hours (City of Palmdale 2025). The Palmdale Municipal Code establishes a restriction on excessive noise that would disturb neighborhoods or other sensitive uses.

Chapter 12.08, Noise Control, of the County of Los Angeles Municipal Code serves as the Noise Ordinance for the County and establishes standards to control unnecessary, excessive, and annoying noise and vibration in the County. Chapter 12.08 of the Los Angeles County Code, Section 12.08.380 assigns standards for receptor properties in four noise zones in the County (Table 22). The exterior noise levels are meant to be further applied as noise standards based on the duration of the noise; i.e., the louder the noise, the shorter the time it is allowed to last.

**Table 22. County of Los Angeles Exterior Noise Standards by Noise Zone**

| Noise Zone | Designated Noise Zone Land Use (Receptor Property) | Time Interval | Exterior Noise Level (dB) |
|---|---|---|---|
| I | Noise-sensitive area | Anytime | 45 |
| II | Residential properties | 10:00 P.M. to 7:00 A.M. (nighttime) | 45 |
| | | 7:00 A.M. to 10:00 P.M. (daytime) | 50 |
| III | Commercial properties | 10:00 P.M. to 7:00 A.M. (nighttime) | 55 |
| | | 7:00 A.M. to 10:00 P.M. (daytime) | 60 |
| IV | Industrial properties | Anytime | 70 |

With respect to construction noise in the County, Section 12.08.440 of the Noise Ordinance prohibits the operation of any tools or equipment used between weekday hours of 7:00 P.M. and 7:00 A.M., or at any time on Sundays or holidays, which will create a noise disturbance across a residential or commercial real-property line. The only exceptions would be emergency work or public safety projects (Section 12.08.0570, part 5, exemption H, Public Health and Safety Activities) or by variance issued by the health officer. Additionally, both the working hours and maximum levels of equipment and activity noise that are allowable from both mobile and stationary equipment in the County are defined by land use (Table 23).

**Table 23. County of Los Angeles Construction Noise Standards**

| Allowable Work Dates and Hours | Residential Structures | | | | | |
|---|---|---|---|---|---|---|
| | Single-Family | | Multi-Family | | Semi-Residential/Commercial | |
| | Mobile Equipment[a] | Stationary Equipment[b] | Mobile Equipment[a] | Stationary Equipment[b] | Mobile Equipment[a] | Stationary Equipment[b] |
| **Daily 7:00 A.M. to 8:00 P.M.[c]** | 75 dBA | 60 dBA | 80 dBA | 65 dBA | 85 dBA | 70 dBA |
| **Daily 8:00 P.M. to 7:00 A.M.[d]** | 60 dBA | 50 dBA | 64 dBA | 55 dBA | 70 dBA | 60 dBA |
| **Business Structures** | | | | | | |
| **Daily[d]** | 85 dBA | | | | | |

Source: County of Los Angeles Ordinance No. 11743, Section 12.08.440
a Represents maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days).
b Represents maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more).
c Exception for Sundays and legal holidays.
d Includes all day Sunday and legal holidays.

a) **Less Than Significant Impact with Mitigation Incorporated.** The closest noise receptors to the proposed AWPF site are a residence on 25th Street East located approximately 625 feet south, a maintenance company office approximately 450 feet south, and a warehouse located immediately east of the site. The closest residence to the proposed pump station location at the PWRP is over 0.75 miles south on Avenue Q. The closest noise receptors to the proposed brine pipeline are located on East Avenue P and include the Air Force Plant 42 Fire Department, National Weather Service, American Red Cross donation center, and the Desert Aire Golf Course. These uses would be within approximately 170 feet of brine pipeline installation on East Avenue P, with the exception of the golf course building which would be within approximately 20 feet of brine pipeline installation. Sensitive noise receptors are not present adjacent to the proposed pump station location at the PWRP or the brine ponds which are adjacent to open space and agricultural land uses.

**Construction**. During installation of the proposed Project facilities, noise would be temporarily generated from excavators, backhoes, dozers, delivery trucks, water trucks, dump trucks, and other construction equipment. Noise could be intermittently noticeable to adjacent residences, offices, and industrial buildings. For example, typical construction equipment (e.g., concrete saw, flatbed truck, grader, paver, and backhoe) emits maximum noise levels from 74 to 90 dBA at 50 feet (FHWA 2006). However, noise would attenuate within a short distance. For example, noise from a concrete saw emitting 90 dBA at 50 feet would attenuate to approximately 68.1 dBA at 625 feet, approximately 70.9 dBA at 450 feet, and approximately 79.4 dBA at 170 feet (Canter 1996). Additionally, most noise receptors along the brine pipeline alignment on East Avenue P where construction would be closest to existing development would be within buildings, which would substantially reduce observed noise levels.

Average noise levels during construction would vary depending on type, number and duration of use for different construction equipment. Composite noise levels for typical construction phases are noted in Table 24.

**Table 24. Typical Noise Levels from Construction Activity**

| Construction Phase | Noise Level (dBA, $L_{eq}$) |
|---|---|
| Ground clearing | 84 |
| Excavation | 89 |
| Foundations | 78 |
| Erection | 85 |
| Finishing | 89 |
| Well Drilling | 83 |

Source: Woodard & Curran 2024

Although the number of noise receptors to Project sites is limited, construction could generate substantial temporary increases in ambient noise levels. While the noise generated during Project construction in the daytime would not be expected to exceed the County's residential standard (75 dBA for mobile equipment and 60 dBA for stationary equipment in the daytime), installation of the proposed brine pipeline could temporarily exceed the County's business standard of 85 dBA. Additionally, construction noise generated outside the City or County's acceptable construction hours and days could expose sensitive receptors to significant noise

levels. Injection wells drilling may require 24-hour construction. As conceptually sited, an injection well may be within 650 of the existing residence south of the PWD 20-acre parcel. Well drilling noise of 83 dBA (per Table 24) would reduce to approximately 60.7 dBA at 650 feet (Canter 1996). To reduce potentially significant noise impacts to sensitive receptors, mitigation measures NOISE-1 and NOISE-2 would be implemented during Project construction. As mitigated, impacts would be less than significant.

**Operation**. Operation of the Project would include new sources of operations and maintenance noise from process equipment such as pumps, compressors, and fans, and from utility vehicles and delivery trucks. The AWPF design would include the following considerations:

- HVAC systems serving occupied areas will be designed to meet the average noise criteria levels recommended by ASHRAE.
- Where efficient HVAC equipment selection does not result in acceptable noise levels, sound attenuation devices such as duct silencers will be utilized to reduce noise levels.
- Duct velocities will be maintained in accordance with the recommendations in the ASHRAE Applications Handbook.
- Noise produced outside of the buildings will be evaluated to comply with local codes and ordinances. The evaluations will also consider the sound emission criteria for all other sources.
- Indoor Design Criteria:
  - Lab Room - 45 dBA
  - Office, hallway, lobby, kitchenette, I/T, community room - 45 dBA
  - Restrooms - 55 dBA

Operation of the brine ponds would not be noise generating except for occasional maintenance. The existing PWRP site for the proposed pump station is surrounded by open space and located away from sensitive receptors. Operation of these Project components would not conflict with the County's Noise Ordinance or General Plan.

Goal N-1 of the City of Palmdale General Plan (2022a) is to minimize resident exposure to excessive noise, and N-1.3 establishes a 65 dBA CNEL (at the property line) exterior noise standard for sensitive land uses. The majority of noise-generating activities at the AWPF would occur within buildings. The nearest residential receptor is approximately 625 feet away. With implementation of the design considerations noted above, especially the evaluation of noise produced outside of the buildings, operation of the AWPF would not conflict with the City's Noise Ordinance or General Plan. Project-related impacts on noise during operations would be less than significant.

b) **Less Than Significant Impact with Mitigation Incorporated.** Equipment used for Project construction would create groundborne vibration and groundborne noise. The closest structure to the proposed AWPF site is a maintenance company building located approximately 450 south and the closest structure to the PWD 20-acre parcel where the injection wells would be sited is a warehouse located immediately adjacent to the parcel. Existing process units at the

PWRP are within approximately 30 feet of the proposed location for the pump station. Along the pipeline alignments, the closest building is at the Desert Aire golf course, within approximately 20 feet of brine pipeline installation

**Construction**. Typical vibration (peak particle velocity (PPV) at 25 feet) produced by construction and maintenance equipment includes small bulldozers at 0.003 (inches/second), loaded trucks at 0.076 inches/second, large bulldozers and caisson drills at 0.089 inches/second, and vibratory rollers at 0.21 inches/second (FTA 2006). The Federal Transit Administration (FTA) has published architectural damage criterion for continuous vibrations of 0.20 inch/second for non-engineered timber and masonry buildings and 0.30 inch/second for engineered concrete and masonry (no plaster) (FTA 2006). The FTA threshold of human annoyance to ground-borne vibration is 80 root mean square (RMS) velocity in decibels (VdB) (FTA 2006).

Construction of the proposed Project would employ conventional equipment and techniques which would generally not cause excessive ground-borne vibration. However, drilling would be required for installation of the injection and monitoring wells and rollers would be used during construction. Based on analysis presented in the SWRP Update PEIR (Woodard & Curran 2024), groundborne vibration noise from the drilling rig would attenuate to below 80 VdB at a distance of 43 feet. Installation of the proposed injection wells could occur in close proximity to the adjacent warehouse building but temporary vibration would not exceed the 0.30 inch/second standard for engineered concrete and masonry buildings, and temporary groundborne vibration noise would not be significant at this type of receptor. However, brine pipeline installation would occur in close proximity to existing structures on East Avenue P and use of vibratory rollers could exceed established thresholds. With implementation of mitigation measure NOISE-3, impacts related to ground-borne vibration and noise during Project construction would be less than significant.

**Operation**. Operation and maintenance of Project facilities would include periodic chemical deliveries potentially including the use of tractor trailers; vibration generation would be substantially below the 0.20 inch/second PPV threshold. Process equipment associated with the proposed Project would not include the use of equipment that could create groundborne vibration. Since the nearest structure is over 450 feet south of the proposed AWPF site, operation and maintenance would not result in the generation of excessive groundborne vibration or groundborne noise levels, and impacts would be less than significant.

c) **Less than Significant Impact.** The Los Angeles County Airport Land Use Commission (ALUC) implements State law regarding airports and surrounding land use compatibility for the County. The ALUC is responsible for designating an Airport Influence Area (AIA) and noise contours for each airport within its jurisdiction. Noise contours are lines drawn about a noise source indicating constant energy levels of noise exposure. The proposed Project sites are located outside of the Palmdale Regional Airport 65 CNEL noise contour (LACAPLU 2004).

The proposed Project would not result in new residences near any airports. During operation of the AWPF PWD employees would experience intermittent noise typical of aircraft takeoff

and landing. Installation of the pump station at the PWRP would not expose additional LACSD workers to airport-related noise, and brine disposal would not be noise generating. Water treatment facilities are not considered noise sensitive uses. Office and laboratory activities would take place within the proposed Administration Building which would substantially attenuate airport-generated noise. Conceptual design criteria include 45 dB indoor noise criteria maximum for the laboratory, office space, hallway, lobby, kitchenette, I/T, and conference room of the Administration Building. Since the 65 CNEL contour around the airport is mapped north of proposed Project facilities (LACAPLU 2004), Project-related impacts on noise near an airport/airstrip would be less than significant.

**Mitigation Measures**

Implementation of the following mitigation measures would reduce impacts related to noise and vibration to less than significant levels.

**NOISE-1 Noise Measures**. PWD shall require the construction contractor(s) to implement the following measures, as applicable, during construction of the proposed Project:

- Construction activities shall meet municipal, or County code requirements related to noise. Construction activities shall be limited to between 7:00 am and 7:00 pm Monday through Saturday to avoid noise-sensitive hours of the day, as feasible (well drilling may be 24-hours per day). Construction activities shall be prohibited on Sunday and holidays.
- Sensitive receptors of the proposed Project construction activities shall be identified and mapped.
- Construction equipment noise shall be minimized by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools.
- Construction contractor(s) shall locate fixed construction equipment and construction staging areas as far as possible from nearby sensitive receptors.
- Where feasible, and especially during 24-hour well drilling, construct barriers between noise sources and noise-sensitive land uses to block sound transmission. Enclose construction equipment where practicable.

**NOISE-2 Noise Coordinator**. PWD shall require the construction contractor(s) to notify in writing all landowners and occupants of properties within 500 feet of the construction area of the construction schedule at least two weeks prior to groundbreaking. The construction contractor(s) shall designate a Noise Coordinator who shall be responsible for responding to complaints regarding construction noise. The Noise Coordinator shall ensure that reasonable measures are implemented to correct any problems. A contact telephone number for the Noise Coordinator shall be conspicuously posted at the construction site and included in the written notification of the construction schedule sent to surrounding properties.

**NOISE-3 Vibration Measures**. PWD shall require the construction contractor(s) to implement the following measures, as applicable, during construction of proposed facilities:

- Sensitive receptors shall be identified and mapped.
- Limit construction activities that cause excessive groundborne vibrations including use of vibratory rollers to at least 43 feet from sensitive receptors and 15 feet from any structures. Alternative construction equipment for paving could include static/pneumatic rollers in areas within 15 feet of structures.

## 2.3.14 Population and Housing

| Issues and Supporting Information Sources | 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)? | ☐ | ☐ | ☒ | ☐ |
| b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☒ |

**Discussion**: The Project area is dominated by disturbed open space desert scrubland, agricultural land, and industrial uses. Existing developments in the Project area include the Desert Aire Golf Course, an American Red Cross office building, the Palmdale Regional Airport, a United States Federal Aviation Agency complex, an outdoor historical airplane exhibit, and a small cluster of industrial-commercial businesses (e.g., storage facility and auto repair shop). According to the City's land use designations, Project components would be located on parcels zoned for Office Flex, Restricted Heavy Industrial, Utilities, and Aerospace Industrial. The nearest residence to any Project facilities is located at 38832 25th Street East, approximately 300 feet south of the PWD 20-acre parcel that is the proposed site of the AWPF.

a) **Less Than Significant Impact.** The purpose of the Project is to improve water supply reliability by augmenting the Antelope Valley groundwater basin with purified recycled water, consistent with PWD's SWRP Update (2023). Any water supply benefits would serve existing and planned land uses under the City of Palmdale and County of Los Angeles General Plans and zoning and would not induce growth beyond those plans. The Project does not include residential or commercial development and would therefore not induce any additional, unplanned growth within the PWD service area.

   **Construction:** The Project would involve construction of an AWPF and two injection wells and associated conveyance facilities on a PWD-owned 20-acre parcel, a new pump station at the existing PWRP, conversion of existing unused oxidation ponds to brine disposal ponds, installation of a replacement production well, and new pipelines in existing streets and on a LAWA-owned parcel north of the AWPF site. Worker parking and material staging would be on the PWD parcel. The construction workforce for the AWPF would average ~36 workers/day and would be temporary, commuting from the existing regional labor pool, with no provision of on-site housing. Materials and equipment deliveries would use existing street networks during normal weekday hours. Access roads to support construction and long-term operations would consist of internal service roads located entirely within the PWD parcel, with site access from existing 25th Street East. No new public roads or roadway extensions are proposed. Because the Project would not provide housing, would not create or extend public access roads, and would not extend new urban services or transportation infrastructure into previously unserved areas, it would not directly or indirectly induce substantial unplanned population growth.

**Operations:** The AWPF would operate 24/7 and be staffed by PWD personnel, with at most a minimal increase in operations and maintenance staffing (an estimated 10 PWD operators would be employed at the facility, with approximately 7 staff members on-site at any one time). The facility would not function as a new employment center capable of attracting substantial new population to the area. Product-water pipelines would remain within PWD's parcel, the tertiary effluent pipeline from the PWRP to the AWPF would occur within existing public rights-of-way and an easement across LAWA property, and the brine line would follow existing roadway corridors to repurposed LACSD oxidation ponds. Proposed Well 37 would serve as a replacement well for PWD's potable water system. Operational access would continue to rely on the internal service roads inside the PWD parcel and existing public streets. No new off-site access roads or capacity-increasing roadway improvements are part of the Project. These facilities would not open new areas to development or extend urban services beyond already planned utility corridors. As a result, the Project does not remove an obstacle to growth or extend infrastructure in a manner that would indirectly induce substantial unplanned population growth.

Considering the temporary nature of construction, location of Project facilities, the minimal operational staffing, and that access is provided by internal on-parcel service roads and existing public streets only, the Project would not directly (e.g., through housing or employment centers) or indirectly (e.g., via infrastructure extensions that open new areas) induce substantial unplanned population growth. Therefore, impacts would be less than significant.

b) **No Impact.** The Project would construct and operate an AWPF and two injection wells on a PWD-owned 20-acre parcel, install product-water conveyance within the parcel, add a tertiary effluent pump station at the PWRP with an ~6,500-foot 18-inch pipeline in 30th Street East, install a small-diameter brine pipeline in existing roadway rights-of-way (e.g., 25th Street East, East Avenue P, 40th Street East) to reach existing LACSD oxidation ponds to be reconfigured for brine evaporation, install a replacement groundwater well, and install groundwater monitoring wells. Construction staging and worker parking would occur on the 20-acre PWD parcel. The Project site traverses disturbed and open lands and is adjacent to industrial facilities, and no residences occur on parcels overlapped by the Project. No acquisition, removal, or relocation of housing is proposed. Therefore, the Project would not displace existing people or housing or necessitate the construction of replacement housing elsewhere. Temporary construction activities would be confined to the PWD parcel, LAWA easement, LACSD brine pond site, and existing public rights-of-way/easements and would not block access to residences or require temporary residential relocation. The operational facilities would be staffed by existing PWD personnel with, at most, a minimal increase (an estimated 10 PWD operators would be employed at the facility, with approximately 7 staff members on-site at any one time), would not convert housing to non-residential use, and would not change land use designations or extend urban services into previously unserved areas. The brine disposal approach reuses existing LACSD oxidation ponds rather than creating new service areas. Therefore, the Project would not create conditions that indirectly displace people or housing (e.g., by opening new areas to development or catalyzing land use conversion). Any water-supply reliability benefits would serve existing and planned land uses consistent with the City of Palmdale and County of Los Angeles General Plans and the SWRP Update (2023).

Because the Project requires no demolition, acquisition, or relocation of housing; confines work to PWD, LAWA and LACSD parcels and existing corridors; and does not alter land use controls or extend services in a growth-inducing manner, it would not displace existing people or housing and would not necessitate construction of replacement housing elsewhere. There would be no impact.

## 2.3.15 Public Services

| Issues and Supporting Information Sources | Potentially Significant Impact | Less Than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: | | | | |
| i) Fire protection? | ☐ | ☐ | ☒ | ☐ |
| ii) Police protection? | ☐ | ☐ | ☒ | ☐ |
| iii) Schools? | ☐ | ☐ | ☐ | ☒ |
| iv) Parks? | ☐ | ☐ | ☐ | ☒ |
| v) Other public facilities? | ☐ | ☐ | ☐ | ☒ |

**Discussion:** The Los Angeles County Fire Department (LACFD) provides emergency medical services, fire and rescue services and safe haven services for unincorporated Los Angeles County and for contract cities including the City of Palmdale (LACFD 2025). LACFD Station #131 is responsible for the Project area (LACFD 2024) and would provide fire protection to the Project site. Station #131 is located at 2629 East Avenue S, approximately 2.1 miles south of the proposed AWPF site.

The Palmdale Sheriff's Station, located at 750 E Ave Q, would provide police services to the Project. The Sheriff's Station is approximately 1.8 miles west of the proposed AWPF site (LACSD 2023).

The Project area is within the Antelope Valley Union High School District (LACBE 2023) and Palmdale School District. Schools closest to the 20-acre PWD parcel proposed for the AWPF include Palmdale SOAR High School (0.20 miles southwest), Manzanita Elementary School (0.7 miles southeast), Tamarisk Elementary School (0.7 miles southwest), the Palmdale Aerospace Academy (0.8 miles southeast), and Just Plane Kids Preschool / Day Care (0.8 miles north of the 20-acre parcel, 170 feet north of the proposed brine pipeline).

Parks closest to the 20-acre PWD parcel proposed for the AWPF include Desert Sands Park (2.3 miles west), Poncitlán Square (1.8 miles southwest), Melville J. Courson Park (1.6 miles southwest), and William J. McAdam Park (0.6 miles south).

a )i) and ii) **Less than Significant Impact**. The Project would construct and operate an AWPF with two injection wells and internal service roads on a PWD-owned 20-acre parcel, install product-water conveyance within the parcel, construct a tertiary effluent pump station at the PWRP with an ~6,500-ft pipeline in existing public right-of-way, install a small-diameter brine pipeline in existing roadway corridors to repurposed LACSD oxidation ponds, and install a replacement groundwater well and monitoring wells.

Primary site access (and emergency vehicle access) would be from 25th Street East. Internal roads would be on-parcel with no new public road extensions proposed. Construction would be temporary, with an average of ~36 workers/day during weekday daytime hours. Staging and worker parking would occur on the PWD parcel, and deliveries would use existing public streets. Given the temporary nature, controlled access, and existing road network use, construction would not necessitate new or physically altered fire or police facilities to maintain service levels. Therefore, impacts related to fire and police services during Project construction would be less than significant.

The AWPF would incorporate security features (e.g., perimeter fencing, motorized access gates at vehicular entries, lockable chain-link enclosures for chemical areas, and video cameras) and include a standby generator. Designed in coordination with the Los Angeles County Fire Department, AWPF fire protection systems would meet applicable Fire Code requirements. Areas requiring sprinkler protection would be provided with a fire riser and pressure regulation. Design of the AWPF would include a separate dedicated fire protection supply connection for the facility's fire protection system, including hydrants, fire sprinklers, or wet standpipes. This connection would be equipped with backflow prevention and control valves and would be sized to meet fire flow requirements established by the Fire Department.

The AWPF would operate 24/7 and would be staffed by approximately 10 PWD personnel. The facility would not be a public destination, and the Administration Building occupancy is 49. This activity level would not materially affect fire and/or police service ratios or response times. The Project would not open new development fronts or extend urban services to previously unserved areas that would indirectly require new fire or police facilities. With incorporation of security features, fire-protection and hazardous-materials compliance, and with operations relying on minimal staffing, operation of the Project would not create the need for new or physically altered fire or police facilities to maintain acceptable service ratios, response times, or performance objectives. Therefore, impacts related to fire and police services during Project operation would be less than significant.

iii) **No impact**. As discussed in section 2.3.14, the Project does not include housing or substantially induce population growth; therefore, it would not generate new students or increase enrollment at nearby schools. Since no new school facilities would be required as a result of the Project, there would be no impact.

iv) **No Impact**. The Project would not generate substantial population growth and would therefore not increase recreational demand. Nearby parks would not experience increased use due to the Project. The Project components are not located within any parks or recreational facilities, but the Project does include a new pipeline to connect the proposed pump station at the PWRP to the existing recycled water system. Recycled water is currently provided to McAdam Park for landscape irrigation. The Project would have benefits related to expansion of the recycled water system. Since the Project would not require new or expanded park facilities, there would be no impact.

v) **No impact**. The Project would not generate substantial population growth or create the need for new or expanded public services such as libraries, community centers, or other public facilities. Since no new or physically altered facilities would be needed, there would be no impact.

## 2.3.16 Recreation

| Issues and Supporting Information Sources | Potentially Significant Impact | Less Than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| 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? | ☐ | ☐ | ☒ | ☐ |
| 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? | ☐ | ☐ | ☒ | ☐ |

**Discussion:**

a) **Less Than Significant Impact.** As discussed in Section 2.3.14, the Project would not provide housing and would not directly or indirectly induce substantial population growth. The Project's construction and operations would not result in a substantial influx of new residents to the area, as the workforce for both construction (approximately 36 workers) and operations (approximately 10 staff members) would be minimal. Thus, construction and operation of the proposed facilities would not result in a substantial increase in use of existing neighborhood and regional parks or other recreational facilities such that substantial deterioration of the facility would occur or be accelerated. The closest park is William J. McAdam Park, approximately 0.6 miles south of the PWD 20-acre parcel proposed for the AWPF. The Project components are not located within any parks or recreational facilities, but the Project does include a new pipeline to connect the proposed pump station at the PWRP to the existing recycled water system. Recycled water is currently provided to McAdam Park for landscape irrigation. The Project would have benefits related to expansion of the recycled water system.

A Class I bikeway is located on Avenue S, approximately 2 miles south of the proposed site for the AWPF, with other bikeways designated south and west of the Project sites (City of Palmdale 2019). No Project pipelines are proposed for Avenue S or other roadway segments with designated bikeways. The proposed brine pipeline would be constructed immediately adjacent to the entrance of the Desert Aire Golf Course. Coordination with the golf course during that segment of pipeline construction would be conducted as part of the Transportation Management Plan described below. Project pipeline installation would disrupt traffic patterns in the immediate area of the construction but the impacts at any one location would be temporary; pipeline installation would progress at approximately 100 feet per day. Overall, impacts on recreation would be less than significant.

b) **Less Than Significant Impact.** The Project does not include construction of new recreational facilities nor are any Project components located within parks or other recreational facilities. The Project does include a new recycled water pipeline to connect the proposed pump station at the PWRP to the existing recycled water system, a benefit to landscape irrigation at existing parks. As discussed in Section 2.3.14, the Project would not generate substantial population

growth that would require the construction or expansion of recreational facilities. Overall, impacts on recreation would be less than significant.

## 2.3.17 Transportation and Traffic

| Issues and Supporting Information Sources | 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, roadways, bicycle and pedestrian facilities. | ☐ | ☒ | ☐ | ☐ |
| b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)? | ☐ | ☐ | ☒ | ☐ |
| c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | ☐ | ☒ | ☐ | ☐ |
| d) Result in inadequate emergency access? | ☐ | ☒ | ☐ | ☐ |

**Discussion:** The proposed Project is located in the Antelope Valley within the City of Palmdale and unincorporated areas of Los Angeles County. Contractors and staff would use State Route (SR) 138, which extends easterly from the SR 14/SR 138 Interchange, to access Project areas. SR 138 extends south to merge with Palmdale Boulevard to become an east-west highway. Bus service is provided through the Antelope Valley Transit Authority (AVTA). Several AVTA bus routes pass through the Project area, including routes 1, 2, 3, 8, 51, 52, and 98. The Metrolink Antelope Valley Line also runs in a north south direction through the Project area along SR 14. The Metrolink Palmdale stop is located near the intersection of E Avenue Q and SR 14 (AVTA 2025).

No pedestrian facilities (e.g., sidewalks, crosswalks, and pedestrian signals) are located within the proposed AWPF site. No bikeways are located in the Project areas per the City's Bikeway and Multi-Purpose Trail Plan (City of Palmdale 2019) and Los Angeles County Bikeways Map (County of Los Angeles 2016).

### Applicable Regulatory Context

**State**

- California Streets and Highways Code: Establishes Caltrans encroachment regulations applicable to pipeline construction within or adjacent to roadways and to the movement of construction crews and equipment. Permits are required for transporting oversized loads, certain materials, and for construction-related traffic disturbances.[1] The California Vehicle Code regulates vehicle licensing, size, weight, and load for vehicles operating on highways.[2]
- Project Development Procedures Manual: Chapter 17 of the Caltrans Project Development Procedures Manual outlines requirements for encroachment onto State highways and for

[1] California Streets and Highways Code §§ 660–711

[2] California Vehicle Code §§ 35000–35796

the placement and protection of utilities within State highway rights-of-way (Caltrans, 2022).

**Local**

- Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy): Connect SoCal is a long-range visioning plan designed to expand mobility options and promote sustainable growth by integrating transportation networks, planning strategies, and stakeholder collaboration. The 2024 plan was approved by the Southern California Association of Governments (SCAG) in April 2024 (SCAG 2024).
- Congestion Management Program (CMP): The Los Angeles County Metropolitan Transportation Authority (LACMTA) prepared the CMP in 2010, summarizing 18 years of highway and transit monitoring and 15 years of local growth monitoring. The CMP outlines requirements, implementation responsibilities, and transit system expansion, and provides level of service data and traffic growth projections (LACMTA 2010).
- City of Palmdale General Plan: The Circulation and Mobility Element of the City's General Plan addresses upgrades to pedestrian walkways, surface streets, arterial and regional highways, public transportation, rail, and air service. Recreational trails and bikeways are addressed in the Parks, Recreation, and Open Space Element. The 2045 General Plan serves as a blueprint for the City's long-term vision (City of Palmdale 2022a).
- County of Los Angeles General Plan: The Los Angeles County General Plan 2035 Mobility Element provides strategies for an efficient, multimodal transportation network, assessing system challenges and offering policy guidance to achieve long-term mobility goals. The Highway Plan and Bicycle Master Plan supplement this element (County of Los Angeles 2022).

a) **Less Than Significant Impact with Mitigation Incorporated**. Construction of the Project would generate vehicle trips associated with both construction worker commutes and material and equipment hauling. During Project construction, the workforce would average approximately 36 workers per day (21 craft workers and 15 management staff), and construction would occur over an estimated 29-month period. Normal work hours would be Monday through Friday, 7:00 a.m. to 7:00 p.m. Equipment deliveries would include concrete trucks, flatbed semis, low-boy semis, and dump trucks, with an estimated 1,768 total delivery trips over the construction period (including 464 concrete truck trips and 694 dump truck trips). These increases in daily trips on local and regional roadways could temporarily affect roadway capacity and circulation. Slower movements and larger turning radii of construction trucks compared to passenger vehicles could also reduce roadway efficiency. Construction of pipelines would impede traffic flow and disrupt AVTA bus routes since pipelines installed in existing streets could temporarily require partial or complete road closures. Per mitigation measure TRA-1, PWD would develop and implement a TMP for the Project construction phase which includes construction worker and truck routes, construction traffic control and site access, construction phasing and staffing levels, pavement maintenance, and mitigations for short-term impacts. The TMP would recommend various mitigation measures, including minimizing deliveries during the A.M. and P.M. peak travel hours, as well as alternative haul

routes to avoid traffic disruption to minimize disturbance to traffic flow. With implementation of mitigation measure TRA-1, impacts on the circulation system would be less than significant.

b) **Less Than Significant Impact**. The City of Palmdale applies the County of Los Angeles guidelines for review of vehicle miles traveled (VMT) assessment pursuant to the Office of Land Use and Climate Innovation Technical Advisory on Evaluating Transportation Impacts in CEQA (State of California 2018). The VMT guidelines recommend screening criteria to identify types, characteristics, or locations of projects that would not result in significant impacts to VMT. If a project meets screening criteria, then it is presumed that VMT impacts would be less than significant for the project and a detailed VMT analysis is not required. The County's screening criteria for non-retail project trip generation is a net increase of 110 or more daily vehicle trips. Since the expected daily staff levels on the site would be 5 to 7 employees, the Project is expected to generate less than 110 average daily trips (ADT) and would be exempted from further VMT analysis. Construction VMT would be temporary and would not be applicable to the transportation thresholds of significance recommended in the LCI Technical Advisory, which are based on a measurement of the operational average VMT per capita. Therefore, the Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). Impacts would be less than significant.

c) **Less Than Significant Impact with Mitigation Incorporated**. Service roads would be constructed throughout the AWPF site, surrounding and connecting the buildings to facilitate operational and maintenance access. A primary access road along the southern side would support site entry for maintenance vehicles and chemical deliveries, leading directly to the chemical area located on the south side of the Process Building. Roadway design would be developed in accordance with the City of Palmdale Public Works Standards, PWD maintenance requirements, and applicable industry design guidelines including AASHTO and Caltrans. Roadways would support safe and durable access for operational, maintenance, and emergency vehicles throughout the facility. Circulation routes will be designed for two-way traffic where needed, with minimum lane widths of 32 feet to meet fire department access requirements. Secondary or service drives may have reduced widths where permitted. Roadway geometry, including turning radii and hammerheads, would accommodate large maintenance trucks and chemical delivery vehicles. Road striping, traffic signage, and site lighting would be included to enhance visibility and safety. Pedestrian safety features would be integrated into the design, including walkways and crossing areas as appropriate. Coordination with utility corridors and drainage infrastructure would ensure roadway designs are fully integrated into the overall site layout and maintainable per PWD standards. With implementation of these design considerations, the Project would not increase hazards due to a design feature like a sharp curve or dangerous intersection.

Construction would involve delivery of heavy equipment and materials to the AWPF site, PWRP, brine ponds, Well 37 site, and along pipeline alignments. Conveyance facilities (including the tertiary effluent pipeline, brine pipeline, recycled water pipeline, and sewer) would be installed underground within existing roadway rights-of-way. Temporary lane closures during trenching and installation could create short-term traffic conflicts. However, oversize loads would be required to comply with California Vehicle Code and Caltrans

requirements pertaining to licensing, size, weight, and roadway encroachment of construction vehicles.

Operation and maintenance activities would be contained within the AWPF, PWRP, brine pond sites, and Well 37 site. Since pipelines would be installed underground within existing rights-of-way they would not present a permanent hazard to roadway users.

Mitigation measure TRA-1 would require preparation of a TMP including development of Project-specific traffic counts and recommendations for construction-related oversize haul routes. Implementation of mitigation measure TRA-1 and compliance with applicable California Vehicle Code and Caltrans requirements would minimize the potential for hazards to other vehicles to less than significant levels.

c) **Less Than Significant Impact with Mitigation Incorporated**. Fire protection and police services within the Project area are provided by the LACFD and Los Angeles County Sheriff's Department. During construction, temporary lane closures or detours associated with pipeline installation in existing roadway rights-of-way (e.g., 30th Street East, East Avenue P, and 40th Street East) could delay emergency response times or disrupt emergency service delivery if not properly managed. To address this, mitigation measure TRA-1 would require preparation and implementation of a TMP that includes coordination with emergency service providers at least one month prior to construction, advance public notifications, and measures to maintain emergency access at all times. The TMP would also identify alternate routes and staging practices to avoid blocking critical corridors.

During operations, vehicular access to the AWPF site would be from 25$^{th}$ Street East via gated entrances and internal service roads. The Project would be designed to allow proper ingress and egress and comply with LACFD requirements for emergency vehicle turning radii and fire apparatus access, as confirmed through Fire Department plan review. Similarly, site security features (e.g., motorized gates) would be designed to allow emergency override access. The Project does not propose new public road closures or geometric changes that would conflict with emergency response routes or adopted emergency plans. Pipelines would be installed underground within existing rights-of-way, so they would not obstruct emergency access once construction is complete. With implementation of the TMP, coordination with Fire and Police prior to construction, and compliance with LACFD design standards, the Project would not result in inadequate emergency access. Therefore, impacts would be less than significant with mitigation incorporated.

**Mitigation Measure**

With implementation of the following mitigation measure, Project-related impacts on transportation and traffic would be less than significant.

**TRA-1: Transportation Management Plan.** Prior to construction, PWD shall require its construction contractor(s) to prepare and implement a Transportation Management Plan (TMP), subject to approval by the City of Palmdale and/or the County of Los Angeles, depending on jurisdiction. The TMP documents worker and truck routes, construction traffic control and site access, construction phasing and staffing levels, pavement maintenance and mitigations for short-term impacts. The plan shall include traffic counts at intersections near the proposed Project facilities to establish existing traffic conditions. Based on these counts, the plan shall recommend measures to minimize impacts on traffic flow. These measures shall include, but are not limited to:

- Identification of construction and delivery hours, with consideration of avoiding A.M. and P.M. peak periods.
- Specification of construction-related vehicle and oversize haul routes, including alternative routes to reduce traffic disruption.
- Limits on open trench length, delineation of work areas, and requirements for traffic control, flagging, and signage.
- Identification of access and parking restrictions.
- Designation of staging locations for construction activities.
- Identification of potential road or lane closures.
- Establishment of haul routes for construction-related traffic.
- Identification of alternative safe routes to maintain pedestrian and bicyclist safety during construction.

At least three days prior to construction, PWD shall coordinate with emergency service providers (police, fire, and others) to notify them of the construction schedule, Project alignment, and potential delays. PWD shall identify roadways and access points critical for emergency response and minimize disruptions or closures at these locations.

The plan shall also include provisions for traffic control measures such as barricades, warning signs, cones, lights, and flaggers to ensure safe circulation for vehicles, bicycles, pedestrians, and emergency responders.

## 2.3.18 Tribal Cultural Resources

| Issues and Supporting Information Sources | Potentially Significant Impact | Less Than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| a) Would the project 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 | ☐ | ☒ | ☐ | ☐ |
| 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | ☐ | ☒ | ☐ | ☐ |

**Discussion:** California Assembly Bill (AB) 52, through its implementing regulations, requires that lead agencies consult with California Native American tribes that are traditionally and culturally affiliated with the geographic area of the proposed Project and who have requested in writing to be informed by the lead agency of proposed projects in the tribe's geographic area (PRC Section 21080.3.1[b] and [d]).

In a letter dated January 13, 2023, the NAHC reported that the results of the SLF search failed to indicate the presence of Native American cultural resources in the immediate proposed Project site; though they stated that negative results do not preclude the presence of Native American cultural resources within the Project site. The NAHC also provided a list of Native American tribes who are traditionally or culturally affiliated with the geographic area of the Project and may have direct knowledge of Native American cultural resources in the Project area.

Consultation with Native American organizations and individuals was initiated to satisfy the requirements of AB 52. PWD sent consultation letters via certified mail on March 1, 2023, to the following six Native American tribes that are traditionally and culturally affiliated within the Pure Water Antelope Valley Project area informing them of their opportunity to consult on the Project's potential impacts to Tribal cultural resources.

- Fernandeño Tataviam Band of Mission Indians (FTBMI)
- Morongo Band of Mission Indians
- Quechan Tribe of the Fort Yuma Reservation

- San Fernando Band of Mission Indians
- Yuhaaviatam of San Manuel Nation (formerly known as the San Manuel Band of Mission Indians) (YSMN)
- Serrano Nation of Mission Indians

The three responses received to date are summarized below.

**Morongo Band of Mission Indians.** On March 28, 2023, Ann Brierty, Tribal Historic Preservation Officer with the Morongo Band of Mission Indians stated in a letter to the District that the "Project is not located within the ancestral territory and traditional use area of the Cahuilla and Serrano people of the Morongo Band of Mission Indians." The Morongo Band of Mission Indians did not request to consult with the District for the Project.

**Yuhaaviatam of San Manuel Nation.** On March 22, 2023, Ryan Nordness, Cultural Resource Analyst with YSMN, sent an email to the District stating that "The proposed project area exists within Serrano ancestral territory and, therefore, is of interest to the Tribe. However, due to the nature and location of the proposed project, and given the CRM Department's present state of knowledge, YSMN does not have any concerns with the project's implementation, as planned, at this time." The tribe did not request consultation pursuant to CEQA unless there is an unanticipated discovery of cultural resources during Project implementation. However, the YSMN did recommend mitigation measures be implemented for the Project, as included below.

**Quechan Indian Tribe.** On March 9, 2023, Jill McCormick, Historic Preservation Officer with the Quechan Indian Tribe, sent an email to the District stating "we do not wish to comment on this project. We defer to the more local Tribes and support their determinations on this matter."

a) i and ii) **Less than Significant Impact with Mitigation Incorporated.** Since significant tribal cultural resources are not known for the proposed Project sites, Project construction and operation would not be anticipated to significantly impact Tribal Cultural Resources. However, cultural resources mitigation measures (see Sections 2.3.5) and mitigation measures TCR-1 shall be implemented to further protect unknown tribal cultural resources. As mitigated, the proposed Project would have a less than significant impact on CRHR-listed or eligible resources, or on resources significant to a California Native American tribe.

**Mitigation Measures**

With implementation of the following mitigation measure TCR-1, and mitigation measures CUL-1 through CUL-4, Project-related impacts on Tribal cultural resources would be less than significant.

**TCR-1 Tribal Notification.** In the event that an archaeological resource inadvertently discovered during Project construction is determined to be potentially of Native American origin based on the initial assessment of the find by a qualified archaeologist pursuant to California Public Resources Code Section 21083.2(i), the Native American tribes that consulted on the proposed Project pursuant to California Assembly Bill 52 shall be notified and be provided information about the

find to allow for early input from the tribal representatives with regards to the potential significance and treatment of the resource.

If, as a result of the resource evaluation and tribal consultation process, the resource is considered to be a tribal cultural resource in accordance with California PRC Section 21074, determined to be eligible for inclusion in the CRHR or a local register of historical resources or determined to be significant by PWD (the CEQA lead agency), the qualified archaeologist shall monitor all remaining ground-disturbing activities in the area of the resource, and a tribal monitor from a consulting Native American tribe shall be invited to monitor the ground-disturbing activities. The tribal monitor shall be ancestrally affiliated with the Project area and qualified by their tribe to monitor tribal cultural resources.

The input of all consulting tribes shall be taken into account in the preparation of any required treatment plan for the resources prepared by the qualified archaeologist. Work in the area of the discovery may not resume until evaluation and treatment of the resource are completed and/or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while evaluation and treatment of the resource takes place.

Archaeological/cultural documents created as a part of the Project shall be supplied to PWD for dissemination to the consulting Native American Tribes and consultation will continue throughout the life of the Project.

## 2.3.19 Utilities and Service Systems

| Issues and Supporting Information Sources | 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? | ☐ | ☐ | ☒ | ☐ |
| b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? | ☐ | ☐ | ☒ | ☐ |
| 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? | ☐ | ☐ | ☒ | ☐ |
| 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? | ☐ | ☐ | ☒ | ☐ |
| e) Comply with federal, state, and local management and reduction statues and regulations related to solid waste? | ☐ | ☐ | ☒ | ☐ |

**Discussion:** PWD supplies water to the Project as well as the southeastern portion of the City of Palmdale and areas of unincorporated Los Angeles County. PWD provides their customers with a combination of groundwater, surface water, and recycled water. Groundwater comes from PWD's operation of groundwater wells and surface water is supplied from the SWP and Littlerock Creek. PWD has a direct Table "A" amount of 21,300 acre-feet from the SWP. Surface water from Littlerock Creek is stored in Littlerock Dam Reservoir, which is jointly owned by PWD and Littlerock Creek Irrigation District. Both sources of surface water are transferred to Palmdale Lake for local storage. Recycled water available for use within the PWD service area is supplied by LACSD's PWRP. A contract with LACSD entitles PWD to up to 5,325 AFY of recycled water.

LACSD provides wastewater management services in the Project area with PWRP providing tertiary treatment for up to 12,000 AFY of wastewater generated in and around the City (LACSD 2025). On average, approximately 10,700 AFY of recycled water is produced at PWRP.

Storm water drainage infrastructure in Palmdale consists of a network of flood control channels and culverts maintained by the Los Angeles County Flood Control District (LACFCD). Floodwaters are restricted by catch basins feeding into a network of 396 miles of gravity flow sewer mainlines and 2,790 feet of forced flow mainlines. There are approximately 172 catch basins within the City's limits. Two pump stations operate within the city. LACFCD maintains three debris retention basins along the southern edge of the city.

Currently, Waste Management of Antelope Valley (WMAV) is the local division of Waste Management, Inc. that provides collection, disposal, recycling, and environmental services in the Project area. WMAV operates two landfills: the Antelope Valley Recycling and Disposal Facility located at 1200 West City Ranch Road in Palmdale and the Lancaster Landfill and Recycling Center located at 600 East Avenue F in Lancaster. Materials accepted by both landfills include municipal solid wastes, industrial waste, construction and demolition material, contaminated soils, and waste tires.

Electricity is provided to the Project area by SCE and natural gas services are provided by SCGC.

a) **Less Than Significant Impact**. The Project involves construction and operation of an AWPF on a PWD-owned parcel, groundwater injection wells, associated product water pipelines, a tertiary effluent pump station at the PWRP and pipeline, a replacement groundwater well and monitoring wells, new sewer and recycled water pipelines, and a small-diameter brine pipeline to existing LACSD oxidation ponds for brine disposal. These facilities are integral to the Project and do not represent off-site relocation or expansion of unrelated water, wastewater, storm drainage, natural gas, or telecommunications infrastructure. Project construction activities would require grading, excavation, and other soil disturbing activities, which would result in soil erosion and the migration of soil and sediment in stormwater runoff. Fuels, lubricants, and other hazardous materials associated with construction equipment could adversely affect water if spilled or stored improperly. Implementation of BMPs as part of the construction SWPPP would control erosion and sediment during Project construction.

   The Project would require electrical service from SCE and includes a standby generator for emergency power. These improvements, potentially including a new substation, would occur on or near the Project site and would not require construction or relocation of off-site electric power facilities. No natural gas or telecommunications extensions beyond standard service connections are proposed. Because all utility improvements are limited to on-site (or nearby) facilities necessary for Project function, the Project would not require or result in the relocation or construction of new or expanded off-site utility infrastructure that could cause significant environmental impacts. Therefore, impacts would be less than significant.

b) **Less Than Significant Impact.** Construction of the Project would use water for dust control, concrete mixing, and equipment cooling. PWD's water supply reliability can be impacted by many factors, including changes in the availability of supplies due to climatic or infrastructure changes, as well as the efficient use of those supplies in both average and dry periods (PWD 2021). However, PWD has invested in diversifying its water supply portfolio with imported water, local and regional supplies, groundwater, and recycled water. Due to this diversification, it is anticipated that PWD would have sufficient water for construction of the Project.

   Project operations would involve treating wastewater effluent for IPR. During operations, limited quantities of potable water would be used intermittently for activities such as equipment cleaning and maintenance; these volumes are minor relative to PWD's available supplies and do not represent a new, material potable demand. Operation of the AWPF would increase supply reliability by 4.75 mgd in the near term (with potential buildout to 10 mgd), consistent with the SWRP Update (2023). PWD would have sufficient water supply to support Project operations, and the Project would increase PWD's overall water supply reliability. The

Project would be beneficial for water supply, and adverse impacts would be less than significant.

c) **Less Than Significant Impact.** The Project would include treatment of wastewater effluent for IPR. Waste streams from the MF and RO processes and the Administration Building would be pumped to the sewer for further treatment by LACSD. The Project would not result in unplanned population growth (see Section 2.3.14) and would serve the existing and projected population growth in PWD's service area as indicated in the 2020 Urban Water Management Plan. Operation of the Project would increase the treatment capacity available to manage wastewater within PWD's service area. Therefore, impacts would be less than significant.

d) e) **Less Than Significant Impact**. Construction of the Project would result in a temporary increase in solid waste generation. PWD would dispose of debris and other solid wastes generated from construction activities in accordance with local and State regulations. It is anticipated that any solid waste generated from construction of the Project would be transferred to the Antelope Valley Public Landfill, which is operated by Antelope Valley Recycling and Disposal. The Antelope Valley Public Landfill has a remaining capacity of 17,911,225 cubic yards and a maximum capacity of 30,200,000 cubic yards (CalRecycle 2025). Based on the remaining capacity of the landfill, construction of the Project would not generate solid waste in excess of available disposal capacities.

Operation of the Project would generate brine discharge from the RO systems which would be conveyed to the brine ponds for evaporation. It is anticipated that solids disposal (approximately 4,400 cy/year) would be infrequent. After approximately 20 years of use (life cycle of the liner), each pond cell would be taken offline for removal of all solids and replacement of the liner. It is anticipated that a biosolids disposal company would dispose of the solids in accordance with applicable local and State regulations.

Construction of the Project would generate solid waste, including excavated soils. Construction of the Project would comply with the Chapter 20.87 of Los Angeles County Code requiring recycling of at least 65 percent of the waste generated during construction and with Section 5.408.1.1 of the California Green Building Standards, which requires preparation of a Construction Waste Management Plan that would disclose how much waste would be removed from the waste stream and submittal of this information to the City Building and Safety Division. Since the proposed Project would comply with all applicable solid waste regulations, impacts would be less than significant.

## 2.3.20 Wildfire

| Issues and Supporting Information Sources | 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 as classified as very high fire hazard severity zones, would the project: | | | | |
| a) Substantially impair an emergency response plan or emergency evacuation plan? | ☐ | ☒ | ☐ | ☐ |
| b) Due to slope, prevailing winds, or other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? | ☐ | ☐ | ☐ | ☒ |
| 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? | ☐ | ☐ | ☒ | ☐ |
| d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? | ☐ | ☐ | ☐ | ☒ |

**Discussion:** Fire protection for the Project area is provided by the Los Angeles County Fire Department, the Palmdale Volunteer Fire Department and the California Department of Forestry and Fire Protection (CalFire). CalFire is required by state law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. Per CalFire's Fire Hazard Severity Zone (FHSZ) Viewer, the majority of the AWPF 20-acre parcel is mapped as Moderate FHSZ in the Local Responsibility Area (LRA), the brine ponds and PWRP are not mapped but are adjacent to parcels mapped as Moderate FHSZ in the LRA, and the pipelines cross areas of Moderate and High FHSZ in the LRA (CalFire 2025). The closest State Responsibility Area (SRA) and the closest LRA Very High FHSZ are located over 2 miles southwest of the Project sites.

a) **Less Than Significant Impact with Mitigation Incorporated.** The City of Palmdale has an Emergency Operations Plan (2012) that outlines the coordination needed in the event of an evacuation but does not map specific evacuation routes. SR-14, the Antelope Valley Freeway, and SR-138, Pearblossom Highway, serve as the main travel routes for the City of Palmdale. During Project construction, equipment and vehicles would access the AWPF site via 25$^{th}$ Street East, the PWRP via 30$^{th}$ Street East, and the brine ponds via 40$^{th}$ Street West. These north-south roadways connect to SR-138 to the south which then connects to SR-14 to the west. Construction of Project pipelines would require temporary road closures, which could disrupt emergency vehicle access and impair emergency evacuation. Implementation of mitigation measure TRA-1 would require preparation of a construction TMP to minimize impacts to existing traffic conditions and maintain access for emergency response. As mitigated, impacts on emergency response or evacuation during Project construction would be less than significant.

Design of the AWPF would be done in coordination with the Los Angeles County Fire Department for consistency with applicable fire codes including site access, emergency vehicle turn-around, setbacks, fire suppression, and water supply requirements. With incorporation of these design considerations, operation of the Project would not disrupt or prevent emergency vehicle access to the Project site or in the Project vicinity. The Project would have no operational impacts on emergency response or evacuation planning.

b) **No Impact**. The proposed Project elements are not located in or near SRAs or lands classified as very high FHSZ in the LRA. Project facilities are water treatment, injection and conveyance facilities as well as ponds for brine disposal. Development of these Project elements would reduce onsite vegetation for the construction of the proposed buildings, pump station, injection wells, groundwater wells, and brine disposal ponds. No steep slopes are present or would be created as a result of the proposed Project. Construction and operation of these infrastructure elements would have no impact on the existing moderate risk of wildfire. Therefore, the Project would not expose Project occupants to pollutant concentrations from wildfire or the uncontrolled spread of wildfire. No impact would occur.

c) **Less Than Significant Impact.** The proposed Project elements are not located in or near SRAs or lands classified as very high FHSZ in the LRA. The proposed Project would not require installation of fuel breaks or emergency water sources. The Project would include creation of internal roadways at the AWPF and potentially the expansion of the power system including a new substation on the AWPF site. Roads would be designed in collaboration with Los Angeles County Fire Department and constructed to allow fire and maintenance vehicle access. Design of the new electrical substation, if required, would be consistent with SCE requirements. Landscaping at the AWPF would be limited to drought-resistant plantings. Therefore, construction and operation of the Project would have a less than significant impact on fire risk associated with installation or maintenance of infrastructure.

d) **No Impact**. The proposed Project elements are not located in or near SRAs or lands classified as very high FHSZ in the LRA. The Project sites and surrounding vicinity are flat to very gently sloping. Landslides and slope instability are not hazards identified for the Project area. Drainage changes associated with the Project would be localized and minimal and would not result in excess runoff that could result in post-fire flooding or landslides compared to existing conditions. Therefore, construction and operation of the Project would not expose people or structures to significant post-fire risks. Therefore, there would be no impact.

## 2.3.21 Mandatory Findings of Significance

| Issues and Supporting Information Sources | Potentially Significant Impact | Less Than Significant With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| a) Does the project have the potential to 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, 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? | ☐ | ☒ | ☐ | ☐ |
| b) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? | ☐ | ☐ | ☐ | ☒ |
| c) Does the project have impacts that are individually limited, but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, effects of other current projects, and the effects of probable future projects.)? | ☐ | ☐ | ☒ | ☐ |
| d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☒ | ☐ | ☐ |

**Discussion:**

a) **Less than Significant Impact with Mitigation Incorporated.** Construction and operation of the proposed Project have the potential to impact biological, tribal, cultural, and paleontological resources. However, with incorporation of mitigation measures, the proposed Project would not substantially degrade biological resources and impacts would be less than significant. Cultural resources are not known for the Project site, however BMPs, standard measures, and mitigation measures have been identified to protect resources in the unlikely event they are discovered during construction. The proposed Project would not eliminate important examples of the major periods of California history or prehistory. With implementation of mitigation measures, impacts to cultural and tribal resources would be less than significant.

b) **No Impact**. The long-term goal of the Project is to provide water supply reliability in the PWD service area by recharging the Antelope Valley Groundwater Basin. Mitigation measures, BMPs, and standard measures to be implemented during Project construction and operation would prevent significant environmental effects. There are no short-term goals related to the Project that would be disadvantageous to this long-term goal. Therefore, there would be no impacts.

c) **Less than Significant Impact.** Combined impacts of the proposed Project together with other projects identified in the SWRP Update would be cumulatively beneficial for water supply in the Project area. Since Project construction would occur over 2+ years, it is anticipated that

several development and/or transportation projects would be constructed in the Project vicinity concurrently with the proposed Project. However, construction for the proposed Project would be isolated to a few parcels. Additionally, environmental impacts related to the Project would be mitigated to less than significant levels. Therefore, the proposed Project would not be anticipated to result in cumulatively considerable impacts. Overall, impacts would be less than significant.

d) **Less than Significant Impact with Mitigation Incorporated.** The Project as mitigated would result in less than significant impacts on aesthetics, air quality, geology and soils, hazards, noise, traffic, and wildfire during Project construction. Therefore, with incorporation of mitigation measures, adverse impacts on human beings would not be substantially adverse.

# Section 3
# References, Abbreviations and Report Preparation

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## 3.2 ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| **AB** | Assembly Bill |
| **ADA** | Americans with Disabilities Act |
| **ADT** | Average Daily Trips |
| **af** | acre-feet |
| **AIA** | Airport Influence Area |
| **AISC** | American Institute of Steel Construction |
| **ALUC** | Airport Land Use Commission |
| **ALUP** | Airport Land Use Plan |
| **APN** | Assessor Parcel Number |
| **ARDR** | Aquatic Resources Delineation Report |
| **ARPA** | Archaeological Resources Protection Act |
| **AVAQMD** | Antelope Valley Air Quality Management District |
| **AVTA** | Antelope Valley Transit Authority |
| **AWPF** | Advanced Water Purification Facility |
| **AWT** | Advanced Water Treatment |
| **BERD** | Built Environment Resources Directory |
| **bgs** | below ground surface |
| **BIOS** | Biogeographic Information and Observation System |
| **BMP** | best management practice |
| **BRTR** | Biological Resources Technical Report |
| **BSA** | Biological Study Area |
| **CAAQS** | California Ambient Air Quality Standards |
| **CalEPA** | California Environmental Protection Agency |
| **Caltrans** | California Department of Transportation |
| **CARB** | California Air Resources Board |
| **CCR** | California Code of Regulations |
| **CCRO** | Closed-Circuit Reverse Osmosis |
| **C&D** | Construction & Demolition |
| **CDFW** | California Department of Fish and Wildlife |
| **CDOC** | California Department of Conservation |
| **CEQA** | California Environmental Quality Act |
| **CESA** | California Endangered Species Act |
| **CFR** | Code of Federal Regulations |

| | |
|---|---|
| **CGS** | California Geological Survey |
| **$CH_4$** | methane |
| **CIP** | clean-in-place |
| **CMP** | Congestion Management Plan |
| **CNDDB** | California Natural Diversity Database |
| **CNEL** | Community Noise Equivalent Level |
| **CNPS** | California Native Plant Society |
| **CO** | carbon monoxide |
| **$CO_2$** | carbon dioxide |
| **$CO_2e$** | carbon dioxide equivalent |
| **CRHR** | California Register of Historical Resources |
| **CRPR** | California Rare Plant Ranks |
| **cy** | cubic yard |
| **dB** | decibel |
| **dBA** | A-weighted decibel |
| **DCH** | Designated Critical Habitat |
| **DPM** | Diesel Particulate Matter |
| **DTSC** | Department of Toxic Substances Control |
| **DWR** | (California) Department of Water Resources |
| **EFZ** | Earthquake Fault Zone |
| **EIR** | Environmental Impact Report |
| **EPA** | (United States) Environmental Protection Agency |
| **EPIC** | Energy for Palmdale's Independent Choice |
| **EV** | Electric Vehicle |
| **FAA** | Federal Aviation Administration |
| **Farmland** | Prime Farmland, Unique Farmland, or Farmland of Statewide Importance |
| **FAT** | Full Advanced Treatment |
| **FEMA** | Federal Emergency Management Agency |
| **FESA** | Federal Endangered Species Act |
| **FHSZ** | Fire Hazard Severity Zone |
| **FHWA** | Federal Highway Administration |
| **FMMP** | Farmland Mapping and Monitoring Program |
| **FTA** | Federal Transit Administration |
| **FTBMI** | Fernandeño Tataviam Band of Mission Indians |
| **GHG** | greenhouse gas |

| | |
|---|---|
| **gpm** | gallon per minute |
| **GRRP** | groundwater replenishment reuse project |
| **GSP** | Groundwater Sustainability Plan |
| **GWP** | global warming potential |
| **GWR** | groundwater recharge |
| **HCP** | Habitat Conservation Plan |
| **HDPE** | high-density polyethylene |
| **HFC** | Hydrofluorocarbon |
| **Hp** | Horsepower |
| **HVAC** | Heating, Ventilation and Air Conditioning |
| **IPR** | Indirect Potable Reuse |
| **IRWM** | Integrated Regional Water Management |
| **IS** | Initial Study |
| **kWh** | kilowatt hour |
| **lbs** | Pounds |
| **LACALUC** | Los Angeles County Airport Land Use Committee |
| **LACFD** | Los Angeles County Fire Department |
| **LACM** | Los Angeles County Museum |
| **LACMTA** | Los Angeles County Metropolitan Transportation Authority |
| **LACSD** | Los Angeles County Sanitation Districts |
| **LAWA** | Los Angeles World Airports |
| **LID** | Low Impact Development |
| **LRA** | Local Responsibility Area |
| **MBTA** | Migratory Bird Treaty Act |
| **MC** | maintenance clean |
| **MCC** | Motor Control Center |
| **MCL** | Maximum Contaminant Level |
| **MF** | microfiltration |
| **mgd** | million gallons per day |
| **mg/L** | milligram per liter |
| **MGS** | Mohave Ground Squirrel |
| **MLD** | Most Likely Descendant |
| **MND** | Mitigated Negative Declaration |
| **mph** | miles per hour |
| **MS4** | municipal separate storm sewer system |

| | |
|---|---|
| **msl** | mean sea level |
| **MT** | metric tons |
| **MW** | megawatt |
| **$N_2O$** | nitrous oxide |
| **NAAQS** | National Ambient Air Quality Standards |
| **NAHC** | Native American Heritage Commission |
| **NaOH** | Sodium hydroxide |
| **NCCP** | Natural Community Conservation Plan |
| **$NF_3$** | nitrogen trifluoride |
| **NFPA** | National Fire Protection Association |
| **NL** | Notification Level |
| **$NO_2$** | nitrogen dioxide |
| **NOx** | nitrous oxides |
| **NOA** | Naturally Occurring Asbestos |
| **NPDES** | National Pollutant Discharge Elimination System |
| **NRCS** | Natural Resources Conservation Service |
| **NRHP** | National Register of Historic Places |
| **$O_3$** | Ozone |
| **OEHHA** | Office of Environmental Health Hazard Assessment |
| **O&M** | Operations & Maintenance |
| **Pb** | Lead |
| **PCS** | Process Control System |
| **PEIR** | Program Environmental Impact Report |
| **PERP** | Portable Equipment Registration Program |
| **PFC** | perfluorocarbon |
| **PM** | particulate matter |
| **$PM_{10}$** | particulate matter 10 microns or less in diameter |
| **$PM_{2.5}$** | particulate matter 2.5 microns or less in diameter |
| **ppb** | parts per billion |
| **PPV** | peak particle velocity |
| **PQS** | professional qualifications standards |
| **PRA** | Paleontological Resources Assessment |
| **PRC** | Public Resources Code |
| **PWD** | Palmdale Water District |
| **PWRP** | Palmdale Water Reclamation Plant |

| | |
|---|---|
| **RC** | Recovery Check |
| **RMS** | root mean square |
| **RO** | reverse osmosis |
| **ROG** | Reactive Organic Gas |
| **ROLD** | Rural Outdoor Lighting District |
| **SB** | Senate Bill |
| **SCADA** | supervisory control and data acquisition |
| **SCAG** | Southern California Association of Governments |
| **SCAQMD** | South Coast Air Quality Management District |
| **SCCIC** | South Central Coastal Information Center |
| **SCE** | Southern California Edison |
| **SCGC** | Southern California Gas Company |
| **$SF_6$** | sulfur hexafluoride |
| **SFHA** | Special Flood Hazard Area |
| **SGMA** | Sustainable Groundwater Management Act |
| **SIP** | State Implementation Plan |
| **SLCP** | Short-lived climate pollutant |
| **SLF** | Sacred Lands File |
| **SMARA** | Surface Mining and Reclamation Act |
| **SNA** | Significant Natural Areas |
| **$SO_2$** | sulfur dioxide |
| **SOI** | Secretary of the Interior |
| **SR** | State Route |
| **SRA** | State Responsibility Area |
| **SVP** | Society of Vertebrate Paleontology |
| **SWA** | Surface Water Augmentation |
| **SWPPP** | Storm Water Pollution Prevention Plan |
| **SWRCB** | State Water Resources Control Board |
| **SWRP** | Strategic Water Resources Plan |
| **TAC** | toxic air contaminants |
| **TCE** | Trichloroethylene |
| **TMP** | Transportation Management Plan |
| **TN** | Total Nitrogen |
| **TOC** | Total Organic Carbon |
| **UCMP** | University of California Museum of Paleontology |

| | |
|---|---|
| **USDA** | United States Department of Agriculture |
| **USEPA** | United States Environmental Protection Agency |
| **USFWS** | United States Fish and Wildlife Service |
| **USGS** | United States Geological Survey |
| **UV/AOP** | ultraviolet/advanced oxidation processes |
| **VdB** | velocity in decibels |
| **VFD** | variable frequency drive |
| **VMT** | vehicle miles traveled |
| **VOC** | volatile organic compound |
| **WEAP** | worker environmental awareness program |
| **WMAV** | Waste Management of Antelope Valley |
| **WMP** | West Mojave Plan |
| **YSMN** | Yuhaaviatam of San Manuel Nation |
| **ZEV** | zero emission vehicle |

## 3.3 PREPARERS OF THE INITIAL STUDY

**Lead Agency:**

**Palmdale Water District**
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# Pure Water Antelope Valley

# CEQA Initial Study

APPENDIX A

Air Quality Modeling Output

# Palmdale Water AV Detailed Report

## Table of Contents

# 1. Basic Project Information

## 1.1. Basic Project Information

| Data Field | Value |
|---|---|
| Project Name | Palmdale Water AV |
| Construction Start Date | 11/17/2027 |
| Operational Year | 2030 |
| Lead Agency | — |
| Land Use Scale | Project/site |
| Analysis Level for Defaults | County |
| Windspeed (m/s) | 4.50 |
| Precipitation (days) | 13.0 |
| Location | 34.59787812365278, -118.09957481904654 |
| County | Los Angeles-Mojave Desert |
| City | Unincorporated |
| Air District | Antelope Valley AQMD |
| Air Basin | Mojave Desert |
| TAZ | 3655 |
| EDFZ | 7 |
| Electric Utility | Southern California Edison |
| Gas Utility | Southern California Gas |
| App Version | 2022.1.1.30 |

## 1.2. Land Use Types

| Land Use Subtype | Size | Unit | Lot Acreage | Building Area (sq ft) | Landscape Area (sq ft) | Special Landscape Area (sq ft) | Population | Description |
|---|---|---|---|---|---|---|---|---|
| General Heavy Industry | 36.9 | 1000sqft | 0.85 | 36,900 | 0.00 | 0.00 | — | — |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| User Defined Linear | 3.50 | Mile | 4.25 | 0.00 | 0.00 | — | — | — |
| Parking Lot | 18.0 | Space | 0.16 | 0.00 | 0.00 | — | — | — |
| Other Non-Asphalt Surfaces | 0.24 | 1000sqft | 0.01 | 0.00 | 0.00 | — | — | — |

### 1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

# 2. Emissions Summary

### 2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 1.74 | 1.45 | 12.6 | 18.4 | 0.03 | 0.30 | 0.49 | 0.79 | 0.28 | 0.12 | 0.39 | — | 3,336 | 3,336 | 0.13 | 0.05 | 1.76 | 3,356 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 11.0 | 10.7 | 43.8 | 120 | 0.19 | 1.83 | 5.44 | 5.94 | 1.68 | 1.59 | 2.08 | — | 20,777 | 20,777 | 0.84 | 2.26 | 0.76 | 20,855 |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 1.69 | 1.41 | 11.8 | 21.1 | 0.04 | 0.33 | 0.53 | 0.86 | 0.30 | 0.15 | 0.45 | — | 4,188 | 4,188 | 0.16 | 0.11 | 0.87 | 4,224 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.31 | 0.26 | 2.15 | 3.85 | 0.01 | 0.06 | 0.10 | 0.16 | 0.06 | 0.03 | 0.08 | — | 693 | 693 | 0.03 | 0.02 | 0.14 | 699 |

### 2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Year | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily - Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2028 | 1.74 | 1.45 | 12.6 | 18.4 | 0.03 | 0.30 | 0.49 | 0.79 | 0.28 | 0.12 | 0.39 | — | 3,336 | 3,336 | 0.13 | 0.05 | 1.76 | 3,356 |
| 2029 | 1.66 | 1.39 | 12.3 | 18.1 | 0.03 | 0.27 | 0.49 | 0.76 | 0.25 | 0.12 | 0.36 | — | 3,327 | 3,327 | 0.13 | 0.05 | 1.61 | 3,346 |
| Daily - Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2027 | 7.42 | 6.23 | 43.8 | 120 | 0.19 | 1.83 | 1.06 | 2.89 | 1.68 | 0.40 | 2.08 | — | 20,777 | 20,777 | 0.84 | 0.19 | 0.05 | 20,855 |
| 2028 | 7.13 | 5.98 | 40.4 | 120 | 0.19 | 1.63 | 5.44 | 5.94 | 1.50 | 1.59 | 2.07 | — | 20,772 | 20,772 | 0.84 | 2.26 | 0.76 | 20,850 |
| 2029 | 2.12 | 1.86 | 12.3 | 17.2 | 0.03 | 0.27 | 0.49 | 0.76 | 0.25 | 0.12 | 0.36 | — | 3,273 | 3,273 | 0.12 | 0.05 | 0.04 | 3,291 |
| 2030 | 11.0 | 10.7 | 12.1 | 17.0 | 0.03 | 0.24 | 0.49 | 0.73 | 0.22 | 0.12 | 0.34 | — | 3,264 | 3,264 | 0.12 | 0.05 | 0.04 | 3,282 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2027 | 0.65 | 0.55 | 3.86 | 10.5 | 0.02 | 0.16 | 0.09 | 0.25 | 0.15 | 0.04 | 0.18 | — | 1,831 | 1,831 | 0.07 | 0.02 | 0.07 | 1,838 |
| 2028 | 1.69 | 1.41 | 11.8 | 21.1 | 0.04 | 0.33 | 0.53 | 0.86 | 0.30 | 0.15 | 0.45 | — | 4,188 | 4,188 | 0.16 | 0.11 | 0.87 | 4,224 |
| 2029 | 1.18 | 0.98 | 8.82 | 12.4 | 0.02 | 0.19 | 0.35 | 0.54 | 0.18 | 0.08 | 0.26 | — | 2,347 | 2,347 | 0.09 | 0.03 | 0.50 | 2,360 |
| 2030 | 0.82 | 0.78 | 1.49 | 2.13 | < 0.005 | 0.03 | 0.06 | 0.09 | 0.03 | 0.01 | 0.04 | — | 405 | 405 | 0.01 | 0.01 | 0.08 | 407 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2027 | 0.12 | 0.10 | 0.70 | 1.92 | < 0.005 | 0.03 | 0.02 | 0.05 | 0.03 | 0.01 | 0.03 | — | 303 | 303 | 0.01 | < 0.005 | 0.01 | 304 |
| 2028 | 0.31 | 0.26 | 2.15 | 3.85 | 0.01 | 0.06 | 0.10 | 0.16 | 0.06 | 0.03 | 0.08 | — | 693 | 693 | 0.03 | 0.02 | 0.14 | 699 |
| 2029 | 0.21 | 0.18 | 1.61 | 2.27 | < 0.005 | 0.03 | 0.06 | 0.10 | 0.03 | 0.01 | 0.05 | — | 389 | 389 | 0.01 | 0.01 | 0.08 | 391 |
| 2030 | 0.15 | 0.14 | 0.27 | 0.39 | < 0.005 | 0.01 | 0.01 | 0.02 | 0.01 | < 0.005 | 0.01 | — | 67.1 | 67.1 | < 0.005 | < 0.005 | 0.01 | 67.5 |

## 2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unmit. | 19.1 | 49.6 | 39.2 | 132 | 0.07 | 1.40 | 1.35 | 2.75 | 1.40 | 0.34 | 1.74 | 41.0 | 31,491 | 31,532 | 12.6 | 0.50 | 13.7 | 32,009 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 18.7 | 49.3 | 39.2 | 129 | 0.06 | 1.40 | 1.35 | 2.74 | 1.40 | 0.34 | 1.74 | 41.0 | 31,358 | 31,399 | 12.6 | 0.50 | 9.71 | 31,874 |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 2.16 | 3.04 | 1.65 | 8.61 | 0.01 | 0.05 | 0.93 | 0.98 | 0.05 | 0.24 | 0.28 | 41.0 | 24,581 | 24,622 | 7.32 | 0.45 | 10.8 | 24,949 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.39 | 0.55 | 0.30 | 1.57 | < 0.005 | 0.01 | 0.17 | 0.18 | 0.01 | 0.04 | 0.05 | 6.79 | 4,070 | 4,076 | 1.21 | 0.07 | 1.79 | 4,131 |

## 2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Sector | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 1.04 | 0.98 | 0.61 | 6.79 | 0.01 | 0.01 | 1.35 | 1.36 | 0.01 | 0.34 | 0.35 | — | 1,467 | 1,467 | 0.07 | 0.07 | 4.12 | 1,492 |
| Area | 1.14 | 1.11 | 0.01 | 1.60 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 6.60 | 6.60 | < 0.005 | < 0.005 | — | 6.62 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 23,392 | 23,392 | 2.96 | 0.36 | — | 23,573 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 16.4 | 35.1 | 51.5 | 1.68 | 0.04 | — | 106 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 24.7 | 0.00 | 24.7 | 2.46 | 0.00 | — | 86.3 |
| Refrig. | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9.61 | 9.61 |
| Stationary | 17.0 | 47.5 | 38.6 | 123 | 0.05 | 1.39 | 0.00 | 1.39 | 1.39 | 0.00 | 1.39 | 0.00 | 6,591 | 6,591 | 5.45 | 0.03 | 0.00 | 6,736 |
| Total | 19.1 | 49.6 | 39.2 | 132 | 0.07 | 1.40 | 1.35 | 2.75 | 1.40 | 0.34 | 1.74 | 41.0 | 31,491 | 31,532 | 12.6 | 0.50 | 13.7 | 32,009 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 0.94 | 0.88 | 0.67 | 5.46 | 0.01 | 0.01 | 1.35 | 1.36 | 0.01 | 0.34 | 0.35 | — | 1,341 | 1,341 | 0.07 | 0.07 | 0.11 | 1,363 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 0.85 | 0.85 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 23,392 | 23,392 | 2.96 | 0.36 | — | 23,573 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 16.4 | 35.1 | 51.5 | 1.68 | 0.04 | — | 106 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 24.7 | 0.00 | 24.7 | 2.46 | 0.00 | — | 86.3 |
| Refrig. | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9.61 | 9.61 |
| Stationary | 17.0 | 47.5 | 38.6 | 123 | 0.05 | 1.39 | 0.00 | 1.39 | 1.39 | 0.00 | 1.39 | 0.00 | 6,591 | 6,591 | 5.45 | 0.03 | 0.00 | 6,736 |
| Total | 18.7 | 49.3 | 39.2 | 129 | 0.06 | 1.40 | 1.35 | 2.74 | 1.40 | 0.34 | 1.74 | 41.0 | 31,358 | 31,399 | 12.6 | 0.50 | 9.71 | 31,874 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 0.66 | 0.61 | 0.47 | 4.07 | 0.01 | 0.01 | 0.93 | 0.93 | 0.01 | 0.24 | 0.24 | — | 950 | 950 | 0.05 | 0.05 | 1.23 | 967 |
| Area | 0.99 | 0.98 | 0.01 | 0.79 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 3.25 | 3.25 | < 0.005 | < 0.005 | — | 3.27 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 23,392 | 23,392 | 2.96 | 0.36 | — | 23,573 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 16.4 | 35.1 | 51.5 | 1.68 | 0.04 | — | 106 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 24.7 | 0.00 | 24.7 | 2.46 | 0.00 | — | 86.3 |
| Refrig. | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9.61 | 9.61 |
| Stationary | 0.52 | 1.45 | 1.17 | 3.76 | < 0.005 | 0.04 | 0.00 | 0.04 | 0.04 | 0.00 | 0.04 | 0.00 | 201 | 201 | 0.17 | < 0.005 | 0.00 | 205 |
| Total | 2.16 | 3.04 | 1.65 | 8.61 | 0.01 | 0.05 | 0.93 | 0.98 | 0.05 | 0.24 | 0.28 | 41.0 | 24,581 | 24,622 | 7.32 | 0.45 | 10.8 | 24,949 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 0.12 | 0.11 | 0.09 | 0.74 | < 0.005 | < 0.005 | 0.17 | 0.17 | < 0.005 | 0.04 | 0.04 | — | 157 | 157 | 0.01 | 0.01 | 0.20 | 160 |
| Area | 0.18 | 0.18 | < 0.005 | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.54 | 0.54 | < 0.005 | < 0.005 | — | 0.54 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 3,873 | 3,873 | 0.49 | 0.06 | — | 3,903 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 2.71 | 5.81 | 8.52 | 0.28 | 0.01 | — | 17.5 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 4.08 | 0.00 | 4.08 | 0.41 | 0.00 | — | 14.3 |
| Refrig. | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1.59 | 1.59 |
| Stationary | 0.09 | 0.26 | 0.21 | 0.69 | < 0.005 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 33.2 | 33.2 | 0.03 | < 0.005 | 0.00 | 34.0 |
| Total | 0.39 | 0.55 | 0.30 | 1.57 | < 0.005 | 0.01 | 0.17 | 0.18 | 0.01 | 0.04 | 0.05 | 6.79 | 4,070 | 4,076 | 1.21 | 0.07 | 1.79 | 4,131 |

# 3. Construction Emissions Details

## 3.1. Linear, Grubbing & Land Clearing (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.3. Linear, Grubbing & Land Clearing (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |

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| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |

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| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.5. Linear, Grubbing & Land Clearing (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |

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| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |

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| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.7. Linear, Grubbing & Land Clearing (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
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| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.9. Linear, Grading & Excavation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |

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| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.11. Linear, Grading & Excavation (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.13. Linear, Grading & Excavation (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.15. Linear, Grading & Excavation (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.17. Linear, Drainage, Utilities, & Sub-Grade (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.19. Linear, Drainage, Utilities, & Sub-Grade (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.21. Linear, Drainage, Utilities, & Sub-Grade (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.23. Linear, Drainage, Utilities, & Sub-Grade (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |

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| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.25. Linear, Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.27. Linear, Paving (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.29. Linear, Paving (2029) - Unmitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |

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| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.31. Linear, Paving (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.33. Site Preparation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 7.24 | 6.07 | 43.5 | 117 | 0.19 | 1.83 | — | 1.83 | 1.68 | — | 1.68 | — | 20,271 | 20,271 | 0.82 | 0.16 | — | 20,340 |
| Dust From Material Movement | — | — | — | — | — | — | 0.58 | 0.58 | — | 0.29 | 0.29 | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.64 | 0.53 | 3.83 | 10.3 | 0.02 | 0.16 | — | 0.16 | 0.15 | — | 0.15 | — | 1,785 | 1,785 | 0.07 | 0.01 | — | 1,791 |
| Dust From Material Movement | — | — | — | — | — | — | 0.05 | 0.05 | — | 0.03 | 0.03 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.12 | 0.10 | 0.70 | 1.89 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 296 | 296 | 0.01 | < 0.005 | — | 297 |
| Dust From Material Movement | — | — | — | — | — | — | 0.01 | 0.01 | — | < 0.005 | < 0.005 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.18 | 0.16 | 0.19 | 2.14 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 447 | 447 | 0.02 | 0.02 | 0.05 | 453 |
| Vendor | < 0.005 | < 0.005 | 0.06 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 58.6 | 58.6 | < 0.005 | 0.01 | < 0.005 | 61.2 |
| Hauling | 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 | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.02 | 0.01 | 0.02 | 0.21 | 0.00 | 0.00 | 0.04 | 0.04 | 0.00 | 0.01 | 0.01 | — | 40.5 | 40.5 | < 0.005 | < 0.005 | 0.07 | 41.1 |
| Vendor | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 5.16 | 5.16 | < 0.005 | < 0.005 | 0.01 | 5.39 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.04 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 6.71 | 6.71 | < 0.005 | < 0.005 | 0.01 | 6.80 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.85 | 0.85 | < 0.005 | < 0.005 | < 0.005 | 0.89 |
| Hauling | 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 | 0.00 |

## 3.35. Site Preparation (2028) - Unmitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 6.95 | 5.83 | 40.1 | 118 | 0.19 | 1.63 | — | 1.63 | 1.50 | — | 1.50 | — | 20,275 | 20,275 | 0.82 | 0.16 | — | 20,345 |
| Dust From Material Movement | — | — | — | — | — | — | 0.58 | 0.58 | — | 0.29 | 0.29 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.57 | 0.48 | 3.30 | 9.67 | 0.02 | 0.13 | — | 0.13 | 0.12 | — | 0.12 | — | 1,666 | 1,666 | 0.07 | 0.01 | — | 1,672 |
| Dust From Material Movement | — | — | — | — | — | — | 0.05 | 0.05 | — | 0.02 | 0.02 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.10 | 0.09 | 0.60 | 1.76 | < 0.005 | 0.02 | — | 0.02 | 0.02 | — | 0.02 | — | 276 | 276 | 0.01 | < 0.005 | — | 277 |
| Dust From Material Movement | — | — | — | — | — | — | 0.01 | 0.01 | — | < 0.005 | < 0.005 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.17 | 0.15 | 0.17 | 2.01 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 439 | 439 | 0.02 | 0.02 | 0.04 | 445 |
| Vendor | < 0.005 | < 0.005 | 0.06 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 57.2 | 57.2 | < 0.005 | 0.01 | < 0.005 | 59.6 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.02 | 0.18 | 0.00 | 0.00 | 0.04 | 0.04 | 0.00 | 0.01 | 0.01 | — | 37.1 | 37.1 | < 0.005 | < 0.005 | 0.06 | 37.7 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.70 | 4.70 | < 0.005 | < 0.005 | < 0.005 | 4.90 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.03 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 6.15 | 6.15 | < 0.005 | < 0.005 | 0.01 | 6.24 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.78 | 0.78 | < 0.005 | < 0.005 | < 0.005 | 0.81 |
| Hauling | 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 | 0.00 |

## 3.37. Grading (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.54 | 1.28 | 12.4 | 15.3 | 0.03 | 0.30 | — | 0.30 | 0.28 | — | 0.28 | — | 2,784 | 2,784 | 0.11 | 0.02 | — | 2,793 |
| Dust From Material Movement | — | — | — | — | — | — | 0.65 | 0.65 | — | 0.30 | 0.30 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.04 | 0.04 | 0.34 | 0.42 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 76.3 | 76.3 | < 0.005 | < 0.005 | — | 76.5 |
| Dust From Material Movement | — | — | — | — | — | — | 0.02 | 0.02 | — | 0.01 | 0.01 | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.01 | 0.06 | 0.08 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 12.6 | 12.6 | < 0.005 | < 0.005 | — | 12.7 |
| Dust From Material Movement | — | — | — | — | — | — | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.17 | 0.15 | 0.17 | 2.01 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 439 | 439 | 0.02 | 0.02 | 0.04 | 445 |
| Vendor | < 0.005 | < 0.005 | 0.06 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 57.2 | 57.2 | < 0.005 | 0.01 | < 0.005 | 59.6 |
| Hauling | 0.32 | 0.29 | 15.1 | 3.73 | 0.11 | 0.20 | 4.29 | 4.50 | 0.20 | 1.18 | 1.38 | — | 14,274 | 14,274 | 0.02 | 2.22 | 0.72 | 14,935 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.01 | 0.06 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 12.4 | 12.4 | < 0.005 | < 0.005 | 0.02 | 12.6 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.57 | 1.57 | < 0.005 | < 0.005 | < 0.005 | 1.63 |
| Hauling | 0.01 | 0.01 | 0.41 | 0.10 | < 0.005 | 0.01 | 0.12 | 0.12 | 0.01 | 0.03 | 0.04 | — | 391 | 391 | < 0.005 | 0.06 | 0.33 | 409 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.01 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 2.05 | 2.05 | < 0.005 | < 0.005 | < 0.005 | 2.08 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.26 | 0.26 | < 0.005 | < 0.005 | < 0.005 | 0.27 |
| Hauling | < 0.005 | < 0.005 | 0.08 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | 0.01 | 0.01 | — | 64.7 | 64.7 | < 0.005 | 0.01 | 0.05 | 67.8 |

## 3.39. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.55 | 1.28 | 12.4 | 15.4 | 0.03 | 0.30 | — | 0.30 | 0.28 | — | 0.28 | — | 2,785 | 2,785 | 0.11 | 0.02 | — | 2,795 |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.55 | 1.28 | 12.4 | 15.4 | 0.03 | 0.30 | — | 0.30 | 0.28 | — | 0.28 | — | 2,785 | 2,785 | 0.11 | 0.02 | — | 2,795 |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.94 | 0.78 | 7.53 | 9.31 | 0.02 | 0.18 | — | 0.18 | 0.17 | — | 0.17 | — | 1,690 | 1,690 | 0.07 | 0.01 | — | 1,695 |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.17 | 0.14 | 1.37 | 1.70 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 280 | 280 | 0.01 | < 0.005 | — | 281 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.19 | 0.17 | 0.16 | 2.98 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 494 | 494 | 0.02 | 0.02 | 1.64 | 502 |
| Vendor | < 0.005 | < 0.005 | 0.06 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 57.1 | 57.1 | < 0.005 | 0.01 | 0.12 | 59.7 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.17 | 0.15 | 0.17 | 2.01 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 439 | 439 | 0.02 | 0.02 | 0.04 | 445 |
| Vendor | < 0.005 | < 0.005 | 0.06 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 57.2 | 57.2 | < 0.005 | 0.01 | < 0.005 | 59.6 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.11 | 0.09 | 0.11 | 1.36 | 0.00 | 0.00 | 0.28 | 0.28 | 0.00 | 0.07 | 0.07 | — | 274 | 274 | 0.01 | 0.01 | 0.43 | 278 |
| Vendor | < 0.005 | < 0.005 | 0.04 | 0.01 | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | — | 34.7 | 34.7 | < 0.005 | < 0.005 | 0.03 | 36.2 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.02 | 0.02 | 0.02 | 0.25 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.01 | 0.01 | — | 45.4 | 45.4 | < 0.005 | < 0.005 | 0.07 | 46.1 |
| Vendor | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 5.74 | 5.74 | < 0.005 | < 0.005 | 0.01 | 5.99 |
| Hauling | 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 | 0.00 |

## 3.41. Building Construction (2029) - Unmitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.48 | 1.22 | 12.1 | 15.3 | 0.03 | 0.27 | — | 0.27 | 0.25 | — | 0.25 | — | 2,786 | 2,786 | 0.11 | 0.02 | — | 2,795 |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.48 | 1.22 | 12.1 | 15.3 | 0.03 | 0.27 | — | 0.27 | 0.25 | — | 0.25 | — | 2,786 | 2,786 | 0.11 | 0.02 | — | 2,795 |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.04 | 0.87 | 8.59 | 10.8 | 0.02 | 0.19 | — | 0.19 | 0.17 | — | 0.17 | — | 1,973 | 1,973 | 0.08 | 0.02 | — | 1,980 |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.19 | 0.16 | 1.57 | 1.98 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 327 | 327 | 0.01 | < 0.005 | — | 328 |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.18 | 0.16 | 0.14 | 2.78 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 485 | 485 | 0.02 | 0.02 | 1.50 | 493 |
| Vendor | < 0.005 | < 0.005 | 0.05 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 55.6 | 55.6 | < 0.005 | 0.01 | 0.10 | 58.1 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.17 | 0.15 | 0.16 | 1.88 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 432 | 432 | 0.01 | 0.02 | 0.04 | 437 |
| Vendor | < 0.005 | < 0.005 | 0.06 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 55.6 | 55.6 | < 0.005 | 0.01 | < 0.005 | 58.1 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.12 | 0.11 | 0.12 | 1.49 | 0.00 | 0.00 | 0.33 | 0.33 | 0.00 | 0.08 | 0.08 | — | 315 | 315 | 0.01 | 0.01 | 0.46 | 319 |
| Vendor | < 0.005 | < 0.005 | 0.04 | 0.01 | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | — | 39.4 | 39.4 | < 0.005 | 0.01 | 0.03 | 41.1 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.02 | 0.02 | 0.02 | 0.27 | 0.00 | 0.00 | 0.06 | 0.06 | 0.00 | 0.01 | 0.01 | — | 52.1 | 52.1 | < 0.005 | < 0.005 | 0.08 | 52.8 |
| Vendor | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 6.52 | 6.52 | < 0.005 | < 0.005 | 0.01 | 6.81 |
| Hauling | 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 | 0.00 |

## 3.43. Paving (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipm | 1.48 | 1.22 | 12.1 | 15.3 | 0.03 | 0.27 | — | 0.27 | 0.25 | — | 0.25 | — | 2,786 | 2,786 | 0.11 | 0.02 | — | 2,795 |
| Paving | 0.48 | 0.48 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.01 | 0.07 | 0.09 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 16.4 | 16.4 | < 0.005 | < 0.005 | — | 16.4 |
| Paving | < 0.005 | < 0.005 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | < 0.005 | 0.01 | 0.02 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 2.71 | 2.71 | < 0.005 | < 0.005 | — | 2.72 |
| Paving | < 0.005 | < 0.005 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.17 | 0.15 | 0.16 | 1.88 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 432 | 432 | 0.01 | 0.02 | 0.04 | 437 |
| Vendor | < 0.005 | < 0.005 | 0.06 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 55.6 | 55.6 | < 0.005 | 0.01 | < 0.005 | 58.1 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.01 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 2.61 | 2.61 | < 0.005 | < 0.005 | < 0.005 | 2.64 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.33 | 0.33 | < 0.005 | < 0.005 | < 0.005 | 0.34 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.43 | 0.43 | < 0.005 | < 0.005 | < 0.005 | 0.44 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.05 | 0.05 | < 0.005 | < 0.005 | < 0.005 | 0.06 |
| Hauling | 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 | 0.00 |

## 3.45. Paving (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.42 | 1.17 | 11.9 | 15.2 | 0.03 | 0.24 | — | 0.24 | 0.22 | — | 0.22 | — | 2,786 | 2,786 | 0.11 | 0.02 | — | 2,795 |
| Paving | 0.48 | 0.48 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.09 | 0.07 | 0.72 | 0.92 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 169 | 169 | 0.01 | < 0.005 | — | 170 |
| Paving | 0.03 | 0.03 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.02 | 0.01 | 0.13 | 0.17 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 28.0 | 28.0 | < 0.005 | < 0.005 | — | 28.1 |
| Paving | 0.01 | 0.01 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.16 | 0.14 | 0.14 | 1.77 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 425 | 425 | 0.01 | 0.02 | 0.04 | 430 |
| Vendor | < 0.005 | < 0.005 | 0.05 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 54.0 | 54.0 | < 0.005 | 0.01 | < 0.005 | 56.3 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.01 | 0.12 | 0.00 | 0.00 | 0.03 | 0.03 | 0.00 | 0.01 | 0.01 | — | 26.5 | 26.5 | < 0.005 | < 0.005 | 0.04 | 26.9 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.28 | 3.28 | < 0.005 | < 0.005 | < 0.005 | 3.42 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.02 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 4.39 | 4.39 | < 0.005 | < 0.005 | 0.01 | 4.45 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.54 | 0.54 | < 0.005 | < 0.005 | < 0.005 | 0.57 |
| Hauling | 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 | 0.00 |

## 3.47. Architectural Coating (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.42 | 1.17 | 11.9 | 15.2 | 0.03 | 0.24 | — | 0.24 | 0.22 | — | 0.22 | — | 2,786 | 2,786 | 0.11 | 0.02 | — | 2,795 |
| Architectural Coatings | 9.39 | 9.39 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.09 | 0.07 | 0.75 | 0.96 | < 0.005 | 0.02 | — | 0.02 | 0.01 | — | 0.01 | — | 176 | 176 | 0.01 | < 0.005 | — | 176 |
| Architectural Coatings | 0.59 | 0.59 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.02 | 0.01 | 0.14 | 0.18 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 29.1 | 29.1 | < 0.005 | < 0.005 | — | 29.2 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 0.11 | 0.11 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.16 | 0.14 | 0.14 | 1.77 | 0.00 | 0.00 | 0.47 | 0.47 | 0.00 | 0.11 | 0.11 | — | 425 | 425 | 0.01 | 0.02 | 0.04 | 430 |
| Vendor | < 0.005 | < 0.005 | 0.05 | 0.02 | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | — | 54.0 | 54.0 | < 0.005 | 0.01 | < 0.005 | 56.3 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.01 | 0.12 | 0.00 | 0.00 | 0.03 | 0.03 | 0.00 | 0.01 | 0.01 | — | 27.5 | 27.5 | < 0.005 | < 0.005 | 0.04 | 27.9 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.40 | 3.40 | < 0.005 | < 0.005 | < 0.005 | 3.55 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.02 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 4.56 | 4.56 | < 0.005 | < 0.005 | 0.01 | 4.62 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.56 | 0.56 | < 0.005 | < 0.005 | < 0.005 | 0.59 |
| Hauling | 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 | 0.00 |

# 4. Operations Emissions Details

## 4.1. Mobile Emissions by Land Use

### 4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | 1.04 | 0.98 | 0.61 | 6.79 | 0.01 | 0.01 | 1.35 | 1.36 | 0.01 | 0.34 | 0.35 | — | 1,467 | 1,467 | 0.07 | 0.07 | 4.12 | 1,492 |
| Parking Lot | 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 | 0.00 |
| Other Non-Asphalt Surfaces | 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 | 0.00 |
| Total | 1.04 | 0.98 | 0.61 | 6.79 | 0.01 | 0.01 | 1.35 | 1.36 | 0.01 | 0.34 | 0.35 | — | 1,467 | 1,467 | 0.07 | 0.07 | 4.12 | 1,492 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | 0.94 | 0.88 | 0.67 | 5.46 | 0.01 | 0.01 | 1.35 | 1.36 | 0.01 | 0.34 | 0.35 | — | 1,341 | 1,341 | 0.07 | 0.07 | 0.11 | 1,363 |
| Parking Lot | 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 | 0.00 |
| Other Non-Asphalt Surfaces | 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 | 0.00 |
| Total | 0.94 | 0.88 | 0.67 | 5.46 | 0.01 | 0.01 | 1.35 | 1.36 | 0.01 | 0.34 | 0.35 | — | 1,341 | 1,341 | 0.07 | 0.07 | 0.11 | 1,363 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | 0.12 | 0.11 | 0.09 | 0.74 | < 0.005 | < 0.005 | 0.17 | 0.17 | < 0.005 | 0.04 | 0.04 | — | 157 | 157 | 0.01 | 0.01 | 0.20 | 160 |
| Parking Lot | 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 | 0.00 |
| Other Non-Asphalt Surfaces | 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 | 0.00 |
| Total | 0.12 | 0.11 | 0.09 | 0.74 | < 0.005 | < 0.005 | 0.17 | 0.17 | < 0.005 | 0.04 | 0.04 | — | 157 | 157 | 0.01 | 0.01 | 0.20 | 160 |

## 4.2. Energy

### 4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | — | 23,387 | 23,387 | 2.96 | 0.36 | — | 23,568 |
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | — | 4.42 | 4.42 | < 0.005 | < 0.005 | — | 4.45 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 23,392 | 23,392 | 2.96 | 0.36 | — | 23,573 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | — | 23,387 | 23,387 | 2.96 | 0.36 | — | 23,568 |
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | — | 4.42 | 4.42 | < 0.005 | < 0.005 | — | 4.45 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 23,392 | 23,392 | 2.96 | 0.36 | — | 23,573 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | — | 3,872 | 3,872 | 0.49 | 0.06 | — | 3,902 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | — | 0.73 | 0.73 | < 0.005 | < 0.005 | — | 0.74 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 3,873 | 3,873 | 0.49 | 0.06 | — | 3,903 |

### 4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | 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 |
| Parking Lot | 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 |
| Other Non-Asphalt Surfaces | 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 |
| Total | 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 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | 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 |
| Parking Lot | 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 |
| Other Non-Asphalt Surfaces | 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 |
| Total | 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 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | 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 |
| Parking Lot | 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 |
| Other Non-Asphalt Surfaces | 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 |
| Total | 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 |

## 4.3. Area Emissions by Source

### 4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Source | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consumer Products | 0.79 | 0.79 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | 0.06 | 0.06 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | 0.29 | 0.26 | 0.01 | 1.60 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 6.60 | 6.60 | < 0.005 | < 0.005 | — | 6.62 |
| Total | 1.14 | 1.11 | 0.01 | 1.60 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 6.60 | 6.60 | < 0.005 | < 0.005 | — | 6.62 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Consum Products | 0.79 | 0.79 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | 0.06 | 0.06 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | 0.85 | 0.85 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consumer Products | 0.14 | 0.14 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | 0.01 | 0.01 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | 0.03 | 0.02 | < 0.005 | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.54 | 0.54 | < 0.005 | < 0.005 | — | 0.54 |
| Total | 0.18 | 0.18 | < 0.005 | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.54 | 0.54 | < 0.005 | < 0.005 | — | 0.54 |

## 4.4. Water Emissions by Land Use

### 4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | 16.4 | 35.1 | 51.5 | 1.68 | 0.04 | — | 106 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 16.4 | 35.1 | 51.5 | 1.68 | 0.04 | — | 106 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | 16.4 | 35.1 | 51.5 | 1.68 | 0.04 | — | 106 |
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 16.4 | 35.1 | 51.5 | 1.68 | 0.04 | — | 106 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | 2.71 | 5.81 | 8.52 | 0.28 | 0.01 | — | 17.5 |
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 2.71 | 5.81 | 8.52 | 0.28 | 0.01 | — | 17.5 |

## 4.5. Waste Emissions by Land Use

### 4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | 24.7 | 0.00 | 24.7 | 2.46 | 0.00 | — | 86.3 |
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 24.7 | 0.00 | 24.7 | 2.46 | 0.00 | — | 86.3 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | 24.7 | 0.00 | 24.7 | 2.46 | 0.00 | — | 86.3 |
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 24.7 | 0.00 | 24.7 | 2.46 | 0.00 | — | 86.3 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | 4.08 | 0.00 | 4.08 | 0.41 | 0.00 | — | 14.3 |
| Parking Lot | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Other Non-Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 4.08 | 0.00 | 4.08 | 0.41 | 0.00 | — | 14.3 |

## 4.6. Refrigerant Emissions by Land Use

### 4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9.61 | 9.61 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9.61 | 9.61 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9.61 | 9.61 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9.61 | 9.61 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| General Heavy Industry | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1.59 | 1.59 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1.59 | 1.59 |

## 4.7. Offroad Emissions By Equipment Type

### 4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.8. Stationary Emissions By Equipment Type

### 4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Emergency Generator | 17.0 | 47.5 | 38.6 | 123 | 0.05 | 1.39 | 0.00 | 1.39 | 1.39 | 0.00 | 1.39 | 0.00 | 6,591 | 6,591 | 5.45 | 0.03 | 0.00 | 6,736 |
| Total | 17.0 | 47.5 | 38.6 | 123 | 0.05 | 1.39 | 0.00 | 1.39 | 1.39 | 0.00 | 1.39 | 0.00 | 6,591 | 6,591 | 5.45 | 0.03 | 0.00 | 6,736 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Emergency Generator | 17.0 | 47.5 | 38.6 | 123 | 0.05 | 1.39 | 0.00 | 1.39 | 1.39 | 0.00 | 1.39 | 0.00 | 6,591 | 6,591 | 5.45 | 0.03 | 0.00 | 6,736 |
| Total | 17.0 | 47.5 | 38.6 | 123 | 0.05 | 1.39 | 0.00 | 1.39 | 1.39 | 0.00 | 1.39 | 0.00 | 6,591 | 6,591 | 5.45 | 0.03 | 0.00 | 6,736 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Emergency Generator | 0.09 | 0.26 | 0.21 | 0.69 | < 0.005 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 33.2 | 33.2 | 0.03 | < 0.005 | 0.00 | 34.0 |
| Total | 0.09 | 0.26 | 0.21 | 0.69 | < 0.005 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 33.2 | 33.2 | 0.03 | < 0.005 | 0.00 | 34.0 |

## 4.9. User Defined Emissions By Equipment Type

### 4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.10. Soil Carbon Accumulation By Vegetation Type

### 4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Vegetation | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

### 4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

### 4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Species | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

# 5. Activity Data

## 5.1. Construction Schedule

| Phase Name | Phase Type | Start Date | End Date | Days Per Week | Work Days per Phase | Phase Description |
|---|---|---|---|---|---|---|
| Linear, Grubbing & Land Clearing | Linear, Grubbing & Land Clearing | 11/17/2027 | 3/5/2030 | 5.00 | 600 | — |
| Linear, Grading & Excavation | Linear, Grading & Excavation | 11/17/2027 | 3/5/2030 | 5.00 | 600 | — |
| Linear, Drainage, Utilities, & Sub-Grade | Linear, Drainage, Utilities, & Sub-Grade | 11/17/2027 | 3/5/2030 | 5.00 | 600 | — |
| Linear, Paving | Linear, Paving | 11/17/2027 | 3/5/2030 | 5.00 | 600 | — |
| Site Preparation | Site Preparation | 11/17/2027 | 2/11/2028 | 5.00 | 63.0 | — |
| Grading | Grading | 2/12/2028 | 2/25/2028 | 5.00 | 10.0 | — |
| Building Construction | Building Construction | 2/26/2028 | 12/28/2029 | 5.00 | 480 | — |
| Paving | Paving | 12/29/2029 | 1/31/2030 | 5.00 | 24.0 | — |
| Architectural Coating | Architectural Coating | 2/1/2030 | 3/5/2030 | 5.00 | 23.0 | — |

## 5.2. Off-Road Equipment

### 5.2.1. Unmitigated

| Phase Name | Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|---|
| Site Preparation | Excavators | Diesel | Average | 1.00 | 242 | 165 | 0.38 |
| Site Preparation | Excavators | Diesel | Average | 1.00 | 0.04 | 44.0 | 0.38 |
| Site Preparation | Forklifts | Diesel | Average | 1.00 | 6.12 | 110 | 0.20 |
| Site Preparation | Pavers | Diesel | Average | 1.00 | 0.04 | 142 | 0.42 |
| Site Preparation | Rollers | Diesel | Average | 1.00 | 1.42 | 100 | 0.38 |
| Site Preparation | Skid Steer Loaders | Diesel | Average | 1.00 | 0.26 | 74.0 | 0.37 |
| Site Preparation | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 0.13 | 117 | 0.37 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Site Preparation | Off-Highway Trucks | Diesel | Average | 1.00 | 0.33 | 250 | 0.38 |
| Site Preparation | Cranes | Diesel | Average | 1.00 | 1.92 | 180 | 0.29 |
| Site Preparation | Aerial Lifts | Diesel | Average | 1.00 | 11.9 | 20.0 | 0.31 |
| Site Preparation | Rubber Tired Dozers | Diesel | Average | 1.00 | 1.75 | 104 | 0.40 |
| Site Preparation | Graders | Diesel | Average | 1.00 | 0.66 | 145 | 0.41 |
| Site Preparation | Plate Compactors | Diesel | Average | 1.00 | 1.22 | 7.00 | 0.43 |
| Site Preparation | Off-Highway Trucks | Diesel | Average | 1.00 | 0.08 | 240 | 0.38 |
| Site Preparation | Bore/Drill Rigs | Diesel | Average | 1.00 | 1.36 | 440 | 0.50 |
| Site Preparation | Generator Sets | Diesel | Average | 5.00 | 10.4 | 33.0 | 0.74 |
| Grading | Excavators | Diesel | Average | 1.00 | 2.42 | 165 | 0.38 |
| Grading | Excavators | Diesel | Average | 1.00 | 0.04 | 44.0 | 0.38 |
| Grading | Forklifts | Diesel | Average | 1.00 | 6.12 | 110 | 0.20 |
| Grading | Pavers | Diesel | Average | 1.00 | 0.04 | 142 | 0.42 |
| Grading | Rollers | Diesel | Average | 1.00 | 1.42 | 100 | 0.38 |
| Grading | Skid Steer Loaders | Diesel | Average | 1.00 | 0.26 | 74.0 | 0.37 |
| Grading | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 0.13 | 117 | 0.37 |
| Grading | Off-Highway Trucks | Diesel | Average | 1.00 | 0.33 | 250 | 0.38 |
| Grading | Cranes | Diesel | Average | 1.00 | 1.92 | 180 | 0.29 |
| Grading | Aerial Lifts | Diesel | Average | 1.00 | 11.9 | 20.0 | 0.31 |
| Grading | Rubber Tired Dozers | Diesel | Average | 1.00 | 1.75 | 104 | 0.40 |
| Grading | Graders | Diesel | Average | 1.00 | 0.66 | 145 | 0.41 |
| Grading | Plate Compactors | Diesel | Average | 1.00 | 1.22 | 7.00 | 0.43 |
| Grading | Off-Highway Trucks | Diesel | Average | 1.00 | 0.08 | 240 | 0.38 |
| Grading | Bore/Drill Rigs | Diesel | Average | 1.00 | 1.36 | 440 | 0.50 |
| Grading | Generator Sets | Diesel | Average | 5.00 | 10.4 | 33.0 | 0.74 |
| Building Construction | Excavators | Diesel | Average | 1.00 | 2.42 | 165 | 0.38 |
| Building Construction | Excavators | Diesel | Average | 1.00 | 0.04 | 44.0 | 0.38 |
| Building Construction | Forklifts | Diesel | Average | 1.00 | 6.12 | 110 | 0.20 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Building Construction | Pavers | Diesel | Average | 1.00 | 0.04 | 142 | 0.42 |
| Building Construction | Rollers | Diesel | Average | 1.00 | 1.42 | 100 | 0.38 |
| Building Construction | Skid Steer Loaders | Diesel | Average | 1.00 | 0.26 | 74.0 | 0.37 |
| Building Construction | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 0.13 | 117 | 0.37 |
| Building Construction | Off-Highway Trucks | Diesel | Average | 1.00 | 0.33 | 250 | 0.38 |
| Building Construction | Cranes | Diesel | Average | 1.00 | 1.92 | 180 | 0.29 |
| Building Construction | Aerial Lifts | Diesel | Average | 1.00 | 11.9 | 20.0 | 0.31 |
| Building Construction | Rubber Tired Dozers | Diesel | Average | 1.00 | 1.75 | 104 | 0.40 |
| Building Construction | Graders | Diesel | Average | 1.00 | 0.66 | 145 | 0.41 |
| Building Construction | Plate Compactors | Diesel | Average | 1.00 | 1.22 | 7.00 | 0.43 |
| Building Construction | Off-Highway Trucks | Diesel | Average | 1.00 | 0.08 | 240 | 0.38 |
| Building Construction | Bore/Drill Rigs | Diesel | Average | 1.00 | 1.36 | 440 | 0.50 |
| Building Construction | Generator Sets | Diesel | Average | 5.00 | 10.4 | 33.0 | 0.74 |
| Paving | Excavators | Diesel | Average | 1.00 | 2.42 | 165 | 0.38 |
| Paving | Excavators | Diesel | Average | 1.00 | 0.04 | 44.0 | 0.38 |
| Paving | Forklifts | Diesel | Average | 1.00 | 6.12 | 110 | 0.20 |
| Paving | Pavers | Diesel | Average | 1.00 | 0.04 | 142 | 0.42 |
| Paving | Rollers | Diesel | Average | 1.00 | 1.42 | 100 | 0.38 |
| Paving | Skid Steer Loaders | Diesel | Average | 1.00 | 0.26 | 74.0 | 0.37 |
| Paving | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 0.13 | 117 | 0.37 |
| Paving | Off-Highway Trucks | Diesel | Average | 1.00 | 0.33 | 250 | 0.38 |
| Paving | Cranes | Diesel | Average | 1.00 | 1.92 | 180 | 0.29 |
| Paving | Aerial Lifts | Diesel | Average | 1.00 | 11.9 | 20.0 | 0.31 |
| Paving | Rubber Tired Dozers | Diesel | Average | 1.00 | 1.75 | 104 | 0.40 |
| Paving | Graders | Diesel | Average | 1.00 | 0.66 | 145 | 0.41 |
| Paving | Plate Compactors | Diesel | Average | 1.00 | 1.22 | 7.00 | 0.43 |
| Paving | Off-Highway Trucks | Diesel | Average | 1.00 | 0.08 | 240 | 0.38 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Paving | Bore/Drill Rigs | Diesel | Average | 1.00 | 1.36 | 440 | 0.50 |
| Paving | Generator Sets | Diesel | Average | 5.00 | 10.4 | 33.0 | 0.74 |
| Architectural Coating | Excavators | Diesel | Average | 1.00 | 2.42 | 165 | 0.38 |
| Architectural Coating | Excavators | Diesel | Average | 1.00 | 0.04 | 44.0 | 0.38 |
| Architectural Coating | Forklifts | Diesel | Average | 1.00 | 6.12 | 110 | 0.20 |
| Architectural Coating | Pavers | Diesel | Average | 1.00 | 0.04 | 142 | 0.42 |
| Architectural Coating | Rollers | Diesel | Average | 1.00 | 1.42 | 100 | 0.38 |
| Architectural Coating | Skid Steer Loaders | Diesel | Average | 1.00 | 0.26 | 74.0 | 0.37 |
| Architectural Coating | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 0.13 | 117 | 0.37 |
| Architectural Coating | Off-Highway Trucks | Diesel | Average | 1.00 | 0.33 | 250 | 0.38 |
| Architectural Coating | Cranes | Diesel | Average | 1.00 | 1.92 | 180 | 0.29 |
| Architectural Coating | Aerial Lifts | Diesel | Average | 1.00 | 11.9 | 20.0 | 0.31 |
| Architectural Coating | Rubber Tired Dozers | Diesel | Average | 1.00 | 1.75 | 104 | 0.40 |
| Architectural Coating | Graders | Diesel | Average | 1.00 | 0.66 | 145 | 0.41 |
| Architectural Coating | Plate Compactors | Diesel | Average | 1.00 | 1.22 | 7.00 | 0.43 |
| Architectural Coating | Off-Highway Trucks | Diesel | Average | 1.00 | 0.08 | 240 | 0.38 |
| Architectural Coating | Bore/Drill Rigs | Diesel | Average | 1.00 | 1.36 | 440 | 0.50 |
| Architectural Coating | Generator Sets | Diesel | Average | 5.00 | 10.4 | 33.0 | 0.74 |

## 5.3. Construction Vehicles

### 5.3.1. Unmitigated

| Phase Name | Trip Type | One-Way Trips per Day | Miles per Trip | Vehicle Mix |
|---|---|---|---|---|
| Site Preparation | — | — | — | — |
| Site Preparation | Worker | 36.0 | 18.5 | LDA,LDT1,LDT2 |
| Site Preparation | Vendor | 2.03 | 10.2 | HHDT,MHDT |
| Site Preparation | Hauling | 0.00 | 20.0 | HHDT |
| Site Preparation | Onsite truck | — | — | HHDT |

| | | | | |
|---|---|---|---|---|
| Grading | — | — | — | — |
| Grading | Worker | 36.0 | 18.5 | LDA,LDT1,LDT2 |
| Grading | Vendor | 2.03 | 10.2 | HHDT,MHDT |
| Grading | Hauling | 232 | 20.0 | HHDT |
| Grading | Onsite truck | — | — | HHDT |
| Building Construction | — | — | — | — |
| Building Construction | Worker | 36.0 | 18.5 | LDA,LDT1,LDT2 |
| Building Construction | Vendor | 2.03 | 10.2 | HHDT,MHDT |
| Building Construction | Hauling | 0.00 | 20.0 | HHDT |
| Building Construction | Onsite truck | — | — | HHDT |
| Paving | — | — | — | — |
| Paving | Worker | 36.0 | 18.5 | LDA,LDT1,LDT2 |
| Paving | Vendor | 2.03 | 10.2 | HHDT,MHDT |
| Paving | Hauling | 0.00 | 20.0 | HHDT |
| Paving | Onsite truck | — | — | HHDT |
| Architectural Coating | — | — | — | — |
| Architectural Coating | Worker | 36.0 | 18.5 | LDA,LDT1,LDT2 |
| Architectural Coating | Vendor | 2.03 | 10.2 | HHDT,MHDT |
| Architectural Coating | Hauling | 0.00 | 20.0 | HHDT |
| Architectural Coating | Onsite truck | — | — | HHDT |
| Linear, Grubbing & Land Clearing | — | — | — | — |
| Linear, Grubbing & Land Clearing | Worker | 0.00 | 18.5 | LDA,LDT1,LDT2 |
| Linear, Grubbing & Land Clearing | Vendor | 0.00 | 10.2 | HHDT,MHDT |
| Linear, Grubbing & Land Clearing | Hauling | 0.00 | 20.0 | HHDT |
| Linear, Grubbing & Land Clearing | Onsite truck | — | — | HHDT |
| Linear, Grading & Excavation | — | — | — | — |
| Linear, Grading & Excavation | Worker | 0.00 | 18.5 | LDA,LDT1,LDT2 |
| Linear, Grading & Excavation | Vendor | 0.00 | 10.2 | HHDT,MHDT |

| | | | | |
|---|---|---|---|---|
| Linear, Grading & Excavation | Hauling | 0.00 | 20.0 | HHDT |
| Linear, Grading & Excavation | Onsite truck | — | — | HHDT |
| Linear, Drainage, Utilities, & Sub-Grade | — | — | — | — |
| Linear, Drainage, Utilities, & Sub-Grade | Worker | 0.00 | 18.5 | LDA,LDT1,LDT2 |
| Linear, Drainage, Utilities, & Sub-Grade | Vendor | 0.00 | 10.2 | HHDT,MHDT |
| Linear, Drainage, Utilities, & Sub-Grade | Hauling | 0.00 | 20.0 | HHDT |
| Linear, Drainage, Utilities, & Sub-Grade | Onsite truck | — | — | HHDT |
| Linear, Paving | — | — | — | — |
| Linear, Paving | Worker | 0.00 | 18.5 | LDA,LDT1,LDT2 |
| Linear, Paving | Vendor | 0.00 | 10.2 | HHDT,MHDT |
| Linear, Paving | Hauling | 0.00 | 20.0 | HHDT |
| Linear, Paving | Onsite truck | — | — | HHDT |

## 5.4. Vehicles

### 5.4.1. Construction Vehicle Control Strategies

| Control Strategies Applied | PM10 Reduction | PM2.5 Reduction |
|---|---|---|
| Water unpaved roads twice daily | 55% | 55% |
| Limit vehicle speeds on unpaved roads to 25 mph | 44% | 44% |
| Sweep paved roads once per month | 9% | 9% |

## 5.5. Architectural Coatings

| Phase Name | Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|---|
| Architectural Coating | 0.00 | 0.00 | 55,350 | 18,450 | 438 |

## 5.6. Dust Mitigation

### 5.6.1. Construction Earthmoving Activities

| Phase Name | Material Imported (cy) | Material Exported (cy) | Acres Graded (acres) | Material Demolished (sq. ft.) | Acres Paved (acres) |
|---|---|---|---|---|---|
| Linear, Grubbing & Land Clearing | — | — | 4.25 | 0.00 | — |
| Linear, Grading & Excavation | — | — | 4.25 | 0.00 | — |
| Linear, Drainage, Utilities, & Sub-Grade | — | — | 4.25 | 0.00 | — |
| Site Preparation | — | — | 9.49 | 0.00 | — |
| Grading | 11,300 | 6,233 | 1.51 | 0.00 | — |
| Paving | 0.00 | 0.00 | 0.00 | 0.00 | 4.42 |

### 5.6.2. Construction Earthmoving Control Strategies

| Control Strategies Applied | Frequency (per day) | PM10 Reduction | PM2.5 Reduction |
|---|---|---|---|
| Water Exposed Area | 2 | 61% | 61% |

## 5.7. Construction Paving

| Land Use | Area Paved (acres) | % Asphalt |
|---|---|---|
| General Heavy Industry | 0.00 | 0% |
| User Defined Linear | 4.25 | 100% |
| Parking Lot | 0.16 | 100% |
| Other Non-Asphalt Surfaces | 0.01 | 0% |

## 5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

| Year | kWh per Year | CO2 | CH4 | N2O |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 2027 | 0.00 | 532 | 0.03 | < 0.005 |
| 2028 | 0.00 | 532 | 0.03 | < 0.005 |
| 2029 | 0.00 | 532 | 0.03 | < 0.005 |
| 2030 | 0.00 | 532 | 0.03 | < 0.005 |

## 5.9. Operational Mobile Sources

### 5.9.1. Unmitigated

| Land Use Type | Trips/Weekday | Trips/Saturday | Trips/Sunday | Trips/Year | VMT/Weekday | VMT/Saturday | VMT/Sunday | VMT/Year |
|---|---|---|---|---|---|---|---|---|
| General Heavy Industry | 145 | 237 | 188 | 59,954 | 1,165 | 1,903 | 1,509 | 481,706 |
| Parking Lot | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other Non-Asphalt Surfaces | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 5.10. Operational Area Sources

### 5.10.1. Hearths

#### 5.10.1.1. Unmitigated

### 5.10.2. Architectural Coatings

| Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|
| 0 | 0.00 | 55,350 | 18,450 | 438 |

### 5.10.3. Landscape Equipment

| Season | Unit | Value |
|---|---|---|
| Snow Days | day/yr | 0.00 |
| Summer Days | day/yr | 180 |

## 5.11. Operational Energy Consumption

### 5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

| Land Use | Electricity (kWh/yr) | CO2 | CH4 | N2O | Natural Gas (kBTU/yr) |
|---|---|---|---|---|---|
| General Heavy Industry | 32,733,000 | 261 | 0.0330 | 0.0040 | 0.00 |
| Parking Lot | 6,182 | 261 | 0.0330 | 0.0040 | 0.00 |
| Other Non-Asphalt Surfaces | 0.00 | 261 | 0.0330 | 0.0040 | 0.00 |

## 5.12. Operational Water and Wastewater Consumption

### 5.12.1. Unmitigated

| Land Use | Indoor Water (gal/year) | Outdoor Water (gal/year) |
|---|---|---|
| General Heavy Industry | 8,533,125 | 0.00 |
| Parking Lot | 0.00 | 0.00 |
| Other Non-Asphalt Surfaces | 0.00 | 0.00 |

## 5.13. Operational Waste Generation

### 5.13.1. Unmitigated

| Land Use | Waste (ton/year) | Cogeneration (kWh/year) |
|---|---|---|
| General Heavy Industry | 45.8 | — |
| Parking Lot | 0.00 | — |
| Other Non-Asphalt Surfaces | 0.00 | — |

## 5.14. Operational Refrigeration and Air Conditioning Equipment

### 5.14.1. Unmitigated

| Land Use Type | Equipment Type | Refrigerant | GWP | Quantity (kg) | Operations Leak Rate | Service Leak Rate | Times Serviced |
|---|---|---|---|---|---|---|---|
| General Heavy Industry | Other commercial A/C and heat pumps | R-410A | 2,088 | 0.30 | 4.00 | 4.00 | 18.0 |

## 5.15. Operational Off-Road Equipment

### 5.15.1. Unmitigated

| Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|

## 5.16. Stationary Sources

### 5.16.1. Emergency Generators and Fire Pumps

| Equipment Type | Fuel Type | Number per Day | Hours per Day | Hours per Year | Horsepower | Load Factor |
|---|---|---|---|---|---|---|
| Emergency Generator | Diesel | 1.00 | 4.50 | 50.0 | 1,075 | 0.73 |
| Emergency Generator | CNG | 1.00 | 4.50 | 50.0 | 1,000 | 0.73 |

### 5.16.2. Process Boilers

| Equipment Type | Fuel Type | Number | Boiler Rating (MMBtu/hr) | Daily Heat Input (MMBtu/day) | Annual Heat Input (MMBtu/yr) |
|---|---|---|---|---|---|

## 5.17. User Defined

| Equipment Type | Fuel Type |
|---|---|

## 5.18. Vegetation

### 5.18.1. Land Use Change

#### 5.18.1.1. Unmitigated

| Vegetation Land Use Type | Vegetation Soil Type | Initial Acres | Final Acres |
|---|---|---|---|

### 5.18.1. Biomass Cover Type

#### 5.18.1.1. Unmitigated

| Biomass Cover Type | Initial Acres | Final Acres |
|---|---|---|

### 5.18.2. Sequestration

#### 5.18.2.1. Unmitigated

| Tree Type | Number | Electricity Saved (kWh/year) | Natural Gas Saved (btu/year) |
|---|---|---|---|

# 6. Climate Risk Detailed Report

## 6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

| Climate Hazard | Result for Project Location | Unit |
|---|---|---|
| Temperature and Extreme Heat | 30.3 | annual days of extreme heat |
| Extreme Precipitation | 1.70 | annual days with precipitation above 20 mm |
| Sea Level Rise | — | meters of inundation depth |
| Wildfire | 1.96 | annual hectares burned |

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

## 6.2. Initial Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | 4 | 0 | 0 | N/A |
| Extreme Precipitation | N/A | N/A | N/A | N/A |
| Sea Level Rise | 1 | 0 | 0 | N/A |
| Wildfire | 1 | 0 | 0 | N/A |
| Flooding | N/A | N/A | N/A | N/A |
| Drought | N/A | N/A | N/A | N/A |
| Snowpack Reduction | N/A | N/A | N/A | N/A |
| Air Quality Degradation | 0 | 0 | 0 | N/A |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

## 6.3. Adjusted Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | 4 | 1 | 1 | 4 |
| Extreme Precipitation | N/A | N/A | N/A | N/A |
| Sea Level Rise | 1 | 1 | 1 | 2 |
| Wildfire | 1 | 1 | 1 | 2 |
| Flooding | N/A | N/A | N/A | N/A |
| Drought | N/A | N/A | N/A | N/A |
| Snowpack Reduction | N/A | N/A | N/A | N/A |
| Air Quality Degradation | 1 | 1 | 1 | 2 |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

### 6.4. Climate Risk Reduction Measures

# 7. Health and Equity Details

## 7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

| Indicator | Result for Project Census Tract |
|---|---|
| Exposure Indicators | — |
| AQ-Ozone | 88.7 |
| AQ-PM | 6.32 |
| AQ-DPM | 16.0 |
| Drinking Water | 50.7 |
| Lead Risk Housing | 90.6 |
| Pesticides | 56.5 |
| Toxic Releases | 98.8 |
| Traffic | 14.4 |
| Effect Indicators | — |
| CleanUp Sites | 50.3 |
| Groundwater | 0.00 |
| Haz Waste Facilities/Generators | 91.6 |
| Impaired Water Bodies | 0.00 |
| Solid Waste | 22.1 |
| Sensitive Population | — |
| Asthma | 91.7 |
| Cardio-vascular | 85.3 |
| Low Birth Weights | 88.0 |

| | |
|---|---|
| Socioeconomic Factor Indicators | — |
| Education | 92.7 |
| Housing | 79.6 |
| Linguistic | 61.5 |
| Poverty | 91.8 |
| Unemployment | 94.3 |

## 7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

| Indicator | Result for Project Census Tract |
|---|---|
| Economic | — |
| Above Poverty | 19.82548441 |
| Employed | 6.723983062 |
| Median HI | 14.29488002 |
| Education | — |
| Bachelor's or higher | 8.520467086 |
| High school enrollment | 100 |
| Preschool enrollment | 7.070447838 |
| Transportation | — |
| Auto Access | 35.49339151 |
| Active commuting | 40.30540228 |
| Social | — |
| 2-parent households | 65.41768254 |
| Voting | 20.50558193 |
| Neighborhood | — |
| Alcohol availability | 80.5338124 |
| Park access | 17.07943026 |
| Retail density | 41.52444501 |

| | |
|---|---|
| Supermarket access | 9.893494161 |
| Tree canopy | 19.99230078 |
| Housing | — |
| Homeownership | 42.78198383 |
| Housing habitability | 5.735916848 |
| Low-inc homeowner severe housing cost burden | 13.43513409 |
| Low-inc renter severe housing cost burden | 0.384960862 |
| Uncrowded housing | 10.95855255 |
| Health Outcomes | — |
| Insured adults | 37.31553959 |
| Arthritis | 60.6 |
| Asthma ER Admissions | 25.2 |
| High Blood Pressure | 51.5 |
| Cancer (excluding skin) | 87.6 |
| Asthma | 13.4 |
| Coronary Heart Disease | 37.1 |
| Chronic Obstructive Pulmonary Disease | 17.9 |
| Diagnosed Diabetes | 19.9 |
| Life Expectancy at Birth | 11.5 |
| Cognitively Disabled | 41.3 |
| Physically  Disabled | 65.4 |
| Heart Attack ER Admissions | 37.4 |
| Mental Health Not Good | 8.1 |
| Chronic Kidney Disease | 27.1 |
| Obesity | 13.8 |
| Pedestrian Injuries | 19.6 |
| Physical Health Not Good | 9.8 |
| Stroke | 26.0 |

| | |
|---|---|
| Health Risk Behaviors | — |
| Binge Drinking | 66.7 |
| Current Smoker | 7.4 |
| No Leisure Time for Physical Activity | 14.6 |
| Climate Change Exposures | — |
| Wildfire Risk | 0.0 |
| SLR Inundation Area | 0.0 |
| Children | 10.6 |
| Elderly | 98.5 |
| English Speaking | 11.0 |
| Foreign-born | 64.9 |
| Outdoor Workers | 5.9 |
| Climate Change Adaptive Capacity | — |
| Impervious Surface Cover | 82.8 |
| Traffic Density | 17.5 |
| Traffic Access | 23.0 |
| Other Indices | — |
| Hardship | 89.2 |
| Other Decision Support | — |
| 2016 Voting | 5.0 |

## 7.3. Overall Health & Equity Scores

| Metric | Result for Project Census Tract |
|---|---|
| CalEnviroScreen 4.0 Score for Project Location (a) | 88.0 |
| Healthy Places Index Score for Project Location (b) | 13.0 |
| Project Located in a Designated Disadvantaged Community (Senate Bill 535) | No |
| Project Located in a Low-Income Community (Assembly Bill 1550) | Yes |
| Project Located in a Community Air Protection Program Community (Assembly Bill 617) | No |

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

## 7.4. Health & Equity Measures

No Health & Equity Measures selected.

## 7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

## 7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

# 8. User Changes to Default Data

| Screen | Justification |
|---|---|
| Construction: Construction Phases | linear construction assumed to take place at the same time as plant construction |
| Construction: Off-Road Equipment | linear construction would use the same equipment as the land use construction phases. |
| Construction: Trips and VMT | Average of 36 construction workers required per day. Linear construction overlaps land use construction, therefore the same workers would be used for both. Grading import and export would use 20 CY trucks and concrete import would use 8 CY trucks. 3,650 CY of concrete / 8 CY + 11,304 CY soil import and export / 20 CY = ~ 2,316 hauling trucks (one-way) for grading period (1,158 concrete and dump trucks). 1,220 total vendor trips (one-way trips) required during construction, ~2 vendor trips/day |
| Operations: Energy Use | The Pure Water Antelope Valley would involve a net increase in PWD's electricity usage to operate. It is estimated that the proposed 5 mgd AWPF would require approximately 32.733 gigawatt-hours per year of power at full buildout |

# Pure Water Antelope Valley

# CEQA Initial Study

APPENDIX B1

Biological Resources Technical Report

Pure Water Antelope Valley

# Biological Resources Technical Report

January 15, 2025

Prepared for:
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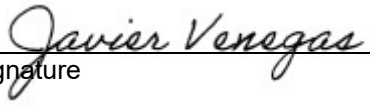
Stantec

The conclusions in the Report titled Biological Resources Technical Report for Pure Water Antelope Valley are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from the Palmdale Water District (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

Prepared by



Signature

Javier Venegas, Project Environmental Scientist

Printed Name

Reviewed by

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Approved by

Signature

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# Table of Contents

**List of Tables**

# Acronyms / Abbreviations

| | |
|---|---|
| AWPF | Advanced Water Purification Facility |
| BGEPA | Bald and Golden Eagle Protection Act |
| BRTR | Biological Resources Technical Report |
| BSA | Biological Study Area |
| Cal-IPC | California Invasive Plant Council |
| CCH | Consortium of California Herbaria |
| CDFG | California Department of Fish and Game |
| CDFW | California Department of Fish and Wildlife |
| CEQA | California Environmental Quality Act |
| CESA | California Endangered Species Act |
| CFR | Code of Federal Regulations |
| CNDDB | California Natural Diversity Database |
| CNPS | California Native Plant Society |
| CRPR | California Rare Plant Rank |
| CWA | Clean Water Act |
| DCH | Designated Critical Habitat |
| ESRI | Environmental Systems Research Institute |
| FESA | Federal Endangered Species Act |
| °F | degrees Fahrenheit |
| FGC | California Fish and Game Code |
| FR | Federal Register |
| HUC | Hydrologic Unit Code |
| MBTA | Migratory Bird Treaty Act |
| MCVII | Manual of California Vegetation, 2nd Edition |
| NEPA | National Environmental Policy Act |
| NHD | National Hydrography Dataset |
| NMFS | National Marine Fisheries Service |
| NPPA | California's Native Plant Protection Act |
| NRCS | Natural Resources Conservation Service |
| NWI | National Wetlands Inventory |
| Project | Pure Water Antelope Valley |
| RHA | Rivers and Harbors Act |
| PWD | Palmdale Water District |
| SSC | California Species of Special Concern |
| Stantec | Stantec Consulting Services Inc. |
| U.S. | United States |
| USACE | United States Army Corps of Engineers |
| USC | United States Code |
| USEPA | U.S. Environmental Protection Agency |

| | |
|---|---|
| USFWS | United States Fish & Wildlife Service |
| USGS | United States Geological Survey |
| WOTUS | Waters of the US |
| WJTCA | Western Joshua Tree Conservation Act |
| WRP | Water Reclamation Plant |

# 1 Introduction

This Biological Resources Technical Report (BRTR) is intended to document the biological resources that are associated with Pure Water Antelope Valley (Project) located near the City of Palmdale, Los Angeles County, California. The Project is located outside of the northeastern extent of the City of Palmdale (refer to **Appendix A, Figure 1**). The surveys conducted and discussions presented in this BRTR are intended to support planning and regulatory agency permitting and associated documentation.

Reconnaissance-level surveys were conducted on May 8, 2024, and July 19, 2024, by Stantec Consulting Services Inc. (Stantec) biologists within 300 feet of the Project for general wildlife, habitat mapping, and focused rare plant surveys. These areas are defined as the Biological Study Area (BSA) (refer to **Appendix A Figures 1** through **6b**). The BRTR describes existing environmental conditions that occur within the BSA and evaluates the potential for biological resources to occur based on those conditions with an emphasis on special-status plant and wildlife species, wildlife corridors, and special-status/sensitive natural communities.

## 1.1 Project Location

The Project is partially located within the City of Palmdale in Los Angeles County, California. The BSA is surrounded by agricultural fields, open space, and neighborhoods/developments associated with the City of Palmdale. The Project site is in Sections 16, 17, 18, 19, 20, 21, 29, and 30; Townships 6 North and 11 West; within United States Geological Survey (USGS) Palmdale NW, California, 7.5-minute topographic quadrangle. The Project occurs at an elevation of approximately 2,537-2,576 feet above mean sea level, with average annual temperatures ranging from a low of 49 degrees Fahrenheit (°F) to a high of 78°F. Annual precipitation averages approximately 7.4 inches (U.S. Climate Data 2024).

## 1.2 Project Description

Stantec was retained by the Palmdale Water District (PWD) to provide program management services for its regional water augmentation program (Pure Water Antelope Valley or Program). Program components include an advanced water purification facility, conveyance pipelines, groundwater production and injection wells, and brine disposal (evaporation) ponds. Using advanced treatment processes including microfiltration, reverse osmosis, and ultraviolet light with advanced oxidation, Pure Water Antelope Valley will further purify tertiary treated wastewater to produce water that will meet all applicable state and federal drinking water standards and regulations. This purified water will be injected into the local groundwater aquifer, thereby supplementing PWD's existing water supplies. Pure Water Antelope Valley is intended to provide safe and reliable drinking water in the Antelope Valley.

# 2 Methods

The biological resources assessment of the BSA included but was not limited to a literature review, reconnaissance-level surveys, a habitat assessment, vegetation mapping, and rare plant surveys. Prior to the survey, a preliminary literature review of readily available resources was performed. The surveys were conducted on foot throughout the BSA.

## 2.1 Literature Review

A focused literature search of the BSA was conducted prior to the field survey. The BSA is located within the USGS Palmdale, 7.5-minute topographic quadrangle. A search of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) was conducted for the BSA and a surrounding 10-mile buffer area to determine special-status plants, wildlife, and vegetation communities that have been documented within this area (CDFW 2024a). The database included portions of the following quadrangles surrounding the BSA: Acton, Pacifico Mountain, Juniper Hills, Little Rock, Palmdale, Ritter Ridge, Lancaster West, Lancaster East, and Alpine Butte.

Additional data regarding the potential occurrence of special-status species and policies relating to these special-status natural resources were gathered from the following sources:

- State and Federally Listed Endangered and Threatened Animals of California (CDFW 2024b)
- State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFW 2024c)
- Special Animals List (CDFW 2024d)
- California's Wildlife – Life History and Range (CDFW 2024e)
- California Sensitive Natural Communities (CDFW 2024f)
- United States Fish & Wildlife Service (USFWS) Information for Planning and Consultation (USFWS 2024a)
- Inventory of Rare and Endangered Vascular Plants of California (California Native Plant Society [CNPS] 2024)
- Consortium of California Herbaria (CCH) (CCH 2024)
- Western Joshua Tree Conservation Act (WJTCA) (CDFW 2024g)

## 2.2 Biological Surveys

### 2.2.1 Site Reconnaissance and Wildlife Surveys

Stantec conducted one pedestrian survey of the Demo Facility Location on October 5, 2022, and two reconnaissance-level surveys on May 8 and July 19, 2024, to document the environmental conditions present within the BSA. A jurisdictional aquatic resources/wetlands delineation was also conducted on May 8, 2024; results are presented in a separate report. The primary goal of the reconnaissance surveys

was to assess the habitat that may be capable of supporting special-status species and determine the potential need for additional focused surveys for such species. Biologists recorded all incidental plant and wildlife observations during these surveys.

The surveys were conducted during a season and time of day when resident and migratory birds would be expected to be present and exhibiting normal activity, small mammals would be active and detectable visually or by sign, and above-ground amphibian and reptile movement would generally be detectable. However, it should be noted that some wildlife species and individuals may have been difficult to detect due to their elusive nature, cryptic morphology, or nocturnal behavior. The survey was conducted during daylight hours when temperatures were such that reptiles and other wildlife would be active.

The BSA was investigated on foot (where accessible) by experienced field biologists walking throughout publicly accessible areas at an average pace of approximately 1 mile per hour while visually scanning for wildlife and their sign and listening to wildlife songs and calls. Biologists paused as necessary to listen for wildlife or to identify, record, or enumerate any observed species. Species present were identified and recorded through direct visual observation, sound, or their sign (e.g., scat, tracks, etc.). Species identifications conform to the most up-to-date online databases and technical literature.

### 2.2.2 Rare Plant Surveys

Focused rare plant surveys were also conducted during the May and July site visits. Prior to initiating field efforts, biologists reviewed the CNDDB and CNPS inventory of rare plants to identify known occurrences of special status plant species and review the blooming period for each species. The timing of the two site visits was planned to ensure coverage during the bloom periods for potential special status plants. Surveys were conducted within 300-feet of the Project area.

### 2.2.3 Sensitive Biological Species

During surveys all species were recorded, and coordinates were taken for special status species. The plant and wildlife species compendiums for all observations during the May and July 2024 surveys are included in **Tables 2** and **3**.

### 2.2.4 Vegetation Mapping

Vegetation descriptions and nomenclature are based on the second edition of A Manual of California Vegetation (MCVII) (Sawyer et al. 2009), where applicable, and have been defined to the alliance level. Vegetation maps were prepared by recording tentative vegetation type boundaries over recent aerial photograph base maps using the Environmental Systems Research Institute (ESRI) Collector for ArcGIS app on an Apple iPhone coupled with an Arrow 100 Submeter Global Navigation Satellite System Receiver external global positioning system unit. Mapping was further refined in the office using ESRI ArcGIS (version 10.7) with aerial photograph base maps with an accuracy of 1 foot. Most boundaries shown on the maps are accurate within approximately 3 feet; however, boundaries between some vegetation types are less precise due to difficulties in interpreting aerial imagery and accessing stands of vegetation.

Vegetation communities can overlap in many characteristics and over time may shift from one community type to another. All vegetation maps and descriptions are subject to variability for the following reasons:

- In some cases, vegetation boundaries result from distinct events, such as wildfire or flooding, but vegetation types usually tend to intergrade on the landscape, without precise boundaries between them. Even distinct boundaries caused by fire or flood can be disguised after years of post-disturbance succession. Mapped boundaries represent the best professional judgment, but usually should not be interpreted as literal delineations between sharply defined vegetation types.
- Natural vegetation tends to exist in generally recognizable types, but also may vary over time and geographic region. Written descriptions cannot reflect all local or regional variation. Many (perhaps most) stands of natural vegetation do not strictly fit into any named type. Therefore, a mapped unit is given the best name available in the classification system being used, but this name does not imply that the vegetation unambiguously matches written descriptions.
- Vegetation tends to be patchy. Small patches of one named type are often included within larger stands mapped as units of another type.

# 3 Regulatory Environment

## 3.1 Federal Endangered Species Act

Federal Endangered Species Act (FESA) provisions protect federally listed threatened and endangered species and their habitats from unlawful “take” and ensure that federal actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of Designated Critical Habitat (DCH). Under FESA, take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct.” The USFWS regulations define harm to mean “an act which actually kills or injures wildlife.” Such an act “may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering” (50 Code of Federal Regulations [CFR] Section 17.3).

DCH is defined in FESA Section 3(5)(A) as “(i) the specific areas within the geographical area occupied by the species on which are found those physical or biological features: (I) essential to the conservation of the species; (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species upon a determination by the Secretary of Commerce or the Secretary of the Interior that such areas are essential for the conservation of the species.” The effects analyses for DCH must consider the role of the critical habitat in both the continued survival and the eventual recovery (i.e., the conservation) of the species in question, consistent with the recent Ninth Circuit judicial opinion, Gifford Pinchot Task Force v. USFWS.

Activities that may result in “take” of individuals are regulated by USFWS. USFWS produced an updated list of candidate species on December 6, 2007 (72 Federal Register [FR] 69034). Candidate species are not afforded any legal protection under FESA; however, candidate species typically receive special attention from federal and state agencies during the environmental review process.

## 3.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code [USC] 703-711) makes it unlawful to possess, buy, sell, purchase, barter or take any migratory bird listed in Title 50 of CFR Part 10. “Take” is defined as possession or destruction of migratory birds, their nests, and eggs. Disturbances that cause nest abandonment or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the MBTA. The MBTA prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary. The MBTA encompasses whole birds, parts of birds, bird nests, and eggs.

## 3.3 Bald and Golden Eagle Protection Act of 1940 (16 USC 668)

The Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 USC 668, enacted by 54 Stat. 250) protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this Act. Take of bald and golden eagles is defined as follows: “disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior’’ (72 FR 31132; 50 CFR 22.3).

USFWS is the primary federal authority charged with the management of golden eagles in the United States (U.S.). USFWS guidance on the applicability of current BGEPA statutes and mitigation is currently under review. On November 10, 2009, the USFWS implemented rules (74 FR 46835) governing the take of golden and bald eagles. The rules were released under the existing BGEPA, which has been the primary regulatory protection for unlisted eagle populations since 1940.

All activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity must be permitted by the USFWS under this act. The definition of disturb (72 FR 31132) includes interfering with normal breeding, feeding, or sheltering behavior to the degree that it causes or is likely to cause decreased productivity or nest abandonment. If a permit is required, due to the current uncertainty on the status of golden eagle populations in the western U.S., it is expected that permits would only be issued for safety emergencies or if conservation measures implemented in accordance with a permit would result in a reduction of ongoing take or a net take of zero.

## 3.4 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act, as amended in 1964, requires that federal agencies consult with National Marine Fisheries Service (NMFS), USFWS, and state wildlife agencies (i.e., CDFW) when proposed actions might result in modification of a natural stream or body of water. Federal agencies must consider the effects these projects would have on fish and wildlife development and provide for improvement of these resources. The Fish and Wildlife Coordination Act allows NMFS, USFWS, and CDFW to provide comments to United States Army Corps of Engineers (USACE) during review of projects under Section 404 of the Clean Water Act (concerning the discharge of dredged materials into navigable “waters of the U.S.” [WOTUS]) and Section 10 of the Rivers and Harbors Act (RHA) regarding obstructions in navigable waterways. NMFS comments provided under the Fish and Wildlife Coordination Act are intended to reduce environmental impacts to migratory, estuarine, and marine fisheries and their habitats.

## 3.5 Western Joshua Tree Conservation Act

The WJTCA is a California Law that was enacted in July 2023. The WJTCA prohibits the importation, export, take, possession, purchase, or sale of any western Joshua tree (*Yucca brevifolia*) in California unless authorized by CDFW. The act authorizes CDFW to issue permits for the incidental take of one or more western Joshua trees if the permittee meets certain conditions. Permittees may pay specified fees in lieu of conducting mitigation activities. The act also authorizes CDFW to issue permits for the removal of dead western Joshua trees and the trimming of live western Joshua trees under certain circumstances. Pursuant to the WJTCA, CDFW may enter into an agreement with any county or city to delegate limited authority to permit the taking of a western Joshua tree associated with developing single-family residences, multifamily residences, accessory structures, and public works projects. CDFW may similarly enter into an agreement with any county or city to delegate limited authority to permit the removal of dead western Joshua trees and the trimming of live western Joshua trees. Under the act, all in-lieu fees collected will be deposited into the Western Joshua Tree Conservation Fund for appropriation to CDFW solely for the purposes of acquiring, conserving, and managing western Joshua tree conservation lands and completing other activities to conserve the western Joshua tree.

Additionally, the act requires CDFW to develop and implement a western Joshua tree conservation plan in collaboration with governmental agencies, California Native American Tribes, and the public. The complete draft conservation plan must be presented no later than December 31, 2024, at a public meeting of the Fish and Game Commission for its review and approval. CDFW must also develop annual reports assessing the conservation status of the western Joshua tree and submit them to the commission and the State Legislature no later than January 1 of each year, starting in 2025.

In March 2022, CDFW prepared a status review report for western Joshua tree evaluating whether listing the species as endangered or threatened under the California Endangered Species Act would be warranted. The WJTCA requires CDFW to prepare an updated status review report by January 1, 2033, unless the Fish and Game Commission directs CDFW to complete the update sooner, and directs the Fish and Game Commission to consider the effectiveness of the conservation measures of the WJTCA, the updated status review report, and other factors before deciding whether the current petition to list the western Joshua tree under the California Endangered Species Act is warranted. (CDFW 2024g)

## 3.6 Federally Regulated Habitats

Areas that meet the regulatory definition of WOTUS are subject to the jurisdiction of the USACE under provisions of Section 404 of the Clean Water Act (CWA) (1972) and Section 10 of the RHA (1899). WOTUS may include all waters used or potentially used for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (e.g., intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as WOTUS, tributaries of waters otherwise defined as WOTUS, territorial seas, and wetlands (i.e., “Special Aquatic Sites”) adjacent to WOTUS (33 CFR Part 328, Section 328.3). The Project Area falls within the South Pacific Division of the USACE and is under the jurisdiction of the Los Angeles District. Construction activities within WOTUS are regulated by USACE. The placement of fill into such

waters must comply with permit requirements of USACE. USACE permits must also be consistent with State Water Quality Certification pursuant to Section 401 of the CWA.

In 1986, the federal agencies (USACE and U.S. Environmental Protection Agency [USEPA]) implemented historic regulations (the 1986 Regulations) that defined WOTUS to mean traditional navigable waters, the territorial seas, interstate waters, and intrastate waters whose use or degradation could affect interstate or foreign commence, as well as tributaries (streams that flow into larger streams or other bodies of water) of and wetlands adjacent to any of those waters.

The jurisdictional extent of USACE regulation changed with the 2001 Solid Waste Agency of Northern Cook County ruling. The U.S. Supreme Court held that the USACE could not apply Section 404 of the CWA to extend their jurisdiction over an isolated quarry pit. The Court ruled that the CWA does not extend Federal regulatory jurisdiction over non-navigable, isolated, intra-state waters. However, the Court made it clear that non-navigable wetlands adjacent to navigable waters are still subject to USACE jurisdiction.

In 2006, the U.S. Supreme Court issued its seminal decision in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (collectively referred to as *Rapanos*). Justice Scalia narrowly interpreted the statutory term “waters of the United States” in a four-Justice plurality opinion, holding that CWA jurisdiction extended over only “relatively permanent, standing or continuously flowing bodies of water” that are connected to traditional navigable waters, plus wetlands with a “continuous surface connection” to such relatively permanent water bodies. Justice Kennedy wrote separately, concurring with the Court’s judgment with respect to the facts of the case, but interpreted “waters of the United States” to include wetlands that possess a “significant nexus” to waters that are or were navigable in fact or that could reasonably be so made.

The Court’s split decision and lack of a commanding majority opinion in *Rapanos* created confusion among the federal agencies and public. On December 2, 2008, the federal agencies released a regulatory guidance document, *Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in Rapanos v. United States & Carabell v. United States* (USACE and USEPA 2008), addressing common questions about federal jurisdiction over WOTUS and clarifying the two jurisdictional standards from *Rapanos*. In the 2008 *Rapanos* Guidance, the federal agencies concluded that federal jurisdiction existed over certain waterbodies that meet the “relatively permanent” standard from Justice Scalia’s plurality opinion or Justice Kennedy’s “significant nexus” standard, the latter of which would be determined by a fact-specific analysis.

The 1986 Regulations as interpreted by the 2008 *Rapanos* Guidance were later replaced by the 2015 Clean Water Rule. The federal agencies attempted to provide clarification on jurisdiction following the *Rapanos* ruling by replacing the numerous categories of waterbodies found in the 1986 Regulations with four broader categories: (1) waters that are categorically “jurisdictional by rule” without the need for further analysis, including traditional navigable waters, interstate waters, the territorial seas, and impoundments of these waters; (2) waters that are jurisdictional by rule, if they meet the definitions for tributaries and adjacent waters established in the 2015 Clean Water Rule; (3) waters that are subject to case-specific jurisdictional analysis under the “significant nexus” standard; and (4) waters that are

categorically excluded from jurisdiction. The 2015 Clean Water Rule therefore resulted in an expansion in federal jurisdiction over waterbodies that might have otherwise been excluded from the definition of WOTUS on a case-by-case basis under the 1986 Regulations and the *Rapanos* ruling.

On June 9, 2021, the USACE and USEPA under the Biden Administration announced their intent to revise the definition of WOTUS to protect more waterways, beginning a new rulemaking process that restores protections put in place before 2015.

On January 18, 2023, the federal agencies published the final "Revised Definition of 'Waters of the United States'" rule (2023 Rule) in the Federal Register, which became effective on March 20, 2023 (USACE and USEPA 2023a). The 2023 Rule generally returns to the pre-2015 definition. The implications of the final 2023 WOTUS rule are such that many ephemeral waters not considered protected under the former 2020 NWPR would now be protected.

On September 8, 2023, the USACE and USEPA amended the CFR with a new Final Rule to conform the definition of WOTUS to the 2023 Supreme Court Sackett decision (USACE and USEPA 2023b). This conforming rule amends the provisions of the agencies' definition of WOTUS that are invalid under the Supreme Court's interpretation of the CWA in the 2023 decision. While EPA's and USACE's 2023 WOTUS rule defining WOTUS was not directly before the Supreme Court, the decision in Sackett made clear that certain aspects of the WOTUS 2023 rule are invalid. The amendments issued are limited and change only parts of the 2023 rule that are invalid under the Sackett decision. For example, the final rule removes the significant nexus test from consideration when identifying tributaries and other waters as federally protected. The result of the Sackett legal ruling and new Final Rule for WOTUS is that it rejected the 17-year-old "significant nexus" test from *Rapanos* and instead authored a new test – the "continuous surface connection" test – to determine what wetlands constitute WOTUS subject to the CWA.

## 3.7 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 requires federal agencies to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA into other planning requirements and prepare appropriate NEPA documents to facilitate better environmental decision-making. NEPA requires Federal agencies to review and comment on Federal agency environmental plans and documents when the agency has jurisdiction by law or special expertise with respect to any environmental impacts involved (42 USC 4321- 4327; 40 CFR 1500-1508). These guidelines establish an overall federal process for the environmental evaluation of projects.

## 3.8 California Environmental Quality Act

The California Environmental Quality Act (CEQA) establishes State policy to prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures. CEQA applies to discretionary actions directly undertaken, financed, or permitted by local or State lead agencies when those actions are found to have or are likely to have direct or indirect environmental impacts. Regulations for implementation are found in the State CEQA Guidelines published by the Resources Agency. These guidelines establish an overall process for the environmental evaluation of projects.

## 3.9 California Endangered Species Act

Provisions of the California Endangered Species Act (CESA) protect State-listed Threatened and Endangered species. The CDFW regulates activities that may result in "take" of individuals ("take" means "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") listed under CESA. Habitat degradation or modification is not expressly included in the definition of "take" under the California Fish and Game Code. The CDFW may authorize take under the CESA via an Incidental Take Permit through California Fish and Game Code Section 2081(b). CDFW also maintains lists for Candidate-Endangered Species and Candidate-Threatened Species. California Candidate Species are afforded the same level of protection as listed species. Additionally, the California Fish and Game Code contains lists of vertebrate species designated as "fully protected" (California Fish & Game Code §§ 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], 5515 [fish]). Such species may not be taken or possessed without an approved Natural Communities Conservation Plan.

In addition to Federal and State-listed species, the CDFW also has produced a list of California Species of Special Concern (SSCs) to serve as a "watch list." Species on this list are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. These SSCs may receive special attention during environmental review, but they do not have statutory protection.

## 3.10 Native Plant Protection Act (Fish & Game Code 1900-1913)

California's Native Plant Protection Act (NPPA) requires all State agencies to utilize their authority to carry out programs to conserve endangered and rare native plants. Provisions of NPPA prohibit the taking of listed plants from the wild and require notification of the CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that would otherwise be destroyed. The Applicant is required to conduct botanical inventories and consult with CDFW during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

## 3.11 California Fish and Game Code Section 1602

Section 1602 of the California Fish and Game Code requires an entity to notify CDFW before commencing an activity that will:

- Substantially divert or obstruct the natural flow, or substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or
- Deposit or dispose of debris, waste or other material where it may pass into any river, stream, or lake.

If any of these activities may substantially alter its bed, channel, or bank, or adversely affect existing fish and wildlife resources, a Lake and Streambed Alteration Agreement is required. A Lake and Streambed Alteration Agreement lists the CDFW conditions of approval relative to a proposed project and serves as an agreement between an applicant and the CDFW for the performance of activities subject to Section 1602. For the purposes of this Report, potential CDFW jurisdiction is interpreted as extending from the streambed/thalweg to the outer edge of adjacent riparian vegetation (for both natural and anthropogenic drainage features) and for this BSA, is roughly equivalent to “waters of the State” as defined by the Regional Water Quality Control Board.

## 3.12 Section 3503 & 3503.5 of the Fish and Game Code

Birds of prey are protected under the California Fish and Game Code. Sections 3503 and 3503.5 state it is “unlawful to take, possess, or destroy any birds of prey (in the order Falconiformes or Strigiformes) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto.” Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “take” by the CDFW. Under Sections 3503 and 3503.5 of the California Fish and Game Code, activities that would result in the taking, possessing, or destroying of any birds-of-prey, taking or possessing of any migratory nongame bird as designated in the MBTA, or the taking, possessing, or needlessly destroying of the nest or eggs of any raptors or non-game birds protected by the MBTA, or the taking of any non-game bird pursuant to Fish and Game Code Section 3800 are prohibited.

## 3.13 Palmdale Native Desert Vegetation Ordinance

The Palmdale Native Desert Vegetation Ordinance (City of Palmdale 1992) aims to protect and preserve desert vegetation, and particularly Joshua trees, so as to retain the unique natural desert aesthetics in some areas of the city, and to promote the general welfare of the community. Although it may not be feasible, practicable, or in the public interest to preserve all healthy desert vegetation regulated by the ordinance due to reasonable planning, developmental or property rights considerations, the design of development projects should strive to protect and maintain the most desirable and significant of the healthy desert vegetation in a manner consistent with the city general plan and CEQA. (Ord. 952 §2 (part) 1992)

All public and private property within the City which contains Joshua trees or other desert vegetation as defined by the ordinance shall follow the provisions for prohibition of removal, desert vegetation preservation plan requirements, and the desert vegetation preservation criteria and maintenance requirements. In summary, these provisions require that:

- A native desert vegetation removal permit shall be obtained from the city's landscape architect, or in lieu thereof, the director of public works' designee, prior to the removal of any native desert vegetation as defined in the ordinance. (Ord. 952 §2(part), 1992)
- All development proposal applications for sites containing native desert vegetation shall include a desert vegetation preservation plan, submitted with the development application.
- All development proposals for land which contains desert vegetation shall be subject to provisions regarding the preservation and ongoing maintenance of native desert vegetation both on-and off-site.

# 4 Existing Conditions

## 4.1 Setting

The BSA is partially located in the City of Palmdale in Los Angeles County, California. The BSA is surrounded by agricultural fields, open space, and neighborhoods/developments associated with Palmdale. The photographic log for the survey is included in **Appendix B** and depicts representative environmental conditions within the BSA and surrounding areas.

## 4.2 Vegetation Communities and Land Cover Types

As defined in the MCVII, a vegetation alliance is "a category of vegetation classification which describes repeating patterns of plants across a landscape. Each alliance is defined by plant species composition and reflects the effects of local climate, soil, water, disturbance and other environmental factors" (Sawyer et al. 2009). Generally, Stantec's mapping and description of plant communities follows the classification system described in MCVII. The MCVII is generally limited to communities that are native or naturalized within California. Biological resources observed within the BSA during the reconnaissance/botanical field surveys consisted primarily of common plant species and vegetation communities characteristic of the southeastern Antelope Valley.

The extent and condition of vegetation communities within the BSA varied depending on the level of existing development and land use activities, which have resulted in disturbed conditions with relatively low plant diversity. Within the BSA, Stantec biologists mapped and quantified acreages for four plant communities defined by Sawyer et al. (2009), and one landcover type (**Table 1**). The botanical nomenclature within this report follows the Jepson Herbarium online database, eFlora (Jepson Flora Project 2024). Plant species documented during the surveys are provided in Section 4.3.

*Table 1 Vegetation Communities and Land Cover Types occurring within the BSA*

| Vegetation Communities and Land Cover Types | Area (acres) of BSA |
|---|---|
| **Vegetation Communities** | |
| *Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance | 14.31 |
| *Brassica nigra* - *Centaurea* (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance | 242.50 |
| *Ericameria nauseosa* Shrubland Alliance | 21.69 |
| *Yucca brevifolia* Woodland Alliance | 35.89 |
| **Land Cover Type** | |
| Disturbed/Developed | 301.59 |
| **Total** | 616.09 |

## 4.2.1 Vegetation Communities

***Avena spp. - Bromus spp. Herbaceous Semi-Natural Alliance***

This community occurs around the southeast corner of the BSA, concentrated by E Avenue Q and 30th St E; 14.31 acres of this community were mapped within the BSA. Vegetation characteristic of the *Avena spp. - Bromus spp*. herbaceous semi-natural alliance consists of slim oat (*Avena barbata),* wildoats *(Avena fatua)*, purple false brome *(Brachypodium distachyon)*, rattlesnake grass *(Briza maxima)*, ripgut brome *(Bromus diandrus)*, soft chess *(Bromus hordeaceus)* and/or foxtail (*Hordeum murinum)* dominant or co-dominant with other non-natives in the herbaceous layer such as Australian saltbush (*Atriplex semibaccata)* and foxtail. Emergent trees and shrubs may be present at low cover. The applicable membership rule for this alliance is *Avena*, B*rachypodium*, *Briza*, *Bromus*, *Erodium* and/or *Hypochaeris* > 30% relative cover individually, or share > 50% relative cover in the herbaceous layer; and overall non-native herbs > 80% relative cover. This alliance occurs where cover is open to continuous. This alliance observed on site was dominated by ripgut brome, wildoats, foxtail, and stork's bill *(Erodium cicutarium).*

***Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance***

This community occurs throughout a majority of the BSA and is the most dominant vegetation community; 242.5 acres of this community were mapped within the BSA. Vegetation characteristic of the *Brassica nigra – Centaurea* herbaceous semi-natural alliance consists of black mustard (*Brassica nigra),* common mustard *(Brassica rapa),* Italian thistle *(Carduus pycnocephalus),* Tocalote *(Centaurea melitensis), y*ellow starthistle *(Centaurea solstitialis),* cardoon *(Cynara cardunculus),* geraldton carnation weed *(Euphorbia terracina),* short-podded mustard *(Hirschfeldia incana),* dyers woad *(Isatis tinctoria)* or wild radish (*Raphanus sativus)* or similar ruderal forb dominant in the herbaceous layer. Emergent trees and shrubs may be present at low cover. The applicable membership rule for this alliance is black mustard*,* short-podded mustard*,* wild radish, or other mustards occur with non-native plants at > 80% relative cover in the herbaceous layer, and mustards are the dominant herbs. This alliance occurs where cover is open to continuous. This alliance observed on site was widespread through most of the BSA and dominated by short-podded mustard*,* black mustard*,* tumble mustard *(Sisymbrium altissimum),* and Russian thistle *(Salsola tragus).*

***Ericameria nauseosa Shrubland Alliance***

This community is limited to the south side of E Avenue P and also concentrated around a drainage like feature that diagonals across the southern portion of the BSA; 21.69 acres if this community were mapped within the BSA. Vegetation characteristic of the *Ericameria nauseosa* shrubland alliance consists of rubber rabbitbrush *(Ericameria nauseosa)* dominant or co-dominant in the shrub canopy with common sagebrush (*Artemisia tridentata),* green rabbitbrush *(Chrysothamnus viscidiflorus), Ephedra spp.,* California buckwheat *(Eriogonum fasciculatum),* scalebroom *(Lepidospartum squamatum)* and *a*ntelope bush *(Purshia tridentata)*. Emergent trees may be present at low cover, including California juniper (*Juniperus californica),* Jeffrey pine *(Pinus jeffreyi),* single leaf pinyon *(Pinus monophyla)* or Joshua tree. The applicable membership rule for this alliance is rubber rabbitbrush >50% relative cover in the shrub canopy; rubber rabbitbrush ≥ 2% absolute cover or > 25% relative cover in the shrub canopy. This association occurs where canopy is open to continuous, and the herbaceous layer is sparse or grassy.

This alliance within the BSA was dominated by rubber rabbitbrush, Nevada ephedra, and California buckwheat.

***Yucca brevifolia Woodland Alliance***

This community mostly occurs around the northeastern BSA, adjacent to the oxidation ponds and along E Avenue P; 35.89 acres of this community were mapped within the BSA. Vegetation characteristic of the *Yucca brevifolia* woodland alliance consists of Joshua tree as an emergent small tree over a shrub or grass layer with burro weed (*Ambrosia Dumosa),* burrobrush (*Ambrosia Salsola),* common sagebrush, green sagebrush, black brush *(Coleogyne ramosissima),* buck horn cholla *(Cylindropuntia acanthocarpa),* Nevada ephedra, California buckwheat, sticky snakeweed *(Gutierrezia microcephala),* winter fat *(Krascheninnikovia lanata),* creosote bush *(Larrea tridentata),* Anderson thornbush *(Lycium andersonii),* Spanish bayonet *(Yucca baccata) and* Mohave yucca *(Yucca schidigera).* Other trees may be present at low cover, including California juniper, Utah juniper *(Juniperus osteosperma)* or single leaf pinyon. The applicable membership rule for this alliance is Joshua tree evenly distributed at ≥ 1% cover, *Juniperus* and/or *Pinus* spp. < 1% absolute cover in the tree canopy. This alliance occurs where both the canopy and shrub layer are open to intermittent, and the herbaceous layer is open to intermittent with perennial grasses and seasonal annuals. Within the BSA, Joshua tree was the dominant species for this alliance and it was codominant with creosote bush, Anderson thornbush, Nevada ephedra, and California buckwheat.

### 4.2.2 Land Cover Types

#### Disturbed/Developed

Within the BSA, this land cover type is defined and mapped by commercial and industrial buildings/structures, roads, the golf course, and the former oxidation ponds; 301.59 acres of this land cover type were mapped within the BSA. These areas are either typically cleared of vegetation, or are vegetated with developed landscaping, golf course lawns, and sparsely interspersed with ruderal pioneer plant species that colonized the disturbed soil. The oxidation ponds, for example, are currently dominated by bare ground and a variety of non-native, annual mustards, thistles, and grasses.

## 4.3 Plant Species Observed

The surveys resulted in the documentation of 65 total species of native and non-native plants within the BSA (**Table 2**)**.** Where applicable, the California Invasive Plant Council (Cal-IPC) inventory ranking is provided (Cal-IPC 2024).

*Table 2. Vascular Plant Species Observed in the BSA*

| Scientific | Common | Origin/Status |
|---|---|---|
| *Acmispon americanus* | Spanish lotus | Native |
| *Ailanthus altissima* | Tree of heaven | Non-native, Cal-IPC Moderate |
| *Ambrosia dumosa* | Burro weed | Native |
| *Amsinckia tessellata* | Devil's lettuce | Native |
| *Atriplex canescens* | Hoary saltbush | Native |
| *Atriplex lentiformis* | Big saltbush | Native |
| *Atriplex semibaccata* | Australian saltbush | Non-native, Cal-IPC Moderate |
| *Baccharis salicifolia* | Mulefat | Native |
| *Brassica nigra* | Black mustard | Non-native, Cal-IPC Moderate |
| *Brassica tournefortii* | Saharan mustard | Non-native, Cal-IPC High |
| *Bromus diandrus* | Ripgut brome | Non-native, Cal-IPC Moderate |
| *Bromus rubens* | Red brome | Non-native, Cal-IPC High |
| *Bromus tectorum* | Cheatgrass | Non-native, Cal-IPC High |
| *Calochortus kennedyi* | Desert mariposa lily | Native |
| *Clarkia sp.* | Clarkia | N/A |
| *Croton setiger* | Turkey-mullein | Native |
| *Cylindropuntia echinocarpa* | Silver cholla | Native |
| *Cylindropuntia sp.* | Cholla | Native |
| *Datura wrightii* | Jimsonweed | Native |
| *Descurainia sophia* | Flix sophia | Non-native, Cal-IPC Limited |
| *Dipterostemon capitatus* | Blue dicks | Native |
| *Eleocharis palustris* | Common spikerush | Native |
| *Ephedra nevadensis* | Nevada ephedra | Native |
| *Epilobium canum* | California fuchsia | Native |
| *Ericameria linearifolia* | Interior goldenbush | Native |
| *Ericameria nauseosa* | Rubber rabbitbrush | Native |
| *Erigeron canadensis* | Canada horseweed | Native |
| *Eriogonum angulosum* | Anglestem buckwheat | Native |
| *Eriogonum fasciculatum* | California buckwheat | Native |
| *Eriogonum mohavense* | Western mojave buckwheat | Native |
| *Erodium cicutarium* | Coastal heron's bill | Non-native, Cal-IPC Limited |
| *Euphorbia albomarginata* | Rattlesnake sandmat | Native |
| *Grayia spinosa* | Hop sage | Native |
| *Gutierrezia microcephala* | Sticky snakeweed | Native |
| *Helianthus annuus* | Hairy leaved sunflower | Native |

| Scientific | Common | Origin/Status |
|---|---|---|
| *Hirschfeldia incana* | Short podded mustard | Non-native, Cal-IPC Moderate |
| *Hordeum murinum* | Foxtail barley | Non-native, Cal-IPC Moderate |
| *Juncus torreyi* | Torrey's rush | Native |
| *Lactuca serriola* | Prickly wild lettuce | Non-native |
| *Larrea tridentata* | Creosote bush | Native |
| *Lasthenia californica* | California goldfields | Native |
| *Lupinus succulentus* | Arroyo lupine | Native |
| *Lycium andersonii* | Anderson thornbush | Native |
| *Malacothrix glabrata* | Desert dandelion | Native |
| *Malva parviflora* | Cheeseweed | Non-native |
| *Melilotus albus* | White sweetclover | Non-native |
| *Oenothera californica* | California evening primrose | Native |
| *Pinus sp.* | Pine | N/A |
| *Rumex crispus* | Curly dock | Non-native, Cal-IPC Limited |
| *Rumex salicifolius* | Willow dock | Native |
| *Salix exigua* | Sandbar willow | Native |
| *Salix laevigata* | Red willow | Native |
| *Salix lasiolepis* | Arroyo willow | Native |
| *Salsola tragus* | Russian thistle | Non-native, Cal-IPC Limited |
| *Schoenoplectus americanus* | Chairmaker's bulrush | Native |
| *Scirpus microcarpus* | Small fruited bulrush | Native |
| *Sisymbrium altissimum* | Tumble mustard | Non-native |
| *Sonchus oleraceus* | Sow thistle | Non-native |
| *Sphaeralcea ambigua* | Desert mallow | Native |
| *Tamarix ramosissima* | Tamarisk | Non-native, Cal-IPC High |
| *Trichostema lanceolatum* | Vinegarweed | Native |
| *Typha latifolia* | Broadleaf cattail | Native |
| *Ulmus pumila* | Siberian elm | Non-native |
| *Veronica anagallis-aquatica* | Water speedwell | Non-native |
| *Yucca brevifolia* | Western Joshua tree | Native |

## 4.4 Common Wildlife

This section describes the common wildlife observed during the reconnaissance-level survey and those species expected to occur within the BSA based on habitat characteristics and species known to occur in the region.

### 4.4.1 Terrestrial Invertebrates

As in all ecological systems, invertebrates in the BSA play a crucial role in biological processes. They serve as the primary or secondary food source for amphibian, bird, reptile, and mammal predators; they provide important pollination vectors for numerous plant species; they act as efficient components in controlling pest populations; and they support the naturally occurring maintenance of an area by consuming detritus and contributing to necessary soil nutrients. Though moderately urbanized, habitat conditions within the BSA provide a suite of microhabitat conditions for a wide variety of terrestrial insects and other invertebrates that are known to adapt to such disturbance. A focused insect survey was not performed within the BSA for this Project; however, a variety of common insects were observed during the reconnaissance-level survey including grasshoppers (*Orthoptera* spp.), moths and butterflies (*Lepidoptera* spp.), wasps, bees, and ants (*Hymenoptera* spp.), and dragonflies and damselflies (*Odonata* spp.).

### 4.4.2 Fish

There is no suitable aquatic habitat for fish within the BSA. While the two drainages in the western extent of the BSA contained water during both site visits, neither drainage maintains standing water year-round nor are they connected to any larger drainage system.

### 4.4.3 Amphibians

There were two drainages towards the western extent of the BSA that contained standing water and had a minimal wetland vegetation footprint. Each drainage stems from and experiences water input from their upstream PWD groundwater pumping stations. Therefore, there is poor suitable amphibian habitat because each drainage only supports ephemeral/perennial flows, which do not provide long periods of standing water and are not connected to any larger natural drainage system. While amphibian species were not observed during the reconnaissance-level survey within the BSA, there have been prior observations in the greater area for western toad (*Bufo boreas*).

### 4.4.4 Reptiles

The number and type of reptile species that may occur at a given site are related to biotic and abiotic features present in the BSA. These include the diversity of plant communities, substrate, soil type, and presence of refugia such as rock piles, boulders, and native debris. Weather conditions were favorable during the survey for reptile activity.

Many reptile species, even if present, are difficult to detect because they are cryptic and their life history characteristics (e.g., foraging, thermoregulatory behavior, fossorial nature, camouflage, etc.) limit their ability to be observed during most surveys. Further, many species are only active within relatively narrow thermal limits, avoiding both cold and hot conditions, and most take refuge in microhabitats that are not directly visible to the casual observer, such as rodent burrows, in crevices, under rocks and boards, and in dense vegetation where they are protected from unsuitable

environmental conditions and predators (USACE and California Department of Fish and Game [CDFG] 2010). In some cases, they are only observed when flushed from their refugia.

Gopher snake (*Pituophis catenifer*), Southern alligator lizard (*Elgaria multicarinata*), Western whiptail (*Aspidoscelis tigris*), and Western side blotch lizard (*Uta stansburiana elegans*) were observed within the BSA. Species not observed within the BSA but known to occur in the area include Mojave rattlesnake (*Crotalus scutulatus*), Desert horned lizard (*Phrynosoma platyrhinos*), Desert night lizard (*Xantusia vigilis*), and Western fence lizard (*Sceloporus occidentalis*).

### 4.4.5 Birds

Birds were identified by sight and song and were observed throughout the BSA. House finch *(Haemorhous mexicanus),* American crow *(Corvus brachyrhynchos),* horned lark *(Eremophila alpestris),* common raven *(Corvus corax),* and mourning dove *(Zenaida macroura)* were observed within the BSA. During the May site visit, one active red-tailed hawk nest was observed in the water tower by the southwest parcel of project, near the proposed facilities; during the July site visit, the nest appeared to have fledged. In May, there was an active common raven nest in a Western Joshua tree across from the Palmdale Water Reclamation Plant (WRP). During the July survey the nest was determined to have failed, likely due to predation, considering its nest contents were scattered and a raven carcass was observed nearby. Species not observed within the BSA but known to occur in the area include House sparrow (*Passer domesticus*) and Great Horned Owl (*Bubo virginianus*).

### 4.4.6 Mammals

Generally, the distribution of mammals on a given site is associated with factors such as access to perennial water, topographical and structural components (e.g., rock piles, vegetation) that provide cover and support prey base, and the presence of suitable soils for fossorial mammals (e.g., sandy areas). Many small burrows were observed consistently throughout the BSA. Some of these burrows were actively being used by Desert cottontail (*Sylvilagus audubonii*) and California ground squirrel (*Spermophilus beecheyi*) and individuals were seen flushing from burrows as they were approached. Mammal species observed within the BSA are detailed in **Table 3**.

*Table 3 Wildlife Species Observed in the BSA*

| Scientific Name | Common Name | Notes |
|---|---|---|
| **Reptiles** | | |
| *Aspidoscelis tigris* | Western whiptail | |
| *Elegaria multicarinata* | southern alligator lizard | |
| *Pituophis catenifer* | gopher snake | |
| *Uta stansburiana* | common side-blotched lizard | |
| **Birds** | | |
| *Agelaius phoeniceus* | red-winged blackbird | |

| Scientific Name | Common Name | Notes |
|---|---|---|
| **Reptiles** | | |
| *Aspidoscelis tigris* | Western whiptail | |
| *Elegaria multicarinata* | southern alligator lizard | |
| *Pituophis catenifer* | gopher snake | |
| *Uta stansburiana* | common side-blotched lizard | |
| *Buteo jamaicensis* | red-tailed hawk | One red-tailed hawk nest was observed during the May site visit on the water tank in the southwest parcel of project, near the proposed facilities. The nest was likely in incubation phase. During the July site visit, the nest had fledged and was no longer active. |
| *Columba livia* | rock pigeon | |
| *Corvus brachyrhynchos* | American crow | |
| *Corvus corax* | common raven | One common raven nest was observed in a Western Joshua tree across the street from the Palmdale WRP during the May site visit. It was likely active given the raven's level of agitation within 50 ft. During the July site visit, the nest had fallen off the tree and looked to have failed. |
| *Eremophila alpestris* | horned lark | |
| *Haemorhous mexicanus* | house finch | |
| *Mimus polyglottos* | Northern mockingbird | |
| *Sayornis saya* | Say's phoebe | |
| *Setophaga coronata* | yellow-rumped warbler | |
| *Sturnus vulgaris* | European starling | |
| *Zenaida macroura* | mourning dove | |
| **Mammals** | | |
| *Lepus californicus* | Black-tailed jackrabbit | |
| *Otospermophilus beecheyi* | California ground squirrel | |
| *Sylvilagus audubonii* | Desert cottontail | |

## 4.5 Soils

Historical soils data from the Natural Resources Conservation Service (NRCS) were used to determine potential soil types that may occur within the Study Area. NRCS GIS data accessible online (NRCS 2023a) provide information on soil types collected from soil surveyors who have surveyed the landscape and provided taxonomic classification and mapping of soil types. This allows for estimation of acreages of each soil type identified within a specified area. Characteristics of soils present within the Study Area are summarized in **Table 4** – Historical Soils Occurring Within the Study Area; NRCS soils mapping is presented in **Appendix, Figure 4.**

*Table 4 Historical Soil Units Occurring within the BSA*

| Map Unit Symbol | Map Unit Name | Description | Area within BSA (acres) |
|---|---|---|---|
| AcA | Adelanto coarse loamy sand, 2 to 5 percent slopes | The Adelanto series consists of very deep, well drained soils that formed in granitic parent material on alluvial fans and plains. | 190.75 |
| CaA | Cajon loamy sand, 0 to 2 percent slopes | The Cajon series consists of very deep, excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Cajon soils are associated with alluvial fans, fan aprons, fan skirts, inset fans, and river terraces. | 13.63 |
| CbA | Cajon loamy sand, loamy substratum, 0 to 2 percent slopes | The Cajon series consists of very deep, excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Cajon soils are associated with alluvial fans, fan aprons, fan skirts, inset fans, and river terraces. | 65.30 |
| GsA | Greenfield sandy loam, 0 to 2 percent slopes | The Greenfield series consists of deep well drained soils that formed in moderately coarse and coarse textured alluvium derived from granitic and mixed rock sources. Greenfield soils are on alluvial fans and terraces and have slopes of 0 to 30 percent. | 16.73 |
| HkA | Hesperia fine sandy loam, 0 to 2 percent slopes | The Hesperia series consists of very deep, well drained soils that formed in alluvium derived primarily from granite and related rocks. Hesperia soils are on alluvial fans, valley plains and stream terraces and have slopes of 0 to 9 percent. | 64.07 |
| M-W | Miscellaneous water | Mapped as Los Angeles County Sanitation Districts Oxidation Ponds within the Survey Area. | 163.60 |
| Ro | Rosamond fine sandy loam | The Rosamond series consists of deep, well drained soils that formed in material weathered and mainly from granitic alluvium. Rosamond soils are on the lower margin of the alluvial fans between sloping fans and the playas and have slopes of 0 to 2 percent. | 62.07 |
| Rp | Rosamond loam | The Rosamond series consists of deep, well drained soils that formed in material weathered and mainly from granitic alluvium. Rosamond soils are on the lower margin of the alluvial fans between sloping fans and the playas and have slopes of 0 to 2 percent. | 39.93 |
| | | **Total** | **616.09** |

Source: NRCS 2024a, 2024b

## 4.6 Aquatic Resources

The BSA is within Hydrologic Unit Code (HUC)-8 18090206 – Antelope – Fremont Valleys. The BSA is located within the Antelope Valley groundwater basin, and in the Landcaster groundwater subbasin. In general, groundwater in the Antelope Valley Basin flows northeasterly from the mountain ranges to the dry lakes. The basin is principally recharged by infiltration of precipitation and runoff from the surrounding mountains and hills in ephemeral stream channels (Los Angeles County Public Works 2014).

A review was conducted of aerial imagery, USGS topographic maps, the National Wetlands Inventory (NWI; USFWS 2024), and the National Hydrography Dataset (NHD; USGS 2024) within and adjacent to the BSA. Several unnamed drainages occur within the southwestern portion of the BSA as mapped by

NWI/NHD but only one of these drainages was observed to have any discernable drainage characteristics (i.e., bed, bank, and ordinary high water mark). This drainage enters the BSA in the southwestern section and traverses through open land until it enters the BSA again to the north. Additionally, there is another drainage that enters the BSA just north of the drainage previously discussed where they confluence in the open land before reentering the BSA.

Two other regional streams mapped by NWI and/or NHD as formerly traversing the BSA likely were channelized from runoff from nearby foothills and may have flowed unhindered at a point in their history. However, most sections of these streams within the BSA have been virtually eliminated as a result of depositional characteristics of typical desert systems in an arid climate.

# 5 Special-Status Biological Resources

The background information presented above combined with habitat assessments performed during the surveys was used to evaluate special-status natural communities and special-status plant and animal taxa that either occur or may have the potential to occur within the BSA and adjacent habitats. For the purposes of this BRTR, special-status taxa are defined as plants or animals that:

- Have been designated as either rare, threatened, or endangered by CDFW or the USFWS, and are protected under either the California Endangered Species Act or FESA,
- Are candidate species being considered or proposed for listing under these same acts,
- Are recognized as California Species of Special Concern (SSC) by the CDFW,
- Are ranked by CNPS as California Rare Plant Rank (CRPR) 1, 2, 3, or 4 plant species,
- Are fully protected by the California Fish and Game Code (FGC), Sections 3511, 4700, 5050, or 5515,
- Included in the CDFW Special Animals List (CDFW 2024), or
- Are of expressed concern to resource/regulatory agencies, or local jurisdictions.

## 5.1 Special-Status Natural Communities

Special-status natural communities are defined by CDFW (2009) as, “communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects.” All vegetation within the state is ranked with an “S” rank, however only those that are of special concern (S1-S3 rank) are generally evaluated under CEQA. One vegetation community within the BSA is considered to have special status: Joshua tree woodland. Joshua tree woodlands have a ranking of S3, meaning this community is vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

The BSA does not occur within a Natural Community Conservation Plan, but it does occur within the Western Joshua Tree Conservation Act range and the Palmdale Native Desert Vegetation Ordinance

## 5.2 Designated Critical Habitat

DCH is defined by the USFWS (2020b) as, “specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection.” DCH may also include areas that are not currently occupied by the species but will be needed for its recovery. There is no DCH located within the BSA, and the closest occurrence is Arroyo toad DCH approximately 8.5 miles southeast of the BSA.

## 5.3 Special-Status Plants

**Table 5** presents a list of special-status plants, including federal- and state-listed species and CRPR 1-4 species that are known to occur in and in the region surrounding the BSA (within 10 miles) (**Appendix A Figure 6**).

Records searches of the CNDDB and the CNPS Online Inventory were performed for special-status plant taxa. Each of the taxa identified in the record searches was assessed for their potential to occur within the BSA based on the following criteria:

- **Present:** Taxa were observed within the BSA during recent botanical surveys or population has been acknowledged by CDFW, USFWS, or local experts.
- **High:** Both a documented recent record (within 10 years) exists of the taxa within the BSA, or immediate vicinity (approximately 5 miles) and the environmental conditions (including soil type) associated with taxa presence occur within the BSA.
- **Moderate:** Both a documented recent record (within 10 years) exists of the taxa within the BSA, or the immediate vicinity (approximately 5 miles) and the environmental conditions associated with taxa presence are marginal and/or limited within the BSA; the BSA is located within the known current distribution of the taxa and the environmental conditions (including soil type) associated with taxa presence occur within the BSA.
- **Low:** A historical record (over 10 years) exists of the taxa within the BSA, or general vicinity (approximately 10 miles) and the environmental conditions (including soil type) associated with taxa presence are marginal and/or limited within the BSA.
- **Not Likely to Occur:** The environmental conditions associated with taxa presence do not occur within the BSA.

*Table 5 Known and Potential Occurrences of Special-Status Plant Taxa within the BSA*

| Scientific Name | Common Name | Status | Habitat and Distribution | Blooming Period | Potential to Occur |
|---|---|---|---|---|---|
| *Astragalus hornii Var. hornii* | Horn's milk-vetch | S1, 1B.1 | Meadows and seeps, playas, alkaline, lake margins; 60-850 m. | Mar - Oct | **Not Likely to Occur**: Suitable habitat does not occur within the BSA.<br>The nearest and most recent recorded occurrence is approximately 2.15 miles southwest of the BSA; this occurrence was recorded in 1929. |
| *Astragalus preussii var. laxiflorus* | Lancaster milk-vetch | S1, 1B.1 | Chenopod scrub; 700 m. | Mar - May | **Low**: Limited marginally suitable habitat occurs within the BSA.<br>The nearest and most recent recorded occurrence is approximately 6.23 miles northwest of the BSA; this occurrence was recorded in 1902. |
| *Calochortus clavatus var. gracilis* | Slender mariposa-lily | S2S3, 1B.2 | Chaparral, coastal scrub, valley and foothill grassland, shaded foothill canyons; < 1,000 m. | May – Jun | **Not Likely to Occur**: Suitable habitat does not occur within the BSA.<br>The nearest and most recent recorded occurrence is approximately 9.47 miles west of the BSA; this occurrence was recorded in 2010 |
| *Calochortus striatus* | Alkali mariposa-lily | S2S3, 1B.2 | Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps; 70-1,595m, | Apr - Jun | **Low**: Limited marginally suitable habitat occurs within the BSA.<br>The nearest recorded occurrence is approximately 6.60 miles northwest of the BSA; this occurrence was recorded in 2005. |
| *Canbya candida* | White pygmy-poppy | S3S4 | Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; 600-1,460 m. | Mar - Jun | **Low**: Limited marginally suitable habitat occurs within the BSA.<br>The most recent recorded occurrence is approximately 8.36 miles south of the BSA; this occurrence was recorded in 1926. |

| Scientific Name | Common Name | Status | Habitat and Distribution | Blooming Period | Potential to Occur |
|---|---|---|---|---|---|
| *Chorizanthe parryi var. parryi* | Parry's spineflower | S2, 1B.1 | Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; 275-1,220 m. | Apr - Jun | **Not Likely to Occur**: Suitable habitat does not occur within the BSA.<br>The nearest and most recent recorded occurrence is approximately 6.23 miles north of the BSA; this occurrence was recorded in 1896. |
| *Eriastrum rosamondense* | Rosamond eriastrum | S1, 1B.1 | Chenopod scrub (openings), vernal pools (edges), often sandy microhabitats; 700-1,175 m. | Apr - Jul | **Low**: Limited marginally suitable habitat occurs within the BSA.<br>The nearest and most recent recorded occurrence is approximately 9.53 miles northwest of the BSA; this occurrence was recorded in 1993. |
| *Loeflingia squarrosa var. artemisiarum* | Sagebrush loeflingia | S2, 2B.2 | Desert dunes, Great basin scrub, Sonoran desert scrub, sandy; 700-1,615 m. | Apr - May | **Moderate**: Limited suitable habitat occurs within the BSA.<br>The nearest recorded occurrence is approximately 4.55 miles northwest of the BSA; this occurrence was recorded in 2005. |
| *Opuntia basilaris var. brachyclada* | Short-joint beavertail | S3, 1B.2 | Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; 425-1,800 m. | Apr – Jun (Aug) | **Moderate**: Limited suitable habitat occurs within the BSA.<br>The most recent recorded occurrence is approximately 9.42 miles south of the BSA; this occurrence was recorded in 2018. |
| *Stylocline masonii* | Mason's neststraw | S1, 1B.1 | Chenopod scrub, pinyon and juniper woodland, sandy; 100-1,200 m. | Mar - May | **Low**: Limited marginally suitable habitat occurs within the BSA.<br>The nearest and most recent recorded occurrence is approximately 9.83 miles southwest of the BSA; this occurrence was recorded in 1991. |
| *Symphyotrichum greatae* | Greata's aster | S2, 1B.3 | Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, riparian woodland, damp places in canyons; 300–2,000 m. | Jun – Oct | **Not Likely to Occur**: Suitable habitat does not occur within the BSA.<br>The nearest and most recent recorded occurrence is approximately 9.22 miles southwest of the BSA; this occurrence was recorded in 1893. |

| Scientific Name | Common Name | Status | Habitat and Distribution | Blooming Period | Potential to Occur |
|---|---|---|---|---|---|
| *Thysanocarpus rigidus* | Rigid fringepod | S2, 1B.2 | Pinyon and juniper woodland, dry and rocky microhabitats; 600-2,200 m. | Feb - May | **Not Likely to Occur**: Suitable habitat does not occur within the BSA.<br>The nearest and most recent recorded occurrence is approximately 8.30 miles south of the BSA; this occurrence was recorded in 2005. |
| *Yucca brevifolia* | Josha tree | SC | Desert flats, slopes; 400-2,300m | Mar - Jun | **Present:** Mostly documented towards the northeast periphery of the BSA, bordering the oxidation ponds. Also concentrated towards the periphery of the BSA along E Avenue P, with several other individuals scattered throughout the rest of the BSA. |

Sources: CNPS 2024, Jepson Flora Project 2024, CDFW 2024a

Federal Designation
FE = Federally Endangered
FT = Federally Threatened
FC = Federal Candidate Species for Listing CDFW State Designation

State Ranking
SE = State Endangered
SR = State Rare
ST = State Threatened
SC= State Candidate for listing
S1 = Critically Imperiled
S2 = Imperiled
S3 = Vulnerable
S4 = Apparently Secure
S5 = Secure

California Rare Plant Rank (CRPR)
1A Plants considered by the CNPS to be extinct in California.
1B Plants rare, threatened, or endangered in California and elsewhere.
2B Plants presumed extinct in California but more common elsewhere.
3 Review List: Plants about which more information is needed.
4 Plants of limited distribution – a watch list
.1 Seriously threatened in California (high degree/immediacy of threat).
.2 Fairly threatened in California (moderate degree/immediacy of threat).
.3 Not very threatened in California (low degree/ immediacy of threat or no current threats known).

## 5.4 Special-Status Wildlife

Special-status taxa include those listed as threatened or endangered under the federal or California Endangered Species Acts, taxa proposed for such listing, SSC, and other taxa that have been identified by the USFWS, CDFW, or local jurisdictions as unique or rare and which have the potential to occur within the BSA.

The CNDDB was queried for occurrences of special- status wildlife taxa within the BSA and surrounding 10-mile area, as discussed above in Section 2.0. **Table 6** summarizes the special-status wildlife taxa known to occur regionally (within 10 miles) and their potential for occurrence in the BSA (**Appendix A, Figure 6a**).

Each of the taxa identified in the database reviews/searches were assessed for potential to occur within the BSA based on the following criteria:

- **Present:** Taxa (or sign) were observed in the BSA or in the same watershed (aquatic taxa only) during the most recent surveys, or a population has been acknowledged by CDFW, USFWS, or local experts.
- **High:** Habitat (including soils) for the taxa occurs on site and a known occurrence occurs within the BSA or adjacent areas (within 5 miles of the BSA) within the past 20 years; however, these taxa were not detected during the most recent surveys.
- **Moderate:** Habitat (including soils) for the taxa occurs on site and a known regional record occurs within the database search, but not within 5 miles of the BSA or within the past 20 years; or a known occurrence occurs within 5 miles of the BSA and within the past 20 years and marginal or limited amounts of habitat occurs on site; or the taxa's range includes the geographic area and suitable habitat exists.
- **Low:** Limited habitat for the taxa occurs on site and no known occurrences were found within the database search and the taxa's range includes the geographic area.
- **Not Likely to Occur:** The environmental conditions associated with taxa presence do not occur within the BSA.

*Table 6. Known and Potential Occurrences of Special-Status Wildlife within the BSA*

| Taxa | | Status | Habitat Types | Potential to Occur |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | | | |
| **Invertebrates** | | | | |
| *Bombus crotchii* | Crotch's bumble bee | SC, S2 | Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum*. | **Moderate**: Limited marginally suitable habitat occurs within the BSA. The nearest recorded occurrence is approximately 0.81 miles west of the BSA; this occurrence was recorded in 1931. |
| *Bombus pensylvanicus* | American bumble bee | S2 | Open farmland and grassland. Uses decaying wood for hibernating sites. This species is a generalist forager, so native, high floral diversity is preferred. | **Moderate:** Limited suitable habitat occurs within the BSA. The nearest and most recent recorded occurrence is approximately 8.34 miles south of the BSA; this occurrence was recorded in 1982. |
| *Helminthoglypta fontiphila* | Soledad shoulderband | S1 | Rock outcrops and talus slopes of the three mountain peaks southeast of Bakersfield. Prefers north facing slopes but has been observed on south facing slopes. | **Moderate:** Limited marginally suitable habitat occurs within the BSA. The nearest recorded occurrence is potentially within the BSA; the date of this occurrence is unknown. |
| **Amphibians** | | | | |
| *Anaxyrus californicus* | Arroyo toad | FE, S2, SSC | Alongside creeks and rivers with shallow pebble bottoms near sandy terrains. When out of water takes refuge in sandy soil for protection and shelter. | **Not Likely to Occur:** No suitable habitat within the BSA. The most recent recorded occurrence is approximately 8.36 miles south of the BSA; this occurrence was recorded in 2001. |
| *Rana draytonii* | California red-legged frog | FT, SSC, S2S3 | Sheltered, permanent or seasonal ponds, marshes, springs, quiet stream pools, or lakes. Breeding habitat is in areas with deep pools and dense, shrubby riparian or emergent vegetation. | **Not Likely to Occur:** No suitable habitat within the BSA. The nearest and most recent recorded occurrence is approximately 9.93 miles west of the BSA; this occurrence was recorded in 1995. |

| Taxa | | Status | Habitat Types | Potential to Occur |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | | | |
| *Rana musacosa* | Southern mountain yellow-legged frog | FE, SE, S2, WL | Mountain creeks, lakes and lakeshores, streams, and pools, preferring sunny areas in the Sierra Nevada and the Transverse Ranges. | **Not Likely to Occur:** No suitable habitat within the BSA.<br>The nearest recorded occurrence is approximately 9.53 miles south of the BSA; this occurrence was recorded in 1969. |
| **Reptiles** | | | | |
| *Anniella pulchra* | Northern California legless lizard | S2S3, SSC | Coastal sand dunes, sandy washes, alluvial fans, valley-foothill, chaparral, and coastal scrub habitats. Preferably moist, warm, loose soil with some plant cover. | **Moderate:** Limited marginally suitable habitat occurs within the BSA.<br>The most recent recorded occurrence is 3.68 miles southeast of the BSA; the date of this occurrence was 2017. |
| *Arizona elegans occidentalis* | California glossy snake | S2, SSC | Deserts and open dry places, such as grassland and chaparral. | **Moderate**: Limited marginally suitable habitat occurs within the BSA.<br>The most recent recorded occurrence is approximately 7.76 miles southeast of the BSA; this occurrence was recorded in 2015. |
| *Emys marmorata* | Western pond turtle | FC, S3, SSC | Marshes, streams, rivers, ponds and lakes with emergent logs or boulders for nesting. | **Not Likely to Occur:** No suitable habitat within the BSA.<br>The most recent recorded occurrence is approximately 8.48 miles west of the BSA; this occurrence was recorded in 1999. |
| *Gopherus agassizii* | Desert tortoise | FT, ST, S2S3 | Sandy flats to rocky foothills with creosote bush, grasses, and wildflowers. | **Moderate**: Suitable habitat occurs within the BSA.<br>The nearest and most recent recorded occurrence is approximately 9.10 miles east, northeast of the BSA; this occurrence was recorded in 1991. |
| *Phrynosoma blainvillii* | Coast horned lizard | S4, SSC | Sandy soils for burrowing near ant hills with logs or rocks for basking in preferably Alkali Desert scrub, annual grassland, and various oak and closed-cone woodlands | **Moderate**: Marginally suitable habitat occurs within the BSA.<br>The nearest recorded occurrence is approximately 1.14 miles west of the BSA; this occurrence was recorded in 1964. |

| Taxa | | Status | Habitat Types | Potential to Occur |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | | | |
| *Thamnophis hammondii* | Two-striped garter snake | S3S4, SSC | Generally found in or near permanent fresh water, often along streams with rocky beds bordered by willows and other riparian vegetation, including mountain slopes and desert oases. | **Not Likely to Occur:** No suitable habitat within the BSA.<br>The nearest recorded occurrence is approximately 8.17 miles west of the BSA; this occurrence was recorded in 1995. |
| **Birds** | | | | |
| *Accipiter cooperii* | Cooper's hawk | S4, WL | Nest in coniferous, deciduous, and mixed woods, typically those with tall trees and with openings or edge habitat nearby. | **Not Likely to Occur (nesting) / Not Likely to Occur (foraging):** No suitable habitat within the BSA.<br>The nearest recorded occurrence is approximately 1.5 miles west of the BSA; this occurrence was recorded in 1921. |
| *Agelaius tricolor* | Tricolored blackbird | ST, S2, SSC | Breeds near fresh water, preferably in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats. | **Low (nesting) / Moderate (foraging)**: Limited suitable habitat occurs within the BSA.<br>The nearest recorded occurrence is approximately 2.88 miles south of the BSA; this occurrence was recorded in 2011. |
| *Aimophila ruficeps canescens* | Southern California rufous-crowned sparrow | S4, WL | Moderate to steep, dry, rocky, south-, west-, or east-facing slopes vegetated with low scattered scrub cover interspersed with patches of grasses and forbs or rock outcrops. | **Not Likely to Occur (foraging) / Not Likely to Occur (nesting):** No suitable habitat within the BSA.<br>The nearest and most recent recorded occurrence is approximately 6.85 miles west, southwest of the BSA; this occurrence was recorded in 2005. |
| *Aquila chrysaetos* | Golden eagle | SL, FP, WL | Open grassland or desert scrub habitat, as well as agricultural areas. For nesting, prefer cliff edges or high trees. | **Low (nesting) / Moderate (foraging)**: Limited marginally suitable habitat occurs within the BSA.<br>The nearest and most recent recorded occurrence is approximately 9.09 miles south, southwest of the BSA; this occurrence was recorded in 1965. |

| Taxa | | Status | Habitat Types | Potential to Occur |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | | | |
| *Artemisiospiza belli belli* | Bell's sage sparrow | S3, WL | Chaparral dominated by chamise and/or California sagebrush. Nests on the ground or in a shrub, up to about 1 m above ground. | **Not Likely to Occur (nesting) / Not Likely to Occur (foraging):** No suitable habitat within the BSA.<br>The nearest and most recent recorded occurrence is approximately 8.15 miles west of the BSA; this occurrence was recorded in 2005. |
| *Athene cunicularia* | Burrowing owl | S2, SSC | A yearlong resident of open, dry grassland and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. Usually, nests in old burrows of ground squirrels, or other small mammals. May dig own burrow in soft soil. Nest chamber lined with excrement, pellets, debris, grass, feathers; sometimes unlined. Pipes, culverts, and nest boxes used where burrows are scarce. | **High (nesting) / High (foraging)**: Suitable habitat and soils occur within the BSA.<br>The nearest recorded occurrence is approximately 0.79 miles north of the BSA; this occurrence was recorded in 2004. A potential pellet was found near a burrow of suitable size within the BSA. Pellet appeared around a year old, and no activity was observed at the burrow. |
| *Buteo regalis* | Ferruginous hawk | S3S4, WL | Arid and semiarid grassland including open, level, or rolling prairies, agricultural land, ranches, and desert edges largely devoid of trees. | **Low (nesting) / High (foraging)**: Suitable habitat and soils occur within the BSA.<br>The nearest recorded occurrence is approximately 3.41 miles north of the BSA; this occurrence was recorded in 2008. |
| *Buteo swainsoni* | Swainson's hawk | ST, S4 | Plains, dry grassland, farmland, and ranch country with scattered groves of trees for nest sites. | **Low (nesting) / High (foraging)**: Suitable habitat and soils occur within the BSA.<br>The nearest recorded occurrence is approximately 1.21 miles northeast of the BSA; this occurrence was recorded in 2020. |
| *Charadrius montanus* | Mountain plover | S2, SSC | Semi-arid plains, grasslands, and plateaus. Nests in mostly short grass prairie and arid plains. | **Moderate (nesting) / Moderate (foraging)**: Limited suitable habitat occurs within the BSA.<br>The nearest recorded occurrence is approximately 0.01 miles north of the BSA; this occurrence was recorded in 2007. |

| Taxa | | Status | Habitat Types | Potential to Occur |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | | | |
| *Falco mexicanus* | Prairie falcon | S4, WL | Open country in arid regions. Shortgrass prairie, high desert, low deserts in winter, farmland. Nests often on rock cliffs or ledges. | **Low (nesting) / Moderate (foraging)**: Limited marginally suitable habitat occurs within the BSA.<br>The nearest recorded occurrence is approximately 6.40 miles south, southwest of the BSA; this occurrence was recorded in 1977. |
| *Lanius ludovicianus* | Loggerhead shrike | S4, SSC | Agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannas, and prairies. Nest in thorny vegetation or brush piles or tumbleweeds. | **Present (foraging) / High (nesting)**: Species observed within outer edges of oxidation ponds on 7/19/24 survey.<br>The nearest recorded occurrence is approximately 2.49 miles west, northwest of the BSA; this occurrence was recorded in 2008. |
| *Toxostoma lecontei* | Le Conte's thrasher | S3, SSC | Open habitats, on dry flats with only scattered low shrubs. Sparse saltbush, or on creosote bush flats; mainly where there are few slightly larger mesquites or cholla cactus. | **Moderate (nesting) / Moderate (foraging)**: Limited marginally suitable habitat occurs within the BSA.<br>The most recent recorded occurrence is approximately 9.88 miles east of the BSA; this occurrence was recorded in 1987. |
| *Vireo bellii pusillus* | Least Bell's vireo | FE, SE, S3 | Dense brush, mesquite, willow-cottonwood forest, streamside thickets, and scrub oak, in arid regions but often near water. Nests in shrub or low tree, usually averaging about 1 m above ground, usually in horizontal or down sloping twig fork, typically near edge of thicket. | **Not Likely to Occur (nesting) / Not Likely to Occur (foraging):** No suitable habitat within the BSA.<br>The nearest recorded occurrence is approximately 2.91 miles south, southwest of the BSA; this occurrence was recorded in 2005. |

| **Mammals** | | | | |
|---|---|---|---|---|
| *Corynorhinus townsendii* | Townsend's big-eared bat | S2, SSC | Coniferous forest, woodlands, deciduous woodland, riparian areas with trees, and semi-desert and montane shrublands. Require large cavities for roosting. | **Not Likely to Occur:** No suitable habitat within the BSA.<br>The nearest and most recent recorded occurrence is approximately 9.22 miles southwest of the BSA; this occurrence was recorded in 1943. |
| *Myotis yumanensis* | Yuma myotis | S4 | Forests, riparian zones, deserts, and grasslands. Closely associated with rivers, streams, and lakes for foraging. | **Not Likely to Occur:** No suitable habitat within the BSA.<br>The nearest and most recent recorded occurrence is approximately 7.48 miles southeast of the BSA; this occurrence was recorded in 1999. |
| *Perognathus inornatus* | San Joaquin pocket mouse | S2S3 | Open grasslands, savanna, and desert shrub communities. Often in sandy washes and finely textured soils. Found in the Tehachapi mountains, lower slopes of the western Sierra Nevada, upper Sacramento Valley, San Joaquin Valley, Salinas Valley, and Mojave Desert. | **Low:** Limited marginally suitable habitat occurs within the BSA.<br>The nearest and most recent recorded occurrence is approximately 0.81 miles west, southwest of the BSA; this occurrence was recorded in 1931. |
| *Xerospermophilus mohavensis* | Mohave ground squirrel | ST, S2 | Joshua tree woodlands, creosote scrub, saltbush scrub, and Mojave mixed woody scrub | **High**: Suitable habitat occurs within the BSA.<br>The nearest recorded occurrence is potentially within the BSA; this occurrence was recorded in 1934. The most recent occurrence was in 2005, 4.30 miles north, northwest of the BSA. |

Sources: CDFW 2024a, 2024e, Center for Biological diversity 2015, CEQAnet 2024, Gallegos 2019, Los Padres Forest Watch 2024, IUCN 2024, NatureServe 2024, Nafis, G. 2022, USFWS 2024d, WDFW 2010.

Federal Rankings:

FE = Federally Endangered
FT = Federally Threatened
FC = Federal Candidate for Listing
BCC = USFWS Bird of Conservation Concern
Delisted = removed from federal listing

State Rankings:

S1 = Critically Imperiled
S2 = Imperiled
S3 = Vulnerable
S4 = Apparently Secure
S5 - Secure

## 5.5 Wildlife Corridors and Special Linkages

Linkages and corridors facilitate regional animal movement and are generally centered in or around waterways, riparian corridors, flood control channels, contiguous habitat, and upland habitat. Drainages generally serve as movement corridors because wildlife can move easily through these areas, and fresh water is available. Corridors also offer wildlife unobstructed terrain for foraging and for dispersal of young individuals.

As the movements of wildlife species are more intensively studied using radio-tracking devices, there is mounting evidence that some wildlife species do not necessarily restrict their movements to some obvious landscape element, such as a riparian corridor. For example, recent radio-tracking and tagging studies of Coast Range newts, California red-legged frogs, southwestern pond turtles, and two-striped garter snakes found that long-distance dispersal involved radial or perpendicular movements away from a water source with little regard to the orientation of the assumed riparian "movement corridor" (Hunt 1993; Rathbun et al. 1992; Bulger et al. 2002; Trentham 2002; Ramirez 2003). Likewise, carnivores do not necessarily use riparian corridors as movement corridors, frequently moving overland in a straight line between two points when traversing large distances (Newmark 1995; Beier 1993, 1995; Noss et al. 1996; Noss et al. no date). In general, the following corridor functions can be utilized when evaluating impacts to wildlife movement corridors:

- Movement corridors are physical connections that allow wildlife to move between patches of suitable habitat. Simberloff et al. (1992) and Beier and Loe (1992) correctly state that, for most species, we do not know what corridor traits (length, width, adjacent land use, etc.) are required for a corridor to be useful. But, as Beier and Loe (1992) also note, the critical features of a movement corridor may not be its physical traits but rather how well a particular piece of land fulfills several functions, including allowing dispersal, plant propagation, genetic interchange, and recolonization following local extirpation.
- Dispersal corridors are relatively narrow, linear landscape features embedded in a dissimilar matrix that links two or more areas of suitable habitat that would otherwise be fragmented and isolated from one another by rugged terrain, changes in vegetation, or human-altered environments. Corridors of habitat are essential to the local and regional population dynamics of a species because they provide physical links for genetic exchange and allow animals to access alternative territories as dictated by fluctuating population densities.
- Habitat linkages are broader connections between two or more habitat areas. This term is commonly used as a synonym for a wildlife corridor (Meffe and Carroll 1997). Habitat linkages may themselves serve as source areas for food, water, and cover, particularly for small- and medium-size animals.
- Travel routes are usually landscape features, such as ridgelines, drainages, canyons, or riparian corridors within larger natural habitat areas that are used frequently by animals to facilitate movement and provide access to water, food, cover, den sites, or other necessary resources. A travel route is generally preferred by a species because it provides the least amount of topographic resistance in moving from one area to another yet still provides adequate food, water, or cover (Meffe and Carroll 1997).

Wildlife crossings are small, narrow areas of limited extent that allow wildlife to bypass an obstacle or barrier. Crossings typically are human-made and include culverts, underpasses, drainage pipes, bridges, tunnels to provide access past roads, highways, pipelines, or other physical obstacles. Wildlife crossings often represent “choke points” along a movement corridor because usable habitat is physically constricted at the crossing by human-induced changes to the surrounding areas (Meffe and Carroll 1997).

## 5.6 Wildlife movement in the BSA

The Project is surrounded by agricultural fields, open space, and neighborhoods/developments associated with Palmdale, and no mapped wildlife corridors were found to occur within the BSA; however, wildlife likely use both the natural and developed portions of the BSA on a regular basis during normal foraging, migration, nesting, and denning activities (USFWS 2024c). Additionally, both flowing drainages within the BSA may occasionally be used as water sources for wildlife during the hot summer months.

The BSA is a part of the Pacific Flyway, a major north-south flyway for migratory birds in America, extending from Alaska to Patagonia. Each year, at least one billion birds migrate along the Pacific Flyway (Audubon 2024).

# 6 Project Impact Discussion

The Project involves trenching, clearing/grubbing, drilling and other ground disturbing activities associated with construction of the proposed treatment plant, pipelines, brine ponds, and ancillary facilities. The spatial extent and impact calculations related to these impacts will be included in the CEQA document for the project. Below is a brief preliminary discussion of potential impacts on sensitive plant and wildlife resources known to occur or with the potential to occur in and near the Project area.

## 6.1 Special-Status Plants

Only one special status plant species, Western Joshua tree, was found to occur within the Project impact area while several others have some potential to occur (refer to Section 5.3 above). Direct impacts to listed or special-status plants could include trampling or crushing from heavy equipment, vehicles, or foot traffic, alterations to the native seed bank due to soil compaction and trenching, and modifications to existing hydrological conditions. Potential indirect impacts could include the disruption of native seed banks through soil alterations, the accumulation of fugitive dust, increased erosion and sediment transport, and the colonization of non-native, invasive plant species. Excessive dust can decrease or limit plant survivorship by decreasing photosynthetic output, reducing transpiration, and adversely affecting reproductive success. Ground-disturbing activities that would occur during construction of the proposed Project could result in the proliferation and spread of non-native invasive plants to new areas. Because noxious weeds can permanently degrade rare plant and animal habitats, their proliferation could adversely affect listed plant species if they are present.

1. Western Joshua tree – Compensation for Tree Removal: Surveys conducted within the BSA identified Joshua tree woodland habitat along with multiple individual and groups of Western Joshua trees scattered throughout the BSA. Where possible, the Project shall be designed to allow Western Joshua trees to remain in place; this will require a focused Joshua tree survey to determine the location of all trees within the Project site. CDFW generally considers any disturbance within a 186-foot radius (56.7 meters) to be an impact on an individual tree. If impacts are to occur within this radius than a more detailed focused survey for Joshua tree, documenting health, height, reproductive status, etc., will need to be completed as part of the environmental impact analysis for the project; this data may also be collected as part of the first focused survey that serves to document the location of all trees. All habitat within a 186-foot radius (56.7 meters; impact evaluation buffer), or as recommended by CDFW, of individual Joshua trees within the Project boundary will be evaluated to account for Project-specific (i.e., newly impacted) impacts to individual trees and dispersed seeds. Some of the habitat within the impact evaluation buffer may not be suitable habitat for western Joshua tree given the existing levels of disturbance in the Project boundary (e.g., existing roads, OHV tracks, and illegal trash piles). Where impacts to Western Joshua tree cannot be avoided and a tree must be removed, the condition of the tree and landscape suitability of the surrounding habitat within the impact evaluation buffer will be evaluated. The final impact evaluation will account for the general health condition of trees that are removed, as well as the magnitude of landscape-level threats including predation, invasive species, wildfire, climate change, and habitat loss. Based on the final impact assessment, compensatory mitigation for impacts to western Joshua trees shall be provided at a minimum ratio of 1:1 (or as otherwise required by CDFW as part of an Incidental Take Permit). Where the Project will not remove, but will encroach upon western Joshua trees, mitigation for indirect impacts shall be as follows (or as otherwise required by CDFW as part of an Incidental Take Permit):

    a. The final acreage of mitigation land acquired to compensate for impacts to western Joshua tree will depend on the density of trees on the mitigation land. Mitigation lands shall not already be public land. Mitigation may also be accomplished by providing mitigation fees to the CDFW Western Joshua Tree Mitigation Fund. Proposed compensatory mitigation for the western Joshua tree shall satisfy CDFW under CESA.

## 6.2 Special-Status Wildlife

### 6.2.1 Invertebrates and Reptiles

Special-status invertebrates and reptiles known to occur in the general Project area were determined to have a moderate or no potential to occur. Should one of these species be present, during construction activities could result in the direct loss of sensitive invertebrates and reptiles. Direct impacts could result from potential mechanical crushing during construction, fugitive dust, wildlife becoming trapped in improperly covered trenching, and general disturbance due to increased human activity. The proposed Project implementation may also result in permanent loss of habitat from the removal of debris piles or trampling of soft friable soils required for burrowing. Indirect impacts could include compaction of soils and the introduction of exotic plant species.

### 6.2.2 Birds

Several bird species are known to occur on or near the Project site. There were no federally listed, or California threatened or endangered bird species documented in the Project area; However, loggerhead shrikes were observed foraging within the oxidation ponds and showed no signs of nesting in the project area. Additionally, an owl pellet that could potentially belong to Burrowing owl *(Athene cunicularia*) was observed next to a burrow of suitable size and shape for this species. The pellet was found west of Brine Pipeline 1, near the intersection of E Avenue P and 30th St. E. The pellet appeared to be almost a year old, and no other signs of Burrowing Owl were observed within the BSA. Direct impacts to these species could include mechanical crushing by vehicles and construction equipment, trenching/excavating activities, and general disturbance due to increased human activity. The proposed project implementation may also result in permanent loss of habitat from the removal of debris piles or trampling/developing over soft friable soils required for burrowing.

Project activities have the potential to directly impact nesting birds through ground- disturbing activities associated with excavation for pipelines, construction of new facilities, scrub habitat removal from vegetation grubbing, and increased human presence. During the breeding season, construction activities could result in the displacement of breeding birds and the abandonment of active nests. Potential indirect impacts could include the deterioration of habitat resulting from the spread of noxious weeds, increased noise levels from heavy equipment, exposure to fugitive dust, and human presence during construction or routine inspection of the facilities. Weed management could also affect nesting.

If project construction were to occur during the avian nesting season (generally considered to be between February 15th through September 15th; although some raptors species may nest as early as January) indirect impacts to nesting birds could occur. The MBTA does not allow for take of migratory birds. Disturbances that cause nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the MBTA. The MBTA prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary. This act encompasses whole birds, parts of birds, and bird nests and eggs. The FGC also protects most California birds and their nests.

### 6.2.3 Mammals

There were no federally listed, or California SSC mammal species documented in the Project area. Direct impacts to these species could include collisions and/or mechanical crushing by vehicles and construction equipment, trampling, and loss of habitat from proposed developments. Construction disturbance can also result in the flushing of small animals from refugia which increases the predation risk for small rodents. Potential indirect impacts include exposure to fugitive dust, alteration of soils, such as compaction, which could preclude burrowing, the spread of exotic weeds, and increased noise levels that can affect foraging, breeding, and dispersal behaviors.

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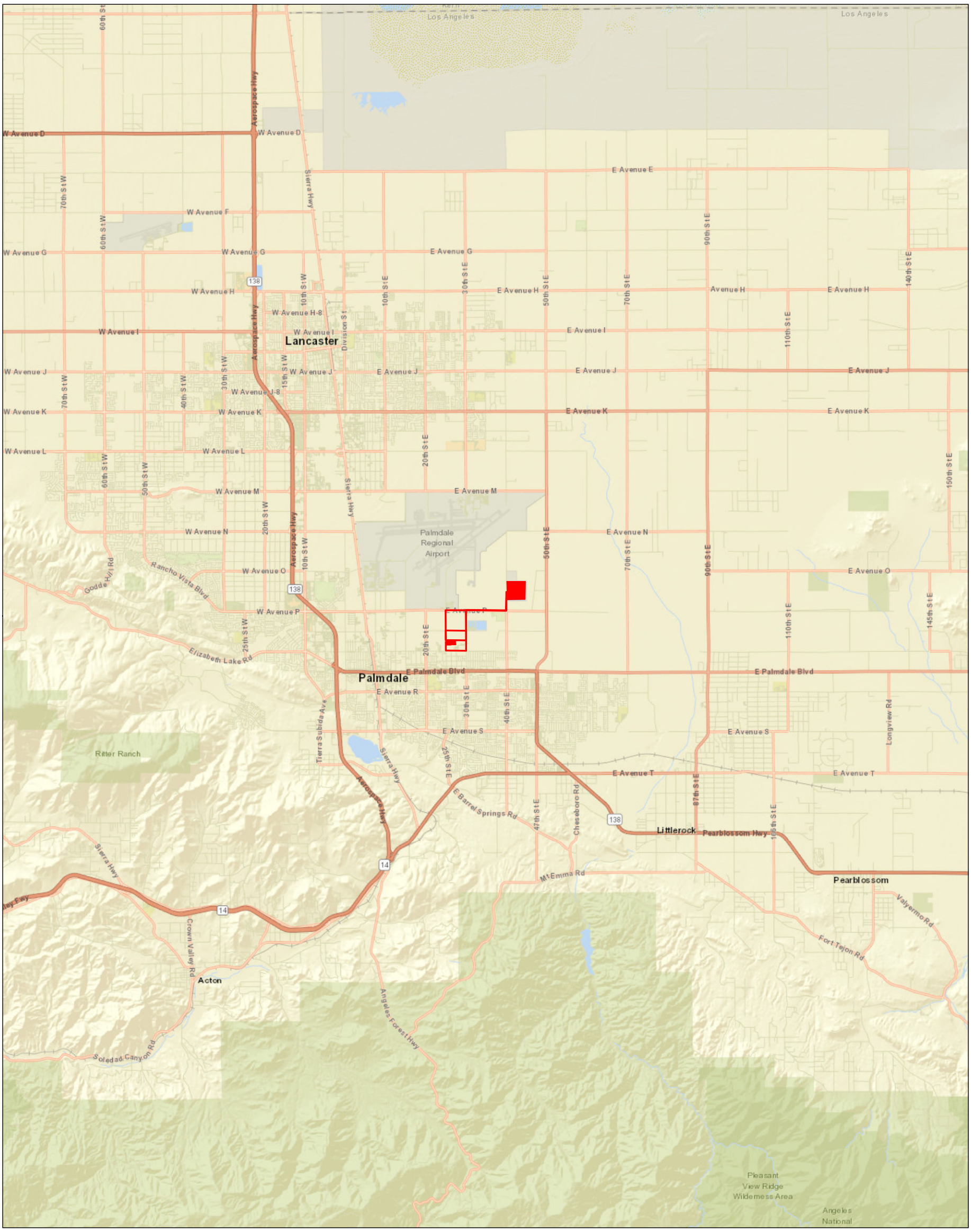
# Appendices

# Appendix A Figures





Project Location

0 2.5 5 Miles

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1:162,342

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| | |
|---|---|
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| *Client/Project* | 184031611 |

Palmdale Water District
Pure Water Antelope Valley
Biological Resources Technical Report

*Figure No.*

**1**

*Title*

**Project Location Map**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
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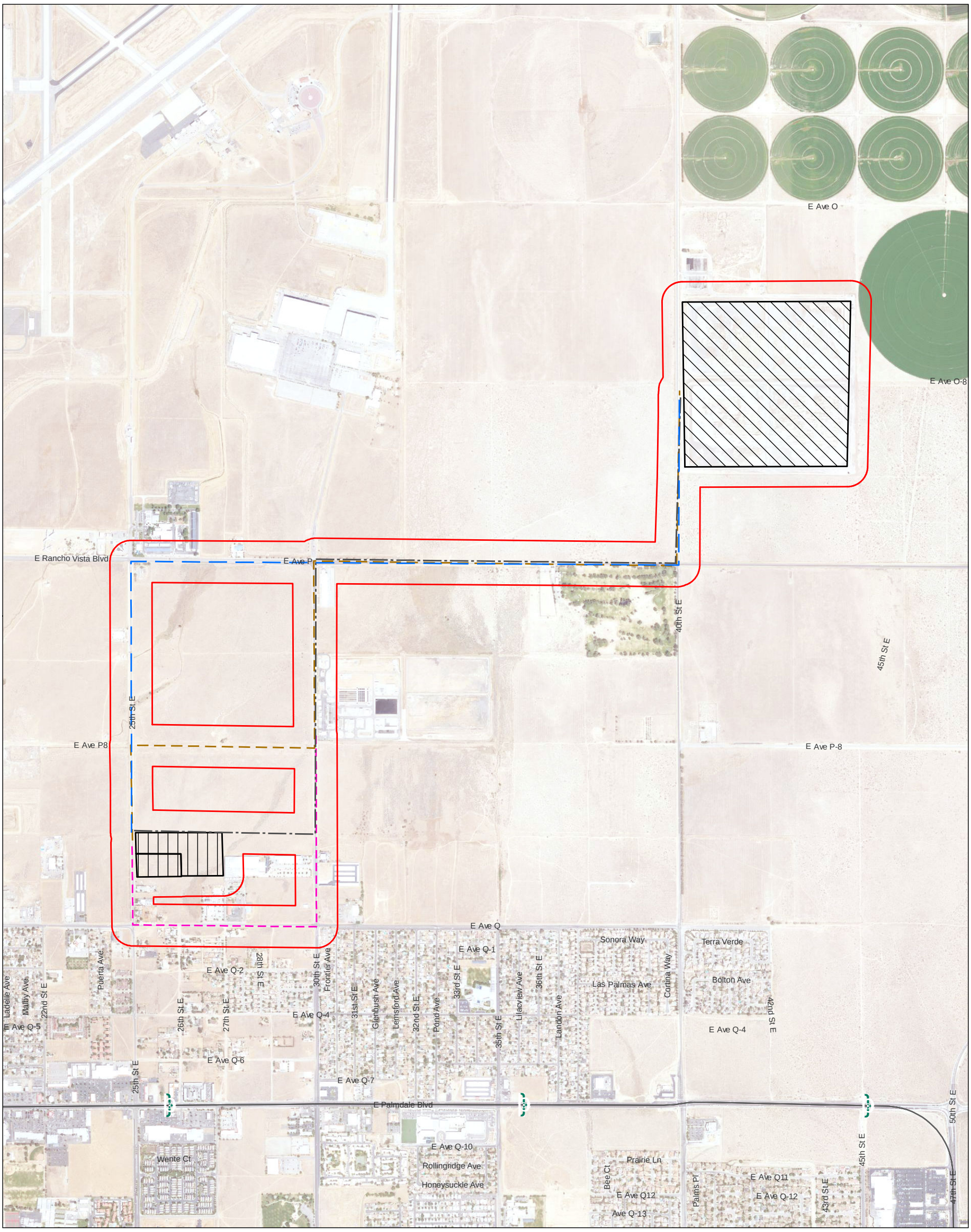



Biological Study Area

**Project Features**

- AWPF Site
- Brine Ponds
- Brine Pipeline 1
- Brine Pipeline 2
- Brine Pipeline 3
- New Tertiary Effluent Pipeline

0 1,500 3,000 Feet

(At original document size of 11x17)
1:18,000

Stantec

| | |
|---|---|
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| *Client/Project* | 184031611 |

Palmdale Water District
Pure Water Antelope Valley
Biological Resources Technical Report

*Figure No.*
**2**

*Title*
**Project Site**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors California NAIP 2022 60cm

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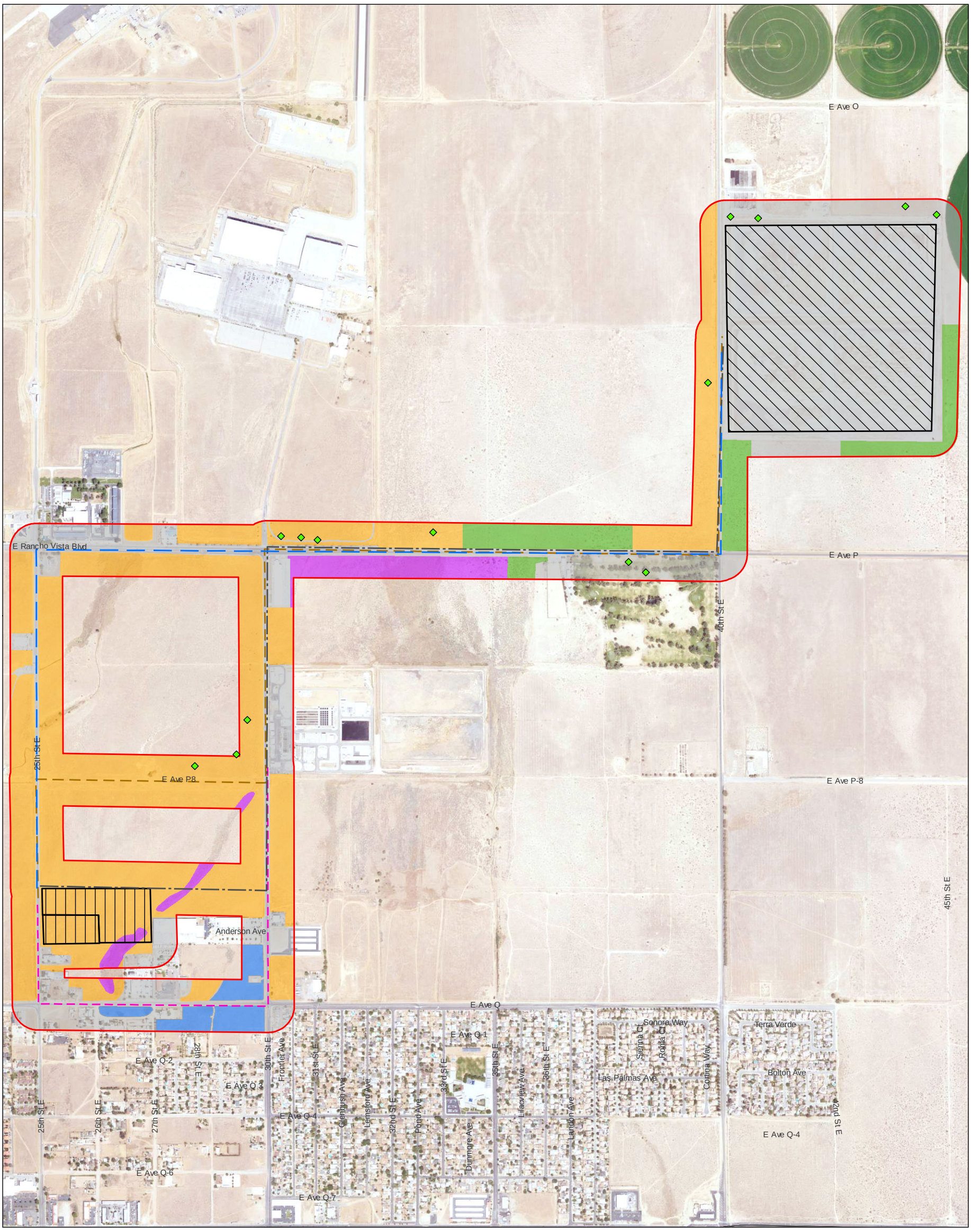


Biological Study Area

**Project Features**

- AWPF Site
- Brine Ponds
- Brine Pipeline 1
- Brine Pipeline 2
- Brine Pipeline 3
- New Tertiary Effluent Pipeline

Isolated Western Joshua Tree (*Yucca brevifolia*) Occurences

**Vegetation Communities**

- *Avena spp. - Bromus spp.* Herbaceous Semi-Natural Alliance
- *Brassica nigra - Centaurea* (solstitialis, melitensis) Herbaceous Semi-Natural Alliance
- *Ericameria nauseosa* Shrubland Alliance
- *Yucca brevifolia* Woodland Alliance

**Land Cover Type**

- Disturbed/Developed

0 1,200 2,400 Feet

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1:14,400

Stantec

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City of Palmdale,
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IR by JV on 2024-10-11

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184031611

Palmdale Water District
Pure Water Antelope Valley
Biological Resources Technical Report

*Figure No.*
**3**

*Title*
**Vegetation Communities, Land Cover Types, and Western Joshua Tree Occurrences**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: California NAIP 2022 60cm

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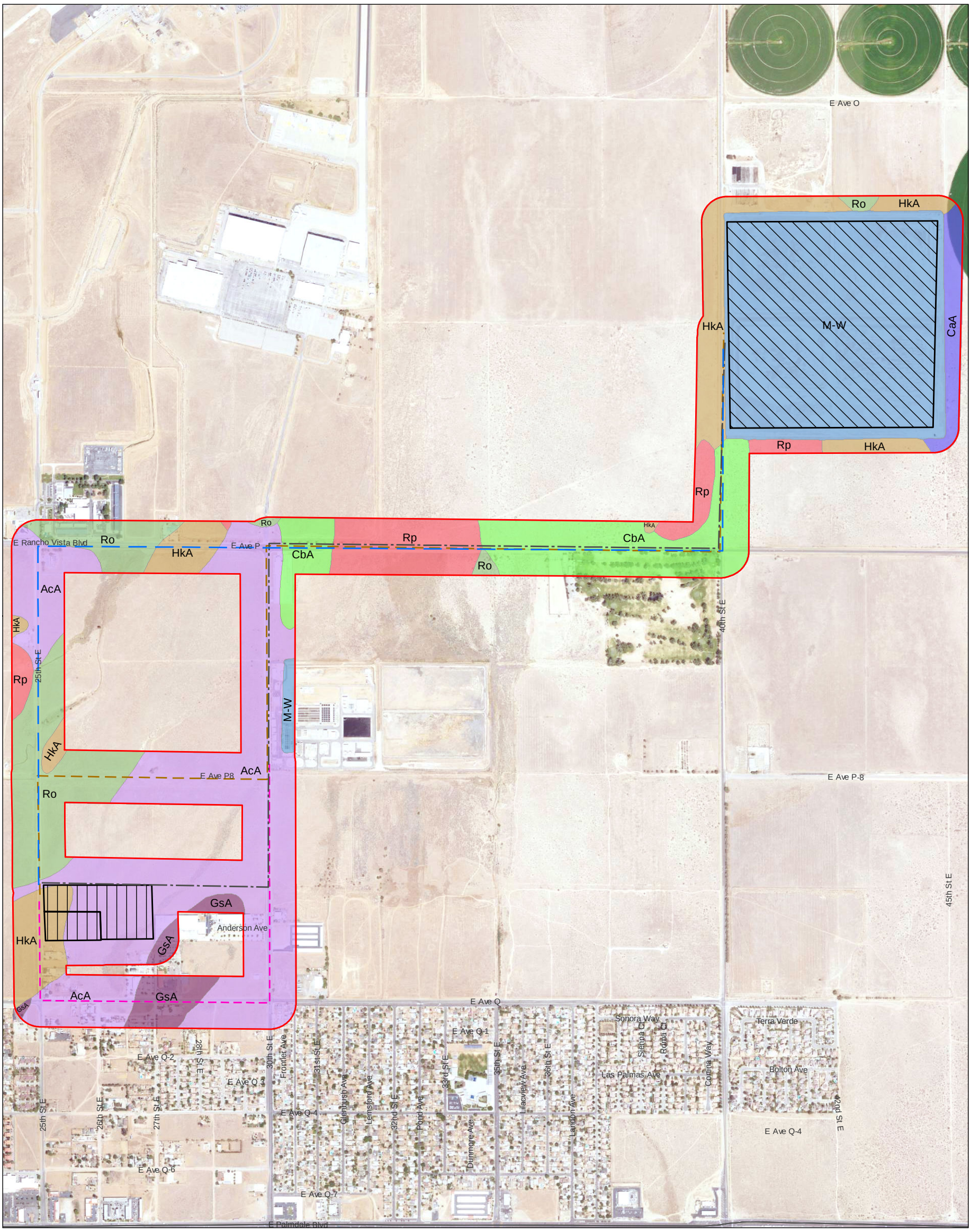


Biological Study Area

**Project Features**

- AWPF Site
- Brine Ponds
- Brine Pipeline 1
- Brine Pipeline 2
- Brine Pipeline 3
- New Tertiary Effluent Pipeline

**Soil Map Unit Symbol**

- AcA; Adelanto coarse sandy loam, 2 to 5 percent slopes
- CaA; Cajon loamy sand, 0 to 2 percent slopes
- CbA; Cajon loamy sand, loamy substratum, 0 to 2 percent slopes
- GsA; Greenfield sandy loam, 0 to 2 percent slopes
- HgA2; Hesperia loamy fine sand, 0 to 2 percent slopes, hummocky
- HkA; Hesperia fine sandy loam, 0 to 2 percent slopes
- M-W; Miscellaneous water
- Ro; Rosamond fine sandy loam
- Rp; Rosamond loam

0 1,200 2,400 Feet

(At original document size of 11x17)
1:14,400

Stantec

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City of Palmdale,
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*Figure No.*
**4**

*Title*
**Historical Soils**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024. Soils from NRCS 2024.
**3.** Background: California NAIP 2022 60cm

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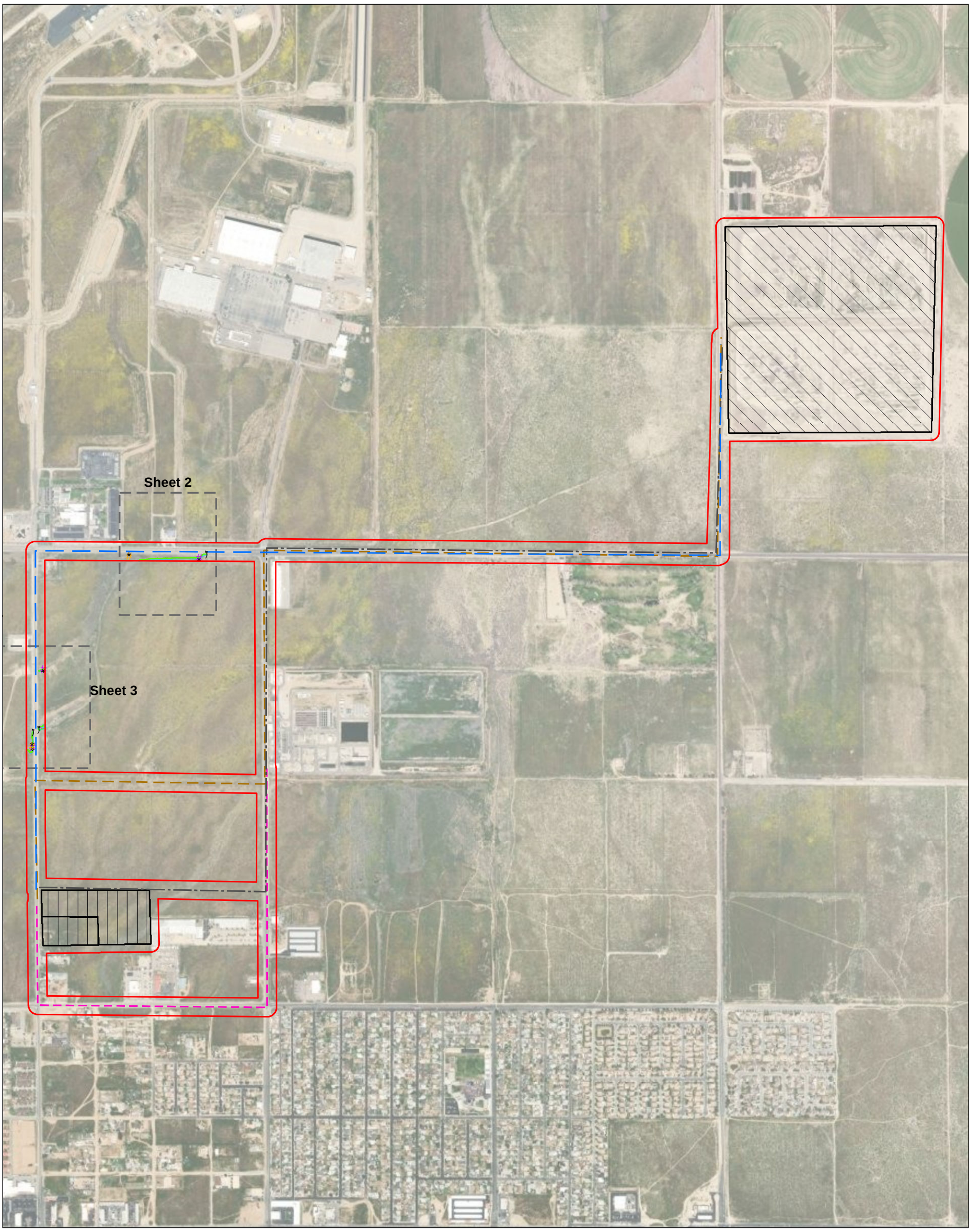


Aquatic Resources Survey Area

**Project Features**
- Brine Pipeline 1
- Brine Pipeline 2
- Brine Pipeline 3
- New Tertiary Effluent Pipeline
- AWPF Site
- Brine Ponds

Culvert

**Sample Locations**
- Upland
- Wetland

**State/RWQCB Jurisdiction**
- Waters of the State (Streambed)

**CDFW Jurisdiction**
- Riparian
- Streambed

0 1,200 2,400 Feet

(At original document size of 11x17)
1:14,400

Stantec

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City of Palmdale,
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Palmdale Water District
Pure Water Antelope Valley
Biological Resources Technical Report

*Figure No.*
**5**

*Title*
**Aquatic Resources**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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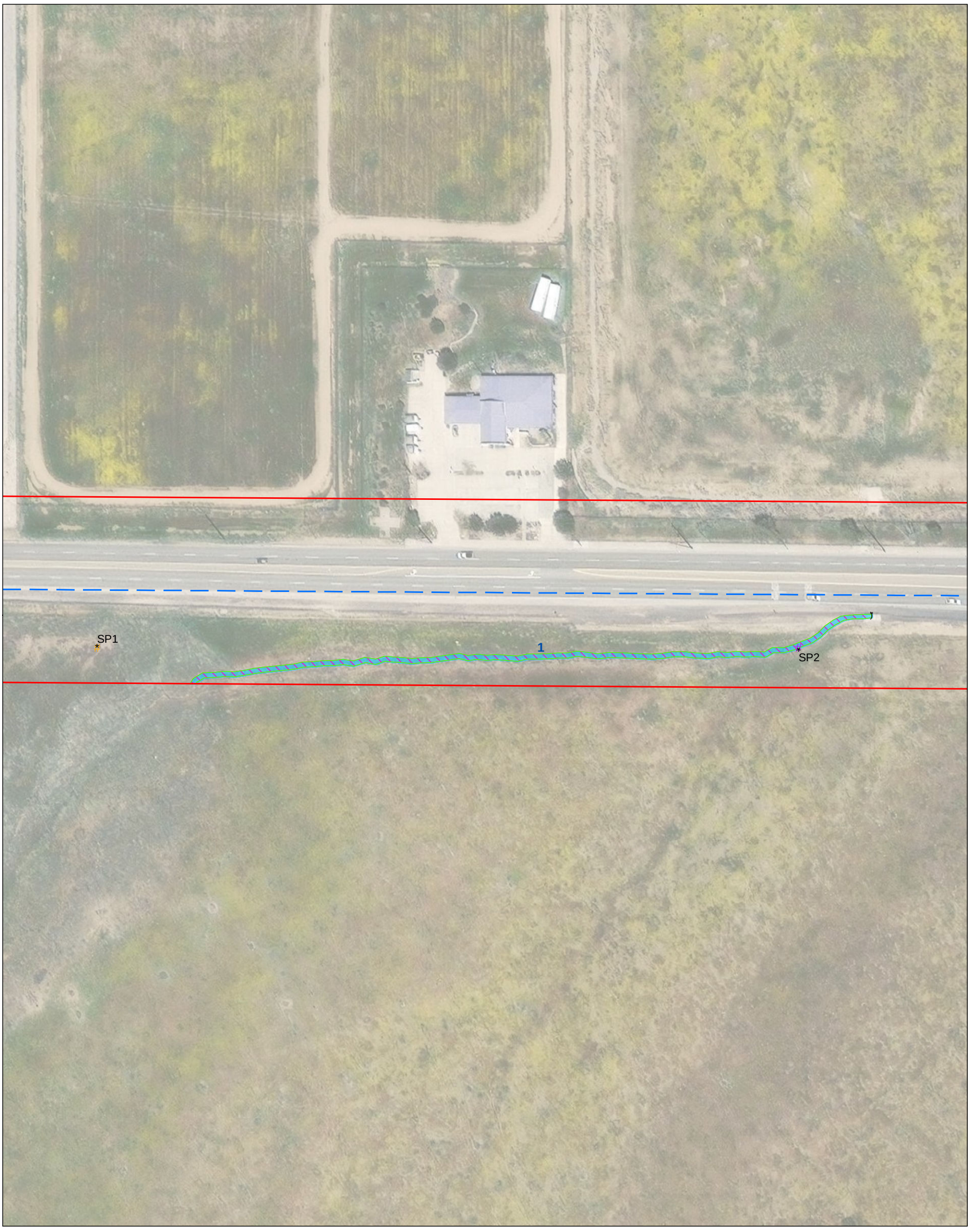


Aquatic Resources Survey Area

**Project Features**

Brine Pipeline 3

Culvert

**Sample Locations**

Upland

Wetland

**State/RWQCB Jurisdiction**

Waters of the State (Streambed)

**CDFW Jurisdiction**

Riparian

Streambed

0 120 240 Feet

(At original document size of 11x17)
1:1,440

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City of Palmdale,
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Palmdale Water District
Pure Water Antelope Valley
Biological Resources Technical Report

*Figure No.*
**5**

*Title*
**Aquatic Resources**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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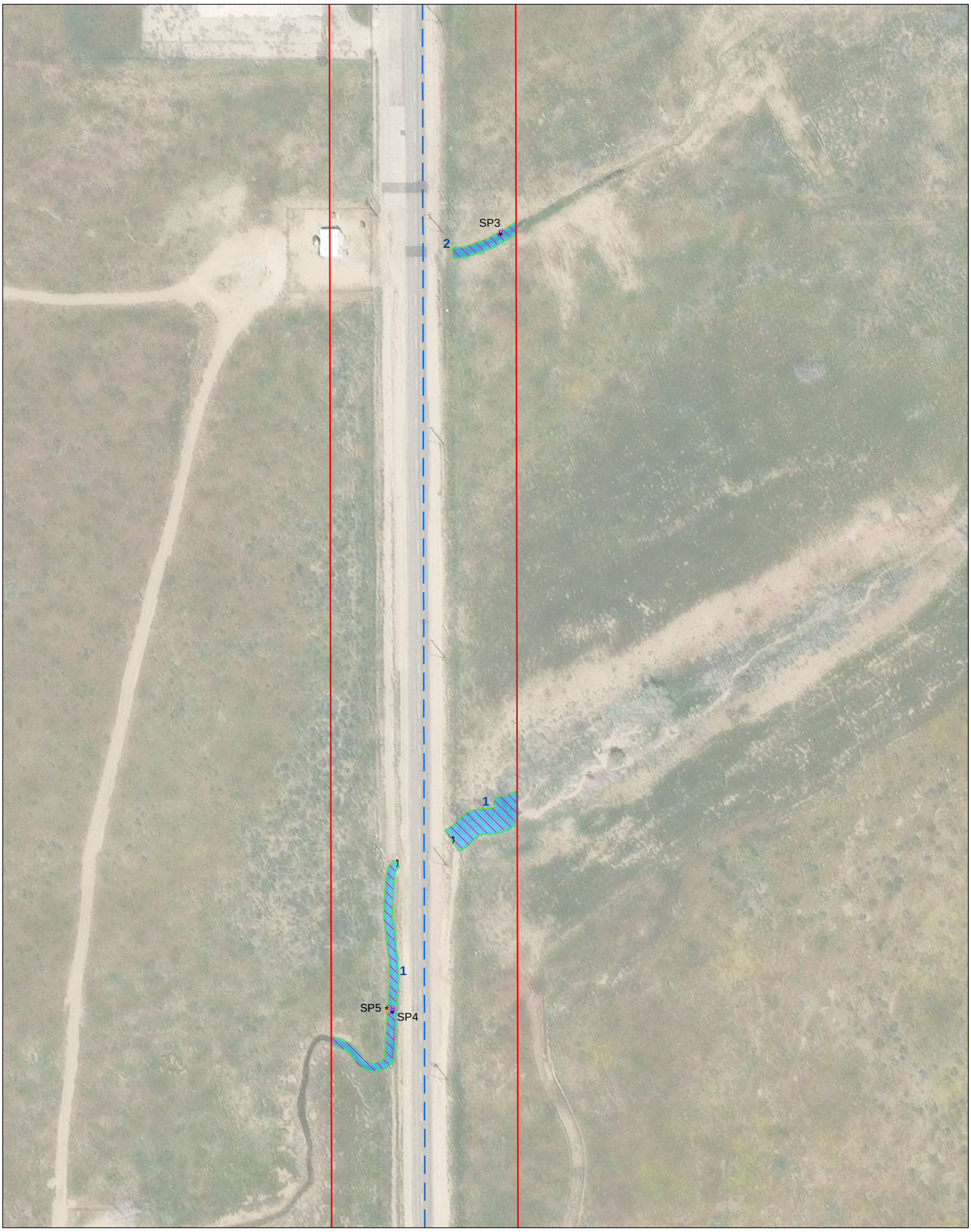


Aquatic Resources Survey Area

**Project Features**

Brine Pipeline 3

Culvert

**Sample Locations**

Upland

Wetland

**State/RWQCB Jurisdiction**

Waters of the State (Streambed)

**CDFW Jurisdiction**

Riparian

Streambed

0 120 240 Feet

(At original document size of 11x17)
1:1,440

Stantec

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Palmdale Water District
Pure Water Antelope Valley
Biological Resources Technical Report

*Figure No.*
**5**

*Title*
**Aquatic Resources**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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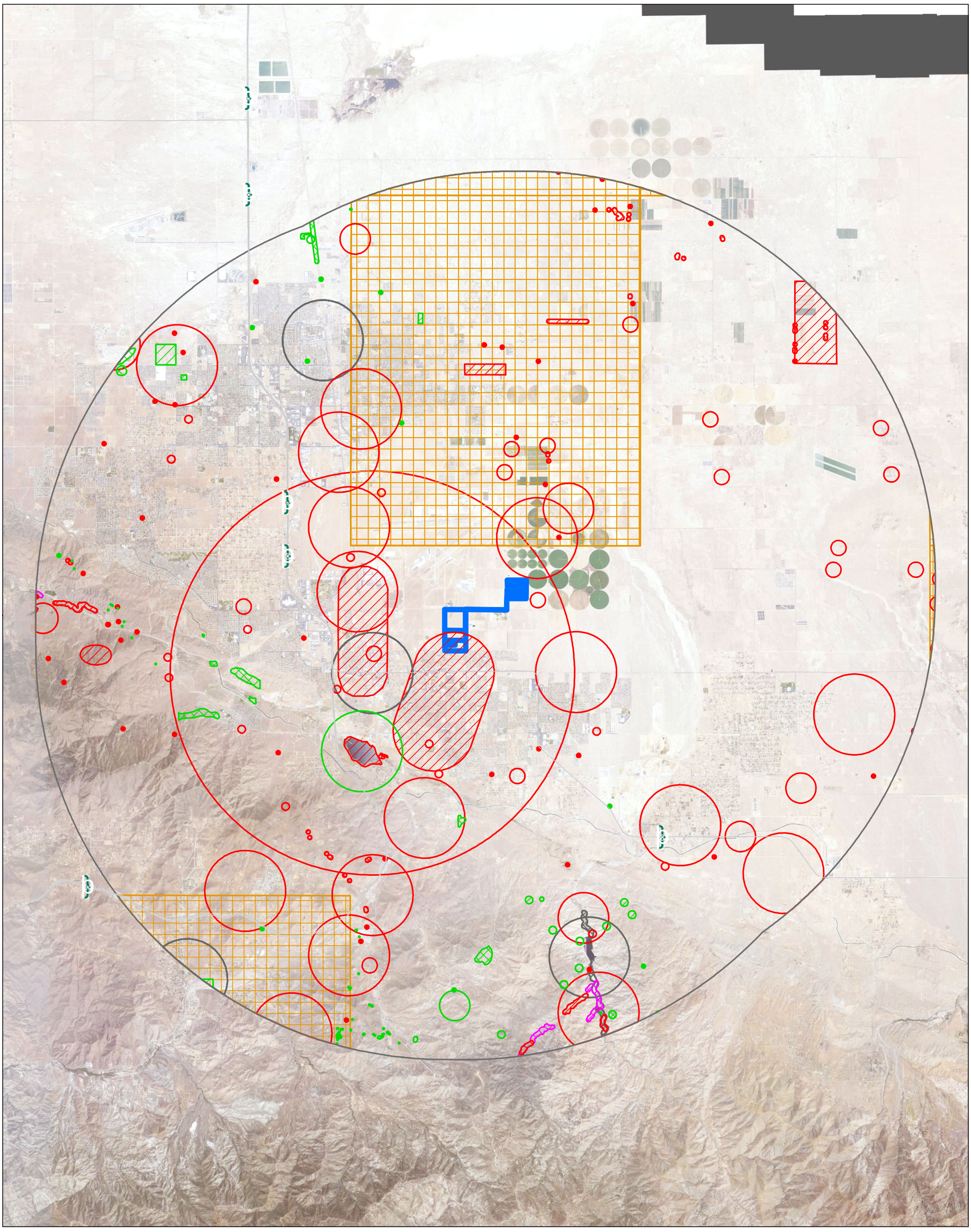

Biological Study Area
10 Mile Search Radius

**CNDDB**

Plant (80m)
Plant (specific)
Plant (non-specific)
Plant (circular)
Animal (80m)
Animal (specific)
Animal (non-specific)
Animal (circular)
Terrestrial Comm. (specific)
Multiple (specific)
Multiple (circular)
Sensitive EO's (Commercial only)

0 2.5 5 Miles

(At original document size of 11x17)
1:158,400

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Palmdale Water District
Pure Water Antelope Valley
Biological Resources Technical Report

*Figure No.*
**6a**

*Title*
**10 Mile CNDDB Results**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024, CNDDB from CDFW 2024.
**3.** Background: California NAIP 2022 60cm

V:\18558\Active\184031611_Palmdale_FieldMap\BRTR_Figure6a_10MileCNDDB_20240603.mxd Revised: 2024-10-11 By: dalaw

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Biological Study Area
2 Mile Search Radius

**2 Mile CNDDB Results**

**Wildlife**

*Phrynosoma blainvillii*
*Charadrius montanus*
*Toxostoma lecontei*
*Bombus crotchii*
*Perognathus inornatus*
*Athene cunicularia*
*Accipiter cooperii*
*Buteo swainsoni*
*Xerospermophilus mohavensis*
*Helminthoglypta fontiphila*

0 3,500 7,000 Feet

(At original document size of 11x17)
1:42,000

Stantec

*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2024-10-11
TR by SET on 2024-10-11
IR by JV on 2024-10-11

*Client/Project*
184031611

Palmdale Water District
Pure Water Antelope Valley
Biological Resources Technical Report

*Figure No.*
**6b**

*Title*
**2 Mile CNDDB Results**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024, CNDDB from CDFW 2024.
**3.** Background: California NAIP 2022 60cm

V:\18558\Active\184031611_Palmdale_FieldMap\BRTR_Figure6b_2MileCNDDB_20240603.mxd Revised: 2024-10-11 By: dalaw

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# Appendix B  Photolog

Stantec

# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 1

**Survey date:** 5/8/2024

**Photo Location:**
LACSD Oxidation ponds

**Comments:**
Western Joshua trees along eastern side of the brine ponds.

**Photograph ID:** 2

**Survey date:** 5/8/2024

**Photo Location:**
LACSD Oxidation ponds

**Comments:**
Western Joshua trees along southern side of brine ponds.

Stantec

# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 3

**Survey date:** 5/8/2024

**Photo Location:**
Palmdale, E Avenue P

**Comments:**
Western Joshua trees along eastern side of the brine ponds.

**Photograph ID:** 4

**Survey date:** 5/8/2024

**Photo Location:**
LACSD Oxidation ponds

**Comments:**
Overview photo of brine pool. Consistent habitat across all four brine ponds.

Stantec

# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 5

**Survey date:** 5/8/2024

**Photo Location:**
LACSD Oxidation ponds

**Comments:**
Overview photo of the proposed brine pools. Consistent habitat across all four brine ponds.

**Photograph ID:** 6

**Survey date:** 5/8/2024

**Photo Location:**
LACSD Oxidation ponds

**Comments:**
Burrows similar to this photo can be seen throughout the BSA.

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 7

**Survey date:** 5/8/2024

**Photo Location:**
LACSD Oxidation ponds

**Comments:**
Overview of red pipes that run through oxidation ponds.

**Photograph ID:** 8

**Survey date:** 5/8/2024

**Photo Location:**
LACSD Oxidation ponds

**Comments:**
Holes within the red pipes that run throughout the oxidation ponds and could provide potentially suitable burrowing habitat for burrowing owl.

Stantec

# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 9

**Survey date:** 5/8/2024

**Photo Location:**
Palmdale BSA

**Comments:**
Invasive mustard species were seen throughout the BSA.

**Photograph ID:** 10

**Survey date:** 5/8/2024

**Photo Location:**
Palmdale southwest parcel

**Comments:**
Red-tailed hawk nest on water tower.

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 11

**Survey date:** 5/8/2024

**Photo Location:**
Palmdale southwest parcel

**Comments:**
*Ericameria nauseosa* habitat seen throughout the Southern portions of the BSA.

**Photograph ID:** 12

**Survey date:** 5/8/2024

**Photo Location:**
Palmdale BSA

**Comments:**
Owl pellet found adjacent to a burrow that could potentially belong to Burrowing Owl. Pellet appears to be old, and no other fresh signs of burrowing owl were observed in the area.

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 13

**Survey date:** 5/8/2024

**Photo Location:**
Palmdale BSA

**Comments:**
Common raven nest in Western Joshua tree in southeast parcel.

**Photograph ID:** 14

**Survey date:** 5/8/2024

**Photo Location:**
Palmdale BSA

**Comments:**
*Ericameria nauseosa* habitat seen throughout the Southern portions of the BSA.

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# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 15

**Survey date:** 7/19/2024

**Photo Location:**
40th St. E

**Comments:**
Dry invasive grasslands across from the oxidation ponds.

**Photograph ID:** 16

**Survey date:** 7/19/2024

**Photo Location:**
LACSD oxidation ponds

**Comments:**
View of disturbed vegetation in oxidations ponds.

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# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 17

**Survey date:** 7/19/2024

**Photo Location:**
LACSD oxidation ponds

**Comments:**
Inactive Cactus wren nest in telephone pole.

**Photograph ID:** 18

**Survey date:** 7/19/2024

**Photo Location:**
E Avenue P

**Comments:**
Western Joshua Tree woodland.

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# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 19

**Survey date:** 7/19/2024

**Photo Location:** Proposed Brine Pipeline 1

**Comments:** View of dry vegetation along Brine Pipeline 1.

**Photograph ID:** 20

**Survey date:** 7/19/2024

**Photo Location:** LACSD oxidation ponds

**Comments:** Western Joshua tree woodland to east of oxidation ponds.

Stantec

# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 21

**Survey date:** 7/19/2024

**Photo Location:** Brine Pipeline 1

**Comments:** Willow grove along Brine Pipeline 1.

**Photograph ID:** 22

**Survey date:** 7/19/2024

**Photo Location:** 25th St. E and E Avenue P8

**Comments:** Small drainage with water.

Stantec

# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, CA** |

**Photograph ID:** 23

**Survey date:** 7/19/2024

**Photo Location:**
Brine Pipeline 1

**Comments:**
Failed Raven nest in Western Joshua tree.

**Photograph ID:** 24

**Survey date:** 7/19/2024

**Photo Location:**
Brine Pipeline 1

**Comments:**
Failed raven nest contents on ground adjacent to Western Joshua tree.

Stantec

Stantec is a global leader in sustainable architecture, engineering, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

# Pure Water Antelope Valley

# CEQA Initial Study

APPENDIX B2

Aquatic Resources Delineation Report

Stantec

# AQUATIC RESOURCES DELINEATION REPORT

Pure Water Antelope Valley – Advanced Water Treatment Project

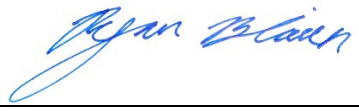
June 21, 2024

Prepared for:
Palmdale Water District
2029 East Avenue Q, Palmdale, CA 93550
(661) 947-4111

Prepared by:
Stantec Consulting Services Inc.

Project Number:
184031611

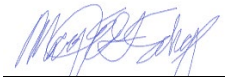
This document entitled Aquatic Resources Delineation Report for the Pure Water Antelope Valley – Advanced Water Treatment Project was prepared by Stantec Consulting Services Inc. (“Stantec”) for the account of Palmdale Water District (the “Client”). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by: 

Signature

Ryan Blaich, Project Biologist

Printed Name

Reviewed by: 

Signature

Meg Schaap, Senior Biologist

Printed Name

Approved by: 

Signature

Geoff Hoetker, Principal Biologist

Printed Name

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## LIST OF FIGURES



## LIST OF APPENDICES

# Acronyms / Abbreviations

| | |
|---|---|
| ARDR | Aquatic Resources Delineation Report |
| CDFW | California Department of Fish and Wildlife |
| CFGC | California Fish and Game Code |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| °F | degrees Fahrenheit |
| FAC | Facultative Plants |
| FACU | Facultative Upland Plants |
| FACW | Facultative Wetland Plants |
| ft | foot/feet |
| $ft^2$ | square foot/feet |
| LSA | Lake and Streambed Alteration Agreement |
| NL | Plants not listed in the National Wetland Plant List |
| NHD | National Hydrography Dataset |
| NRCS | National Resources Conservation Service |
| NWI | National Wetlands Inventory |
| NWP | Nationwide Permit |
| NWPL | National Wetland Plant List |
| NWPR | Navigable Waters Protection Rule |
| OBL | Obligate Wetland Plants |
| OHWM | ordinary high water mark |
| Porter-Cologne Act | Porter-Cologne Water Quality Control Act |
| Procedures | State Wetland Definition and Procedures of Dredged or Fill Material to Waters of the State |
| Project | Pure Water Antelope Valley – Advanced Water Treatment Project |
| PWD | Palmdale Water District |
| Rapanos | *Rapanos v. United States and Carabell v. United States* |
| RWQCB | Regional Water Quality Control Board |
| Sackett | *Sackett v. Environmental Protection Agency* |
| Stantec | Stantec Consulting Services Inc. |
| SWANCC | Solid Waste Agency of Northern Cook County |
| SWP | State Water Project |
| SWRCB | State Water Resources Control Board |
| UPL | Upland Plants |
| USACE | U.S. Army Corps of Engineers |
| USGS | U.S. Geological Survey |
| USEPA | U.S. Environmental Protection Agency |
| Waters of the State | Waters of the State of California |
| WDR | Water Discharge Requirement |

| | |
|---|---|
| WIS | Wetland Indicator Status |
| WOTUS | Waters of the United States |
| WQC | Water Quality Certification |

# 1 Introduction

This Aquatic Resources Delineation Report (ARDR) is intended to document the jurisdictional resources that are associated with the Pure Water Antelope Valley – Advanced Water Treatment Project (Project) located near Palmdale, Los Angeles County, California. The Project is located outside of the northeastern extent of the City of Palmdale (refer to Appendix A, Figure 1). The surveys conducted and discussions presented within this ARDR are intended to support planning and regulatory agency permitting and associated documentation.

A reconnaissance-level survey was conducted on May 8, 2024, by Stantec Consulting Services Inc. (Stantec) Biologist Ryan Blaich within accessible portions of the Project site and a surrounding 100-foot (ft) buffer area (Survey Area). The ARDR describes the existing aquatic resources that occur within the Survey Area and surrounding areas and evaluates the potential for aquatic resources to occur based on those conditions with an emphasis on jurisdictional waters.

## 1.1 Project Description

Stantec was retained by the Palmdale Water District (PWD) to provide program management services for its regional water augmentation program, referred to as Pure Water Antelope Valley or Program. Using advanced treatment processes including microfiltration, reverse osmosis, and ultraviolet light with advanced oxidation, Pure Water Antelope Valley will further purify tertiary treated wastewater to produce water that will meet all applicable state and federal drinking water standards and regulations. This purified water will be injected into the local groundwater aquifer, thereby supplementing PWD's existing water supplies. Pure Water Antelope Valley is intended to provide safe and reliable drinking water for Antelope Valley.

## 1.2 Project Location

The Project is located just northeast of the City of Palmdale. The Survey Area is bordered by the agricultural fields to the north, west, and east, and the City of Palmdale to the south. It is located within the United States Geological Survey (USGS) Palmdale NW, California, 7.5-minute topographic quadrangle. The site occurs at an elevation of approximately 2,537-2,576 feet above mean sea level within California annual grassland and rubber rabbitbrush scrub habitats. Average annual temperatures range from a low of 49 degrees Fahrenheit (°F) to a high of 78°F. Annual precipitation averages approximately 7.4 inches (U.S. Climate Data 2024). A National Wetland Inventory (NWI) and National Hydrography Dataset (NHD) (USGS 2024) map and an Natural Resources Conservation Service (NRCS) Soils Map of the Project location are included in Appendix A (Figures 2 and 3).

# 2 Regulatory Background

## 2.1 Clean Water Act Section 404 and Federal Jurisdictional Waters

The Clean Water Act (CWA), introduced in 1977 via amendatory legislation of the Federal Water Pollution Control Act, is the primary federal law in the United States regulating water pollution. Section 404 of the CWA regulates the discharge of dredged material, placement of fill material, or certain types of excavation within federal waters of the United States (WOTUS) and authorizes the Secretary of the Army, through the Chief of Engineers, to issue permits for such actions. Permits can be issued for individual projects (individual permits) or for general categories of projects (general permits). Terrestrial WOTUS as defined by the CWA have typically included rivers, creeks, streams, and lakes extending to their headwaters and any associated wetlands. Wetlands are defined by the CWA as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." The U.S. Army Corps of Engineers (USACE) has adopted several revisions to their regulations in order to more clearly define WOTUS. The protection of federal jurisdictional WOTUS has been particularly contentious and subject to numerous legal decisions since 2001.

### 2.1.1 1986 REGULATIONS

In 1986, the federal agencies (USACE and U.S. Environmental Protection Agency [USEPA]) implemented historic regulations (the 1986 Regulations) that defined WOTUS to mean traditional navigable waters, the territorial seas, interstate waters, and intrastate waters whose use or degradation could affect interstate or foreign commence, as well as tributaries (streams that flow into larger streams or other bodies of water) of and wetlands adjacent to any of those waters.

### 2.1.2 2001 SWANCC RULING

Until the beginning of 2001, WOTUS included isolated wetlands and lakes, intermittent streams, prairie potholes, and other waters that are not part of a tributary system to interstate waters or to navigable WOTUS. The jurisdictional extent of USACE regulation changed with the 2001 *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers* ruling. The U.S. Supreme Court held that the USACE could not apply Section 404 of the CWA to extend their jurisdiction over an isolated quarry pit. The Court ruled that the CWA does not extend federal regulatory jurisdiction over non-navigable, isolated, intra-state waters. However, the Court made it clear that non-navigable wetlands adjacent to navigable waters are still subject to USACE jurisdiction.

### 2.1.3 2006 RAPANOS RULING

In 2006, the U.S. Supreme Court issued its seminal decision in the consolidated cases *Rapanos v. United States and Carabell v. United States* (collectively referred to as "*Rapanos*"). Justice Scalia narrowly interpreted the statutory term "waters of the United States" in a four-Justice plurality opinion, holding that

CWA jurisdiction extended over only "relatively permanent, standing or continuously flowing bodies of water" that are connected to traditional navigable waters, plus wetlands with a "continuous surface connection" to such relatively permanent water bodies. Justice Kennedy wrote separately, concurring with the Court's judgment with respect to the facts of the case, but interpreted "waters of the United States" to include wetlands that possess a "significant nexus" to waters that are or were navigable in fact or that could reasonably be so made.

The Court's split decision and lack of a commanding majority opinion in *Rapanos* created confusion among the federal agencies and public. On December 2, 2008, the federal agencies released a regulatory guidance document, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos* (USACE and USEPA 2008), addressing common questions about federal jurisdiction over WOTUS and clarifying the two jurisdictional standards from *Rapanos*. In the 2008 *Rapanos* Guidance, the federal agencies concluded that federal jurisdiction existed over certain waterbodies that meet the "relatively permanent" standard from Justice Scalia's plurality opinion or Justice Kennedy's "significant nexus" standard, the latter of which would be determined by a fact-specific analysis.

### 2.1.4 2015 CLEAN WATER RULE

The 1986 Regulations as interpreted by the 2008 *Rapanos* Guidance were later replaced by the 2015 Clean Water Rule. The federal agencies attempted to provide clarification on jurisdiction following the *Rapanos* ruling by replacing the numerous categories of waterbodies found in the 1986 Regulations with four broader categories: (1) waters that are categorically "jurisdictional by rule" without the need for further analysis, including traditional navigable waters, interstate waters, the territorial seas, and impoundments of these waters; (2) waters that are jurisdictional by rule, if they meet the definitions for tributaries and adjacent waters established in the 2015 Clean Water Rule; (3) waters that are subject to case-specific jurisdictional analysis under the "significant nexus" standard; and (4) waters that are categorically excluded from jurisdiction. The 2015 Clean Water Rule therefore resulted in an expansion in federal jurisdiction over waterbodies that might have otherwise been excluded from the definition of WOTUS on a case-by-case basis under the 1986 Regulations and the *Rapanos* ruling.

After the final 2015 Clean Water Rule was published, the Sixth Circuit Court of Appeals issued an order staying the rule nationwide, pending a determination by the court on jurisdiction to review the rule. While the 2015 Clean Water Rule was stayed, the pre-2015 regulatory regime remained in effect. Following additional litigation and administrative processes, the 2015 Clean Water Rule was briefly in effect in select states beginning in August 2018.

### 2.1.5 2020 NAVIGABLE WATERS PROTECTION RULE

In 2017, the Trump Administration issued Executive Order 13778, "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule." The executive order directed the federal agencies to review the 2015 Clean Water Rule for consistency with the policy "to ensure that the nation's navigable waters are kept free from pollution, while at the same time promoting economic growth, minimizing regulatory uncertainty, and showing due regard for the roles of

the Congress and the States under the Constitution." It further directed the federal agencies to issue a proposed rule rescinding or revising the 2015 Clean Water Rule as appropriate and consistent with law.

On December 11, 2018, the federal agencies proposed a revised definition of WOTUS, which would repeal the 2015 Clean Water Rule. On December 23, 2019, the federal agencies repealed the 2015 Rule and restored the previous regulatory regime as it existed prior to finalization of the 2015 Clean Water Rule with the publication of a final rule described as "Definition of 'Waters of the United States'—Recodification of Pre-Existing Rules."

On April 21, 2020, the federal agencies published the Navigable Waters Protection Rule (NWPR) to redefine WOTUS. The agencies streamlined the definition to include four simple categories of jurisdictional waters:

1. Traditional navigable waters and the territorial seas;
2. Tributaries of traditional navigable waters and the territorial seas;
3. Lakes, ponds, and impoundments of the first two categories of waters; and
4. Wetlands adjacent to the first three categories of waters.

The NWPR provided clear exclusions for many water features that traditionally have not been regulated, and defined terms in the regulatory text that had never been defined before. Congress, in the CWA, explicitly directed the federal agencies to protect "navigable waters." The intent of the NWPR was to regulate waters and the core tributary systems that provide perennial or intermittent flow and excluded ephemeral waters. The final NWPR fulfilling Executive Order 13788 became effective on June 22, 2020. However, on August 30, 2021, the U.S. District Court for the District of Arizona vacated the NWPR finding "fundamental, substantive flaws that cannot be cured without revising or replacing the NWPR's definition." The federal agencies subsequently announced that they would interpret WOTUS consistent with the pre-2015 regulatory regime until further notice.

### 2.1.6 2023 REVISED DEFINITION OF "WATER OF THE UNITED STATES" RULE

On June 9, 2021, the USACE and USEPA under the Biden Administration announced their intent to revise the definition of WOTUS to protect more waterways, beginning a new rulemaking process that restores protections put in place before 2015.

On January 18, 2023, the federal agencies published the final "Revised Definition of 'Waters of the United States'" rule (2023 Rule) in the Federal Register, which became effective on March 20, 2023 (USACE and USEPA 2023a). The 2023 Rule generally returns to the pre-2015 definition. The implications of the final 2023 WOTUS rule are such that many ephemeral waters not considered protected under the former 2020 NWPR would now be protected.

The 2023 Rule defines WOTUS to include:

1. Traditional navigable waters, the territorial seas, and interstate waters;

2. Impoundments of other jurisdictional WOTUS, except for those that qualify under category 5, below;

3. Tributaries to either of the above waters and tributaries that meet the “relatively permanent” standard or the “significant nexus” standard, (collectively, “jurisdictional tributaries”);

4. Wetlands adjacent to traditional waters, wetlands adjacent and with a continuous surface connection to relatively permanent tributaries and impoundments, and wetlands adjacent to other jurisdictional tributaries when those wetlands meet the “significant nexus” standard; and

5. Intrastate lakes and ponds, streams, or wetlands that are not identified in categories 1–4 above that meet either the “relatively permanent” standard or the “significant nexus” standard.

For purposes of characterizing a “jurisdictional adjacent wetland” under the 2023 WOTUS Rule, a wetland may be considered “adjacent” to WOTUS if it is bordering, contiguous, or neighboring a WOTUS, including wetlands separated from other WOTUS by man-made dikes or barriers, natural river berms, beach dunes, and similarly situated wetlands.

However, a wetland, even if “adjacent,” must satisfy either the “relatively permanent” standard or the “significant nexus” standard to be considered WOTUS. The federal agencies have not necessarily defined "relatively permanent" or “significant nexus” and will likely determine the applicability of these standards on a case-by-case basis.

On March 19, 2023, the U.S. District Court for the Southern District of Texas enjoined the 2023 Rule in Texas and Idaho pending its consideration of those states’ legal challenges to the rule. On April 12, 2023, the U.S. District Court for the District of North Dakota similarly issued a preliminary injunction preventing the application of the 2023 Rule in 24 states: Alabama, Alaska, Arkansas, Florida, Georgia, Indiana, Iowa, Kansas, Louisiana, Mississippi, Missouri, Montana, Nebraska, New Hampshire, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Utah, Virginia, West Virginia, and Wyoming. The federal agencies announced that, pending resolution of the litigation, they will apply the pre-2015 regulatory regime in the 26 states subject to injunctions and the 2023 Rule in the remaining 24 states, including California.

### 2.1.7 2023 SACKETT RULING

On May 25, 2023, the U.S. Supreme Court issued its ruling in *Sackett v. Environmental Protection Agency* (Sackett), which established a more stringent test to determine whether the CWA applies to certain categories of wetland. With *Sackett*, the U.S. Supreme Court unanimously reversed the previous *Rapanos* guidance regarding waters that are adjacent or have a significant nexus to a WOTUS. The new *Sackett* ruling states that the CWA applies to a particular wetland only if it blends or flows into a neighboring water that is a channel for interstate commerce. While the Court decided that some “adjacent” wetlands will also qualify under the CWA as “waters of the United States,” wetlands that are entirely separate from traditional bodies of water will not qualify. The CWA will apply only to wetlands that are “as a practical matter indistinguishable from waters of the United States” because they have a “continuous surface connection” with a larger body of water, “making it difficult to determine where the ‘water’ ends and the ‘wetland’ begins.

### 2.1.8 AMENDMENT TO THE 2023 WOTUS RULE

On September 8, 2023, the USACE and USAPE amended the Code of Federal Regulations (CFR) with a new Final Rule to conform the definition of WOTUS to the 2023 Supreme Court *Sackett* decision (USACE and USEPA 2023b). This conforming rule amends the provisions of the agencies' definition of WOTUS that are invalid under the Supreme Court's interpretation of the CWA in the 2023 decision. While EPA's and USACE's 2023 WOTUS rule defining WOTUS was not directly before the Supreme Court, the decision in Sackett made clear that certain aspects of the WOTUS 2023 rule are invalid. The amendments issued are limited and change only parts of the 2023 rule that are invalid under the *Sackett* decision. For example, the final rule removes the significant nexus test from consideration when identifying tributaries and other waters as federally protected. The result of the *Sackett* legal ruling and new Final Rule for WOTUS is that it rejected the seventeen-year-old "significant nexus" test from *Rapanos* and instead authored a new test – the "continuous surface connection" test – to determine what wetlands constitute WOTUS subject to the CWA.

### 2.1.9 EXEMPTIONS UNDER CLEAN WATER ACTION SECTION 404

Activities that are exempt under CWA Section 404(f) include

1. Nominal farming, silviculture, and ranching activities,

2. (Emergency) maintenance activities that would not change the original fill design;

3. Construction and maintenance of farm ponds, stock ponds, or irrigation ditches or the maintenance of drainage ditches;

4. Construction of temporary sedimentation basins;

5. Any activity with respect to which a State has an approved program under CWA Section 208(b)(4) which meets the requirements of sections 208(b)(4) (B) and (C) (this pertains to certain applicable statewide waste treatment management programs); and

6. Construction or maintenance of farm roads, forest roads, or temporary roads for moving mining equipment.

Exceptions to these exemptions (USACE 2023b) include:

1. Discharge of toxic pollutants, and

If it is part of an activity whose purpose is to convert an area of a WOTUS into a use to which it was not previously subject, where the flow and/or circulation of waters may be impaired, or the reach of the waters reduced.

### 2.1.10 EXTENT OF JURISDICTION

The extent of CWA Section 404 jurisdiction for non-tidal waters includes non-isolated aquatic features (including wetlands qualifying under the original federal 1986 standards and non-wetland WOTUS) bound by an "ordinary high water mark" (OHWM) as defined by 33 CFR 328.3(e):

> *"The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."*

Features considered isolated from traditional navigable waters and the exemptions listed above are not considered WOTUS under the jurisdiction of CWA Section 404.

## 2.2 Clean Water Act Section 401, Porter-Cologne Water Quality Control Act, and Waters of the State of California

### 2.2.1 CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION

Section 401 of the CWA ensures that federally permitted activities comply with the federal CWA and state water quality laws. Under CWA Section 401, an applicant for a federal permit or license for any activity which may result in a discharge to federal waters must obtain a Water Quality Certification (WQC) certifying that the proposed activity will comply with applicable water quality standards. WQCs are generally issued by the state or tribe with jurisdiction over the area in which the activity will occur. If there is not a state or tribe with authority over the activity, the USEPA will issue a WQC.

In California, CWA Section 401 is implemented either by the State Water Resources Control Board (SWRCB) or the applicable Regional Water Quality Control Board (RWQCB), with most WQCs issued in connection with USACE CWA Section 404 permits for dredge and fill discharges. The SWRCB or RWQCB issues a WQC via the CWA Section 401 process verifying that a proposed project complies with water quality standards and other conditions of California law. CWA Section 401 certification typically precedes USACE CWA Section 404 permit issuance.

In addition, the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) serves as the primary water quality state law in California and addresses two primary functions: water quality control planning and waste discharge regulation. The SWRCB and various RWQCBs are charged with protecting all Waters of the State of California (Waters of the State), broadly defined as "any surface water or groundwater, including saline waters, within the boundaries of the State." This encompasses all Waters of the State, including those waters not under federal jurisdiction; therefore, the State of California's jurisdiction expands beyond federal jurisdiction. The Porter-Cologne Act does not include physical descriptors or interstate commerce limitations in defining "Waters of the State."

### 2.2.2 PORTER-COLOGNE ACT WASTE DISCHARGE REQUIREMENTS

Under the Porter-Cologne Act, discharges of dredged or fill material to Waters of the State not subject to CWA Section 404 (i.e., non-USACE jurisdictional) are regulated under the Porter-Cologne Act Chapter 3,

Article 4 via Waste Discharge Requirements (WDRs). The WDR permit requirements ensure that the permitted activities comply with state water quality standards over the term of the action and are consistent with the requirements of the Porter-Cologne Act, CEQA, and the California Endangered Species Act. There are two types of WDRs: individual WDRs, which are tailored to specific dischargers, and general WDRs, which are for a similar group of dischargers. The applicable RWQCB (for respective regions) or the SWRCB (for statewide applicability) can adopt general WDRs for categories of discharges if they involve similar operations, types of waste, and monitoring. Applicants must file an application with the Water Boards for any activity that could result in the discharge of dredged or fill material to Waters of the State in accordance with Title 23 California Code of Regulations Section 3855. Procedures for complying with WDR regulations, including submittal of an application with a project description and impact assessment, are similar to CWA Section 401 procedures.

### 2.2.3 STATE WETLAND DEFINITION AND PROCEDURES FOR DISCHARGES OF DREDGED OR FILL MATERIAL TO WATERS OF THE STATE

On April 2, 2019, the California Water Boards (including the SWRCB and the nine RWQCBs) adopted the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (Procedures) (SWRCB 2021). The Procedures became effective on May 28, 2020, and were subsequently revised on April 6, 2021. Additional *Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* was released in April 2020 (SWRCB 2020); this implementation guidance has been considered during the preparation of this ARDR.

The Procedures define wetlands as follows:

> *"An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation."*

Per the Procedures, the following wetlands are considered Waters of the State (SWRCB 2021):

1. Natural wetlands,

2. Wetlands created by modification of a surface water of the state, and

3. Artificial wetlands (that result from human activity) that meet any of the following criteria:

    a. Approved by an agency as compensatory mitigation for impacts to other Waters of the State, except where the approving agency explicitly identifies the mitigation as being of limited duration;

    b. Specifically identified in a water quality control plan as a wetland or other water of the state;

    c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or

d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not Waters of the State unless they also satisfy the criteria set forth in 2, 3a, or 3b);

    i. Industrial or municipal wastewater treatment or disposal,

    ii. Settling of sediment,

    iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,

    iv. Treatment of surface waters,

    v. Agricultural crop irrigation or stock watering,

    vi. Fire suppression,

    vii. Industrial processing or cooling,

    viii. Active surface mining – even if the site is managed for interim wetlands functions and values,

    ix. Log storage,

    x. Treatment, storage, or distribution of recycled water, or

    xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or

    xii. Fields flooded for rice growing.

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c as outlined above are not Waters of the State. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the state (SWRCB 2021).

### 2.2.4 EXTENT OF JURISDICTION

The extent of CWA Section 401 jurisdiction is identical to CWA Section 404 jurisdiction (i.e., up to the OHWM of a federal wetland or non-wetland WOTUS); Porter-Cologne jurisdiction may extend beyond CWA Section 401 jurisdiction. If there happens to be both CWA Section 404/401 WOTUS and non-WOTUS Waters of the State that could be impacted by a proposed project, the Water Boards may issue coverage under a single CWA Section 401 WQC permitting action, rather than separate WQC and WDR permitting actions.

## 2.3 Jurisdictional Aquatic Resources Under California Fish and Game Code Section 1602

### 2.3.1 NOTIFICATION

Section 1602 of the California Fish and Game Code (CFGC) requires a proponent proposing a project that may affect a “river, stream, or lake” to notify the California Department of Fish and Wildlife (CDFW) before beginning the project, within a format similar to a permit application process. Any activities that result in one or more of the following require a CDFW notification (CDFW 2023):

1. Substantially divert or obstruct the natural flow of any river, stream, or lake;

2. Substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or

3. Deposit or dispose of debris, waste or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Note that "any river, stream, or lake" includes those features that are dry for periods of time (e.g., intermittent and ephemeral features) as well as those that flow perennially year-round. If an applicant is not certain a particular activity requires notification, CDFW recommends the applicant notify. CDFW has historically required a Lake and Streambed Alteration Agreement (LSA) for activities within a feature that has a definable “bed and bank.” In addition, CDFW does not necessarily distinguish between a “pond” and a “lake;” therefore, natural and artificial pond features may be regulated under CFGC Section 1602.

### 2.3.2 LAKE AND STREAMBED ALTERATION AGREEMENT

Once a Section 1602 notification is processed, CDFW may issue a draft LSA. An LSA is an agreement between the applicant and CDFW for the performance of activities subject to CFGC Section 1602. An LSA lists the conditions relative to a proposed project that CDFW identifies as necessary to protect applicable water quality, plants, and wildlife. If the parties agree to the conditions, they will execute the LSA, which will govern the activities described in the agreement.

### 2.3.3 EXTENT OF JURISDICTION

CFGC Section 1602 jurisdiction typically extends from the thalweg of a non-tidal river, stream, or lake up to the TOB, outer edge of associated riparian vegetation, or outer edge of the associated floodplain (whichever is greater).

# 3 Existing Conditions

## 3.1 Land Uses

The Project is located northeast of the City of Palmdale, Los Angeles County, California. The Study Area covers all potential impacts from the implementation of the Pure Water Antelope Valley – Advanced Water Treatment Project. Elevation ranges from approximately 2,537 feet above sea level for the southernmost section and gently increases in elevation to 2,576 feet above sea level northeast to the PWD Reclamation Plant's oxidation ponds. Surrounding land use consists of open private land that has been historically used for agriculture, agricultural fields, existing PWD infrastructure, and a golf course.

## 3.2 Topography and Elevation

Locally, the Project is located within the Antelope Valley and are bordered by the San Gabriel Mountains to the south and the Mojave Desert to the north. The Study Area is characterized by the flat valley floors associated with the Antelope Valley. Elevation ranges from 2,537 feet in the southwestern corner of the Study Area to 2,576 feet in the northwestern corner.

## 3.3 Climate

Climate in the Study Area is based on historical weather data collected in Palmdale, California (Western Regional Climate Center 2024):

- **Type:** The climate of the area is characterized as Mediterranean with moderate winters and hot, dry summers.
- **Precipitation:** Precipitation in the Study Area primarily occurs as rain and snow. The average annual rainfall is approximately 5.05 inches and snowfall is approximately 4.2 inches.
- **Air Temperature:** Air temperatures in the Study Area ranges between an average January temperature range of 29.0 to 56.8 degrees Fahrenheit (ºF) and an average July temperature range of 64.1 to 98.9ºF.

The growing season (i.e., the longest continuous period of a non-freezing air temperature of 32ºF or higher) in the Study Area is approximately 300 days and occurs between approximately January 20 and December 15 (Weather Spark 2024).

## 3.4 Hydrology and Geomorphology

The Study Area is within Hydrologic Unit Code (HUC)-8 18090206 – Antelope – Fremont Valleys. The Study Area is located within the Antelope Valley groundwater basin, and in the Landcaster groundwater subbasin. In general, groundwater in the Antelope Valley Basin flows northeasterly from the mountain ranges to the dry lakes. The basin is principally recharged by infiltration of precipitation and runoff from the surrounding mountains and hills in ephemeral stream channels (Los Angeles County Public Works 2014).

A review was conducted of aerial imagery, USGS topographic maps, the NWI (U.S. Fish and Wildlife Service [USFWS], 2024), and the NHD (USGS, 2024) within and adjacent to the Study Area; NWI and NHD mapping data are presented in Appendix A, Figure 3. Several unnamed drainages occur within the southwestern portion of the Survey Area as mapped by NWI/NHD but only one of these drainages was observed to have any discernable drainage characteristics (i.e. bed, bank, and OHWM). This drainage enters the Survey Area in the southwestern section and traverses through open land until it enters the Survey Area again to the north. Additionally, there is another drainage that enters the Survey Area just north of the drainage previously discussed where they confluence in the open land before reentering the Survey Area.

Two other regional streams mapped by NWI and/or NHD as formerly traversing the Study Area likely were channelized from runoff from nearby foothills and may have flowed unhindered at a point in their history. However, most sections of these streams within the Study Area have been virtually eliminated as a result of depositional characteristics of typical desert systems in an Arid climate (as described in Section 5.2).

## 3.5 Soils

Historic soils data from the NRCS were used to determine potential soil types that may occur within the Study Area. NRCS GIS data accessible online (NRCS 2023a) provides information on soil types collected from soil surveyors who have surveyed the landscape and provided taxonomic classification and mapping of soil types. This allows for estimation of acreages of each soil type identified within a specified area. Characteristics of soils present within the Study Area are summarized in Table 1 – Historic Soils Occurring Within the Study Area; NRCS soils mapping is presented in Appendix, Figure 2.

**Table 1. Historic Soils Occurring Within the Study Area**

| Map Unit Symbol | Map Unit Name | Description | Hydric | Acreage in Study Area |
|---|---|---|---|---|
| AcA | Adelanto coarse loamy sand, 2 to 5 percent slopes | The Granoso series consists of very deep, well drained soils that formed in granitic parent material on alluvial fans and plains. | No | 87.73 |
| CaA | Cajon loamy sand, 0 to 2 percent slopes | The Cajon series consists of very deep, excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Cajon soils are associated with alluvial fans, fan aprons, fan skirts, inset fans, and river terraces. | No | 0.67 |
| CbA | Cajon loamy sand, loamy substratum, 0 to 2 percent slopes | The Cajon series consists of very deep, excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. Cajon soils are associated with alluvial fans, fan aprons, fan skirts, inset fans, and river terraces. | No | 27.06 |

| Map Unit Symbol | Map Unit Name | Description | Hydric | Acreage in Study Area |
|---|---|---|---|---|
| GsA | Greenfield sandy loam, 0 to 2 percent slopes | The Chanac series consists of deep well drained soils that formed in moderately coarse and coarse textured alluvium derived from granitic and mixed rock sources. Greenfield soils are on alluvial fans and terraces and have slopes of 0 to 30 percent. | No | 4.16 |
| HkA | Hesperia fine sandy loam, 0 to 2 percent slopes | The Hesperia series consist of very deep, well drained soils that formed in alluvium derived primarily from granite and related rocks. Hesperia soils are on alluvial fans, valley plains and stream terraces and have slopes of 0 to 9 percent. | No | 19.92 |
| M-W | Miscellaneous water | Mapped as the PWD Reclamation Plant's Oxidation Ponds within the Survey Area. | No | 156.19 |
| Ro | Rosamond fine sandy loam | The Rosamond series consists of deep, well drained soils that formed in material weathered and mainly from granitic alluvium. Rosamond soils are on the lower margin of the alluvial fans between sloping fans and the playas and have slopes of 0 to 2 percent. | No | 22.56 |
| Rp | Rosamond loam | The Rosamond series consists of deep, well drained soils that formed in material weathered and mainly from granitic alluvium. Rosamond soils are on the lower margin of the alluvial fans between sloping fans and the playas and have slopes of 0 to 2 percent. | No | 11.21 |
| | | | Total | 329.51 |

Source: NRCS 2024a, 2024b

## 3.6 Vegetation Communities and Land Covers

As defined in A Manual of California Vegetation, 2nd Edition (MCVII), a vegetation alliance is "a category of vegetation classification which describes repeating patterns of plants across a landscape. Each alliance is defined by plant species composition and reflects the effects of local climate, soil, water, disturbance and other environmental factors" (Sawyer et al. 2009). Generally, Stantec's mapping and description of plant communities follows the classification system described in MCVII. The MCVII is generally limited to communities that are native or naturalized within California. Biological resources observed within the Study Area during the reconnaissance and botanical field surveys consisted primarily of common plant species and vegetation communities characteristic of the southeastern Antelope Valley. The extent and condition of vegetation communities within the Study Area varied depending on the level of existing development and ongoing mineral extraction activities, which have resulted in disturbed conditions with relatively low plant diversity. Within the BSA, Stantec biologists mapped and quantified acreages for five plant communities defined by Sawyer et al. (2009) and one landcover type (Table 2).

These are described further below; however, acreages and description of vegetation communities and land cover types will be included in a separate report.

**Table 2. Vegetation Communities and Land Cover Types**

| Vegetation Community/Land Cover Type |
|---|
| *Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance |
| *Brassica nigra* - *Centaurea* (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance |
| *Bromus rubens* – *Schismus* (*arabicus, barbatus*) Herbaceous Semi-Natural Alliance |
| Disturbed/Developed |
| *Ericameria nauseosa* Shrubland Alliance |
| *Yucca brevifolia* Woodland Alliance |

# 4 Jurisdictional Waters and Wetlands Assessment

## 4.1 Description of Federal and State Waters

Various agencies regulate activities within inland streams, wetlands, and riparian areas in California. The USACE Regulatory Program regulates activities pursuant to Section 404 of the federal CWA; the CDFW regulates activities under CFGC Section 1600-1607; and the SWRCB/RWQCB regulate activities under Section 401 of the CWA and the Porter-Cologne Act.

Positive indicators for each of the three parameters outlined below are required for a wetland to meet the USACE criteria for jurisdictional wetland determination. Indicators are as follows:

- Hydrophytic vegetation is defined as macrophytic vegetation that is adapted to, and occurs in, areas where soils are frequently or permanently saturated of sufficient duration to exert a controlling influence on the plant species present. Plant species adjacent to the sample points were identified and included following the "50/20 rule," meaning that plant species in each vegetation stratum (i.e., tree, sapling/shrub, herb, and woody vine) were included in order of abundance until at least 50% of the total vegetation cover was accounted for, plus any other species that, by itself, accounts for at least 20% of the total. Plants are assigned a Wetland Indicator Status (WIS) based on frequency of occurrence in wetland habitats following the 2020 National Wetland Plant List (NWPL) (USACE 2020) and using the Indicator Ratings Definitions (Lichvar et al. 2012) as follows:

    - OBL (Obligate Wetland Plants): Almost always occur under natural conditions in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface;

    - FACW (Facultative Wetland Plants): Usually occur in wetlands but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally;

    - FAC (Facultative Plants): Occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions;

    - FACU (Facultative Upland Plants): Usually occur in non-wetlands but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings, where water rarely saturates the soils or floods the soil surface seasonally; and

    - UPL (Upland Plants): Almost never occur under natural conditions in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

The hydrophytic vegetation parameter is met when at least one of the following tests is fulfilled:

- The prevalent vegetation (more than 50% of the dominant plant species) is typically adapted to areas having wetland hydrology and hydric soil conditions and rated OBL, FACW, or FAC;
- The prevalence index, which is a value determined by accounting for the relative cover and WIS and ranges from 1 (only OBL species present) to 5 (only UPL species present), is less than or equal to 3; or
- Vegetation has morphological adaptations to growing in inundated or saturated conditions.

In the text results that follow, the abbreviations for the WIS categories have been inserted after the initial use of Latin/scientific names for identified dominant plants to reflect the hydrophytic indicator status as most recently presented by USACE (2020). Plants not listed or with no indicator status (NI) in USACE (2020) are treated as UPL.

- Hydric Soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (U.S. Department of Agriculture [USDA] Soil Conservation Service [SCS] 1994). Hydric soils are identified based on observable properties that result from prolonged saturated-anaerobic conditions. To assess whether hydric soil was present at each sample point, soil attributes (including color [hue, value, and chroma], redoximorphic features [color patterns in a soil formed by oxidation/reduction of iron and/or manganese that are caused by loss/depletion], or gain/concentration of pigment compared to the matrix color, mottling, texture, grain size, structure, streaking, etc.) were recorded on the delineation forms. Soil colors were assessed using Munsell Soil Color Charts (Munsell 2009).

- Wetland hydrology refers to inundation and/or saturation of the soil by flooding or a shallow water table for a prolonged period during the growing season, such that the character of the soil and vegetation are substantially different from areas that do not experience inundation/saturation in this manner. The identification of wetland hydrology follows the Wetlands Delineation Manual (Environmental Laboratory 1987) and Arid West Regional Supplement (USACE 2008). Visual evidence among the positive indicators of wetland hydrology includes surface water, high water table, or soil saturation; geomorphic features associated with inundation (e.g., channels, shorelines); and water marks, sediment deposits, or drift deposits.

Regarding the types of federal WOTUS regulated by the USACE:

- The term “wetlands” includes WOTUS in the instances where all three wetland parameters i.e., hydrophytic vegetation, hydric soil, and wetland hydrology) are present.
- The term “other waters” typically encompasses drainages and other features bound by a definable OHWM with connectivity to jurisdictional waters and includes WOTUS lacking one or more of the three wetland parameters.
- Refer to Section 2.1.6-2.1.9 for a full list of WOTUS regulated by USACE.

Potential jurisdictional boundaries for waters of the state under SWRCB jurisdiction were delineated using the latest available recommended procedures per the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2019). While there is no standard definition in place for “Waters of the State,” typically they are accepted to extend from the channel bed to the top of a bank or outer edge of riparian canopy dominated by hydrophytic vegetation (whichever is

greater) and also include adjacent waters, non-federal isolated waters (if present), and certain anthropogenic features (such as concrete drainage ditches) that are not considered to be jurisdictional federal WOTUS. Refer to Section 2.2.3 for aquatic resources SWRCB regulates as a State Wetland.

For the purposes of aquatic resources delineations, Stantec conservatively considers potential CDFW jurisdiction to extend from the channel bed to the top of an adjacent bank or outer edge of adjacent riparian canopy (whichever is greater) and also may include smaller swales and certain anthropogenic drainage features such as drainage ditches not considered to be jurisdictional federal WOTUS.

## 4.2 Methodology

A jurisdictional aquatic resources/wetlands delineation was conducted as part of a preliminary jurisdictional determination for the Survey Area on May 8, 2024. The aquatic resources delineation Survey Area includes the Project area and a 100-ft survey buffer. Sample points/soil test pits were excavated to a depth of approximately 16 inches unless a restrictive layer was present. Hydrophytic vegetation and wetland hydrology indicators were also considered in the vicinity of these sampling locations. Percent cover estimates for vegetation were conducted by visually estimating absolute percent cover for each plant species within a sample plot. Generally, sample plot sizes included a 5-ft radius for herbs and saplings/shrubs, and a 30-ft radius for trees and woody vines (when present) per recommendations in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Plant species were identified to the lowest possible taxonomic level using *The Jepson Manual: Higher Plants of California, 2nd Edition* (Baldwin et al. 2012). Sample points/soil test pits were backfilled after being examined.

Potential jurisdictional aquatic resources are mapped and presented in Appendix A, Figure 4. Data were recorded on standard Wetland Determination Data Forms from the *Arid West Regional Supplemen*t (included in USACE 2008) and an OHWM Delineation Data Sheet (David et al. 2022). The Wetland Determination Data Forms are included in Appendix B. A summary of the delineation and data captured in the datasheets is provided below.

## 4.3 Resulting Delineation and Preliminary Jurisdictional Determination

Appendix A, Figure 4 includes a delineation map for potential jurisdictional features, which has been prepared consistent with the *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program* (USACE 2016).

Table 3 provides a summary of vegetation, soil, and hydrology wetland parameters present/absent based on observed indicators recorded on the jurisdictional delineation data sheets (see Appendix B); and a characterization of the potential federal and state jurisdictional features occurring within the vicinity of the sample points.

**Table 3. Preliminary Jurisdictional Determination Summary**

| Sample Point/Soil Pit | Hydrophytic Vegetation | Hydric Soil | Wetland Hydrology | Potential Jurisdiction | | |
|---|---|---|---|---|---|---|
| | | | | Federal / USACE | State / RWQCB | CDFW |
| SP1 | N | N | Y | Non-jurisdictional[1] | Non-wetland Waters of the State (Ephemeral drainage)[2] | Streambed[3] |
| SP2 | N | N | Y | Upland | Upland | Upland |
| SP3 | Y | N | Y | Non-jurisdictional[1] | Non-wetland Waters of the State (Ephemeral drainage)[2] | Streambed[3] |
| SP4 | Y | Y | Y | Non-jurisdictional[3] | Non-wetland Waters of the State (Ephemeral drainage)[4] | Streambed[3] |
| SP5 | N | N | N | Upland | Upland | Upland |

[1] This ephemeral drainage will not fall under the jurisdiction of the USACE since it does not meet the "relatively permanent" standard or the "significant nexus" with a traditional navigable water standard.
[2]Qualifies as a potential non-wetland Waters of the State since it is an ephemeral drainage.
[3]Does not qualify as a potential USACE wetland since it does not have continuous surface water connection to a relatively permanent tributary that meets the "significant nexus" standard to a traditional navigable water.
[4]Does not qualify as a wetland Waters of the State since it is an artificial wetland that is less than one acre in size, it resulted from historic human activity, and is subject to ongoing operation and maintenance. Since the feature is an ephemeral drainage it qualifies as a non-wetland Waters of the State.

Table 4 quantifies the potential jurisdictional aquatic resources (in acres, square feet, and linear feet) for the delineated resources within the Survey Area and includes footnotes summarizing the key characteristics of potential jurisdictional aquatic resources for each agency/regulatory jurisdiction based on Stantec's understanding of current regulatory guidance.

**Table 4. Preliminary Jurisdictional Waters Totals in the Study Area**

| Potential Jurisdictional Aquatic Resources | Acres | Linear Feet |
|---|---|---|
| **State/RWQCB** | | |
| Non-wetland Waters of the State (ephemeral drainage) | 0.27 | 11,945 |
| **CDFW** | | |
| Streambed | 0.25 | 10,964 |
| Riparian | 0.02 | 981 |

[1] Areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies.

## 4.4 Results

Five sample points within the Survey Area were positioned along the wetland/upland interface (see Appendix A: Figure 4), each determined to be sufficient to analyze wetland and OHWM indicators and assign potential jurisdiction.

### 4.4.1 DRAINAGES AND OTHER AQUATIC RESOURCES

Refer to Appendix B and C for the comprehensive Wetland Data Sheets and Photo Log to view soils, location of soil pits, and vegetation near the sampling areas.

**Sample Point 1 (SP1)**

This sample point was positioned within what seemed to be an ephemeral drainage from aerial imagery on the western portion of the Survey Area within its northern extent. Vegetation at SP1 was dominated by soft brome (*Bromus hordeaceus*) (FACU) and wall barley (*Hordeum murinum*) (FACU) in the herb stratum; there were no species within the tree, sapling/shrub, or woody vine strata present. These species collectively do not meet the requirements to pass the dominance test. Soil observed included brown (7.5YR 4/4) clay loam with a depth from 0 to 16 inches within the soil profile. No hydric soil indicators along the soil profile were observed. The Primary Wetland Hydrology indicator of Surface Soil Cracks (B6) was observed. SP1 meets one of the three wetland parameters; therefore, the Sampled Area is not within a wetland.

**Sample Point 2 (SP2)**

This sample point was positioned within an ephemeral drainage just to the east of SP1. Vegetation at SP2 was dominated by rubber rabbitbrush (*Ericameria nauseosa*) (NI) within the sapling/shrub stratum, shortpod mustard (*Hirschfeldia incana*) (NI), Canada horseweed (*Erigeron canadensis*) (FACU), white sweetclover (*Melilotus albus*) (NI), red brome (*Bromus madritensis* ssp*. Rubens*) (UPL), and common sunflower (FACU) in the herb stratum; there were no species within the tree or woody vine strata present. These species do not meet the requirements to pass the dominance test. Soil observed included brown (10YR 4/3) silty clay loam with a depth from 0 to 16 inches within the soil profile. No hydric soil indicators along the soil profile were observed. Additionally, both Surface Soil Cracks (B6) (Primary Indicator) and Sediment Deposits (B2) (**Riverine**) (Secondary Indicator) were observed within the sampling area; therefore, Wetland Hydrology is present at SP2. SP2 meets one of the three wetland parameters; therefore, the Sampled Area is not within a wetland.

**Sample Point 3 (SP3)**

This point was positioned in the western most section of the Survey Area along a drainage ditch downstream of the PWD's groundwater pumping station. Vegetation in this area was dominated by rubber rabbitbrush (NI) in the sapling/shrub stratum and broadleaf cattail (*Typha latifolia*) (OBL) and curly dock (*Rumex crispus*) (FAC) in the herb stratum; there were no species within the tree or woody vine strata present. These species collectively pass the Dominance Test; therefore, hydrophytic vegetation is present within the SP3 sampling location. Soil observed included dark yellowish brown (10YR 4/4) clay

loam with a depth from 0 to 16 inches within the soil profile. No hydric soil indicators along the soil profile were observed. The wetland hydrology primary indicator of Saturation (A3) was observed. Thus, wetland hydrology was present at this sample point. Wetland Hydrology in this pit is only present due to the water pumping station draining water into the drainage upstream of the soil pit. SP3 does not have indicators of hydric soils; therefore, the Sampled Area is not within a wetland.

**Sample 4 (SP4)**

This sample point was positioned south of SP3 within an ephemeral drainage downstream of another PWD's groundwater pumping station that was suspected to meet the three wetland parameters. Vegetation in this area was dominated by red willow (*Salix laevigata*) (FACW) and arroyo willow (*Salix lasiolepis*) (FACW) in the sapling/shrub stratum and chainmaker's bullrush (*Schoenoplectus americanus*) (OBL) within the herb stratum; there were no species within the tree or woody vine strata present. These species meet the requirements to pass the dominance test and can be classified as hydrophytic vegetation. Soil observed included very dark grayish brown (10YR 3/2) sandy clay loam with a depth from 0 to 2 inches within the soil profile, brown (10YR 5/3) loamy sand making up 97% of the matrix with yellowish red (5YR 4/6) redox covered sand grains making up 3% of the matrix with a depth 2-10 inches, and grayish brown (10YR 5/2) loamy sand making up 95% of the matrix with strong brown (7.5YR 4/6) redox concentrations from 10 to 12 inches within the soil profile. This soil meets the requirements detailed within the "Vegetated Sand and Gravel Bars within floodplain" under the "Problematic hydric soils" section of the Arid West Regional supplement since there is evidence of sand deposition from high flow events. Since a high water table, saturation, and redoximorphic concentrations are present within the soil pit, it can be assumed that anaerobic conditions are present enough for hydric soil development; however, with the influx of sandy material none of the hydric soil indicators are met. Hydric soils are assumed to be present. Additionally, the Primary Wetland Hydrology Indicators High Water Table (A2), Saturation (A3), Oxidized Rhizospheres along Living Roots (C3), and Presence of Reduced Iron (C4) were observed. SP4 meets all three wetland parameters, therefore the Sampled Area is within a wetland.

**Sample Point 5 (SP5)**

This point was positioned uphill from SP4 on the assumed upland habitat. Vegetation in this area was dominated by red willow (FACW) and rubber rabbitbrush (NI) in the sapling/shrub stratum and red brome (UPL) in the herb stratum; there were no species within the tree or woody vine strata present. These species do not pass the dominance test. Soil observed included brown (10YR 4/3) sandy loam with a depth from 0 to 16 inches within the soil profile. No hydric soil indicators along the soil profile were observed. No wetland hydrology indicators were observed. SP5 does not meet any of the three wetland parameters; therefore, the Sampled Area is not within a wetland.

### 4.4.2 RATIONALE FOR PRELIMINARY JURISDICTIONAL DETERMINATION

Within the Survey Area there is one major ephemeral drainage and a tributary channel that provides additional ephemeral flow to the main channel. These drainages stem from and experience water input from their upstream PWD's groundwater pumping stations. The drainages travel northeast from 25th St E where they confluence and then make their way to where they flow underground at a concrete culvert at E Avenue P until where they are assumed to reach the Palmdale Water Reclamation Plant's oxidation

ponds. At the SP4 sampling location, three wetland parameters are met, and the wetland boundaries were mapped in accordance with the transition of hydrophytic vegetation to upland vegetation. The wetland and associated ephemeral channel does not fall under the jurisdiction of USACE since it does not meet the “relatively permanent” standard or the “significant nexus” with a traditional navigable water standard. Since this is an artificial wetland that resulted from historic human activity, and is subject to ongoing operation and maintenance, it does not qualify as a wetland Waters of the State. Since its channel has presence of a bed, bank, and OHWM, it is subject to potential jurisdiction of the State/RWQCB as a non-wetland Waters of the State. Additionally, since the channel has clear evidence of a bed and bank, it is subject to the potential jurisdiction of CDFW, where their jurisdiction extends out to the limit of riparian vegetation. The only location where CDFW jurisdiction may extend outside the boundaries of bed and bank is just east of 25$^{th}$ St E where riparian trees extend outside of the bank of the ephemeral drainage. The SP2 sampling location is a downstream study of the same drainage as SP4. At the SP3 sampling location, hydrophytic vegetation and wetland hydrology were met; however, hydric soils were not present. Therefore, this location is not a wetland; however, the drainage has presence of bed, bank, and an OHWM. This drainage will also be subject to potential jurisdiction of the State/RWQCB as a non-wetland Waters of the State and CDFW. Since this drainage lacks the “relative permanence” standard and “significant nexus” standard, it does not fall under jurisdiction of the USACE. It is recommended that PWD provide CDFW with a Section 1602 notification for an LSA and obtain a WDR Permit from the RWQCB in compliance with the Porter-Cologne Act if PWD plans on impacting any of the aquatic resources within the Survey Area.

It should be noted that Stantec’s assessments regarding areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies, including the USACE, SWRCB/RWQCB, and CDFW.

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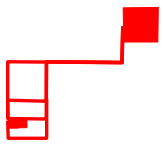
# APPENDICES

# Appendix A Figures

**Figure 1. Site Location Map**



Project Location

0 2.5 5 Miles

(At original document size of 11x17)
1:162,342

N

Stantec

*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2024-06-19
TR by SET on 2024-06-19
IR by JV on 2024-06-19

*Client/Project*
184031611

Palmdale Water District
Pure Water Antelope Valley – Advanced Water Treatment Project
Aquatic Resources Delineation Report

*Figure No.*
**1**

*Title*
**Project Location Map**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors California NAIP 2022 60cm

V:\1858\Active\184031611_Palmdale_FieldMap\ARDR_Figure1_ProjectLocation_20240603.mxd Revised: 2024-06-19 By: dalaw

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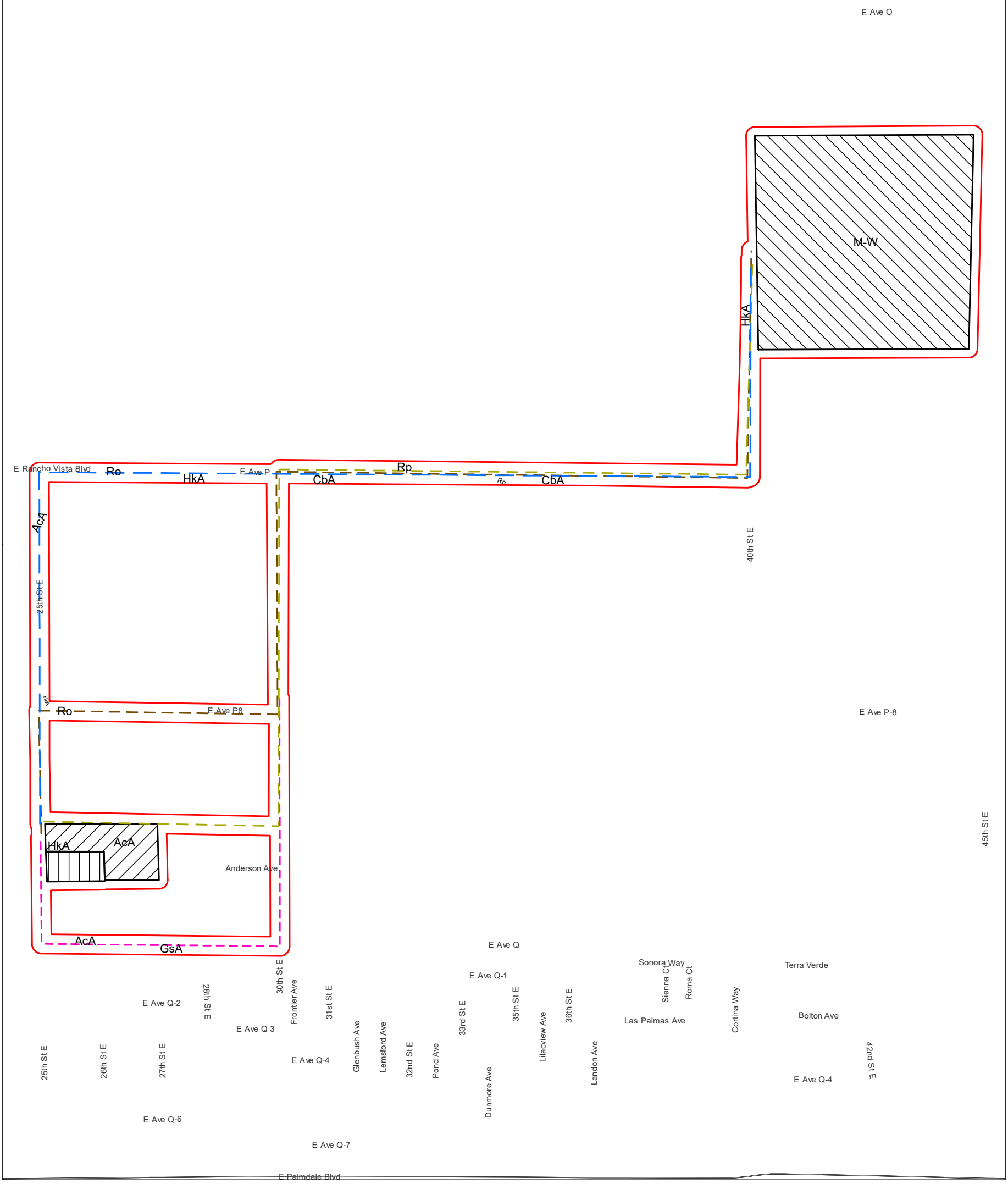
**Figure 2. Soils Map**




Survey Area

**Project Features**

- AWPF Site
- Brine Ponds - Location 1
- C6
- Brine Pipeline 1
- Brine Pipeline 2
- Brine Pipeline 3
- New Tertiary Effluent Pipeline

**Soil Map Unit Symbol**

- AcA; Adelanto coarse sandy loam, 2 to 5 percent slopes
- CaA; Cajon loamy sand, 0 to 2 percent slopes
- CbA; Cajon loamy sand, loamy substratum, 0 to 2 percent slopes
- GsA; Greenfield sandy loam, 0 to 2 percent slopes
- HkA; Hesperia fine sandy loam, 0 to 2 percent slopes
- M-W; Miscellaneous water
- Ro; Rosamond fine sandy loam
- Rp; Rosamond loam

0 1,200 2,400 Feet

(At original document size of 11x17)
1:14,400

N

Stantec

*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2024-06-19
TR by SET on 2024-06-19
IR by JV on 2024-06-19

*Client/Project* 184031611
Palmdale Water District
Pure Water Antelope Valley – Advanced Water Treatment Project
Aquatic Resources Delineation Report

*Figure No.*
**2**

*Title*
**Historic Soils**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024. Soils from NRCS 2024.
**3.** Background: California NAIP 2022 60cm

V:\1858\Active\184031611_Palmdale_FieldMapARDR_Figure2_Soils_20240603.mxd Revised: 2024-06-19 By: dalaw

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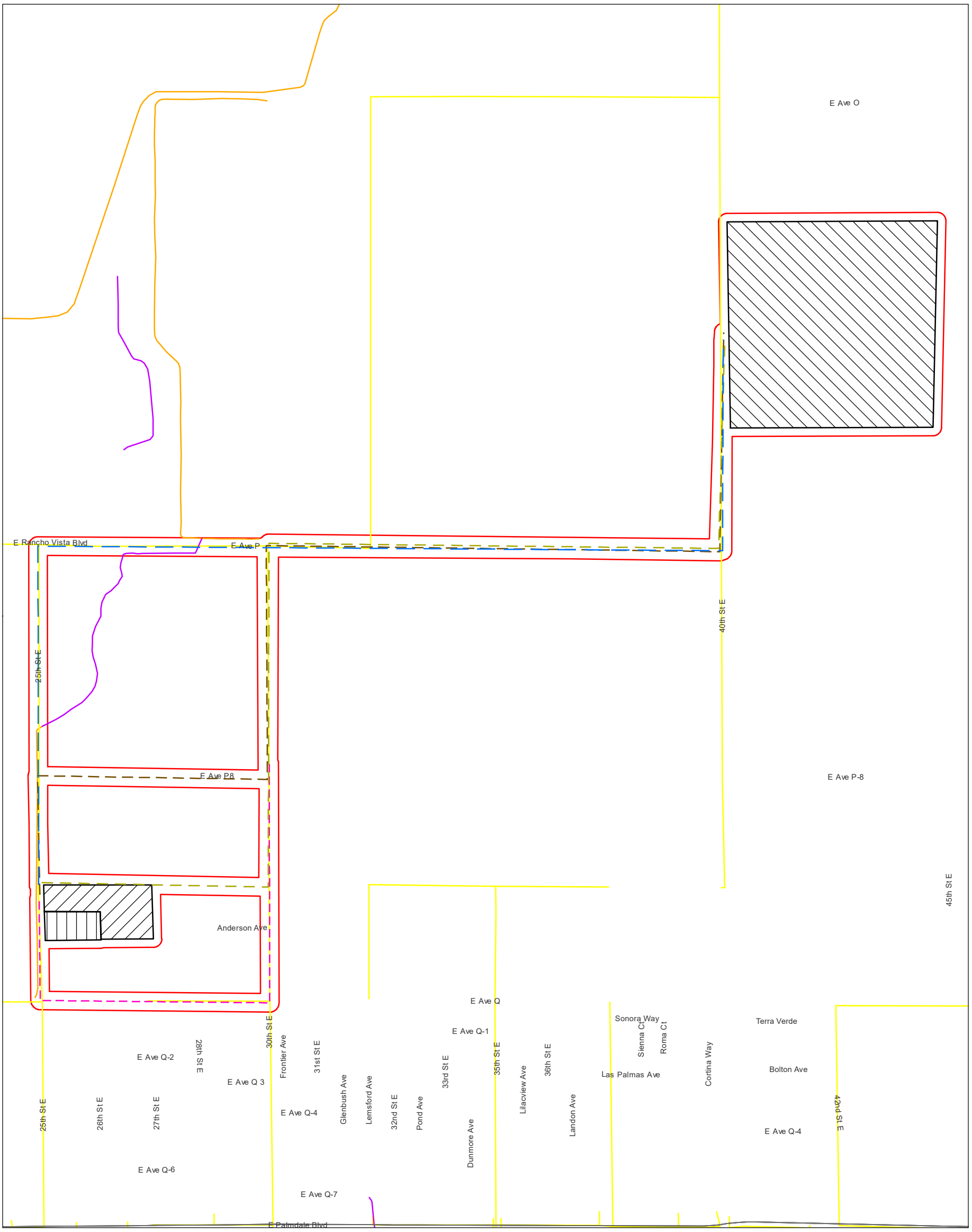
**Figure 3. NWI and NHD Map**




Survey Area

**Project Features**

- AWPF Site
- Brine Ponds - Location 1
- C6
- Brine Pipeline 1
- Brine Pipeline 2
- Brine Pipeline 3
- New Tertiary Effluent Pipeline

**National Wetlands Inventory**

- Freshwater Pond
- Lake
- Riverine

**National Hydrography Dataset**

- Canal/ Ditch
- Pipeline
- Stream/ River

0 1,200 2,400 Feet

(At original document size of 11x17)
1:14,400

N

Stantec

| | |
|---|---|
| *Project Location*<br>City of Palmdale,<br>Los Angeles County, California | Prepared by DL on 2024-06-21<br>TR by SET on 2024-06-21<br>IR by JV on 2024-06-21 |
| *Client/Project* | 184031611 |

Palmdale Water District
Pure Water Antelope Valley – Advanced Water Treatment Project
Aquatic Resources Delineation Report

*Figure No.*

**3**

*Title*

**National Wetlands Inventory & National Hydrography Dataset**

***Notes***

**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024. NWI from USFWS 2023. National Hydrography Dataset from USGS 2023.
**3.** Background: California NAIP 2022 60cm

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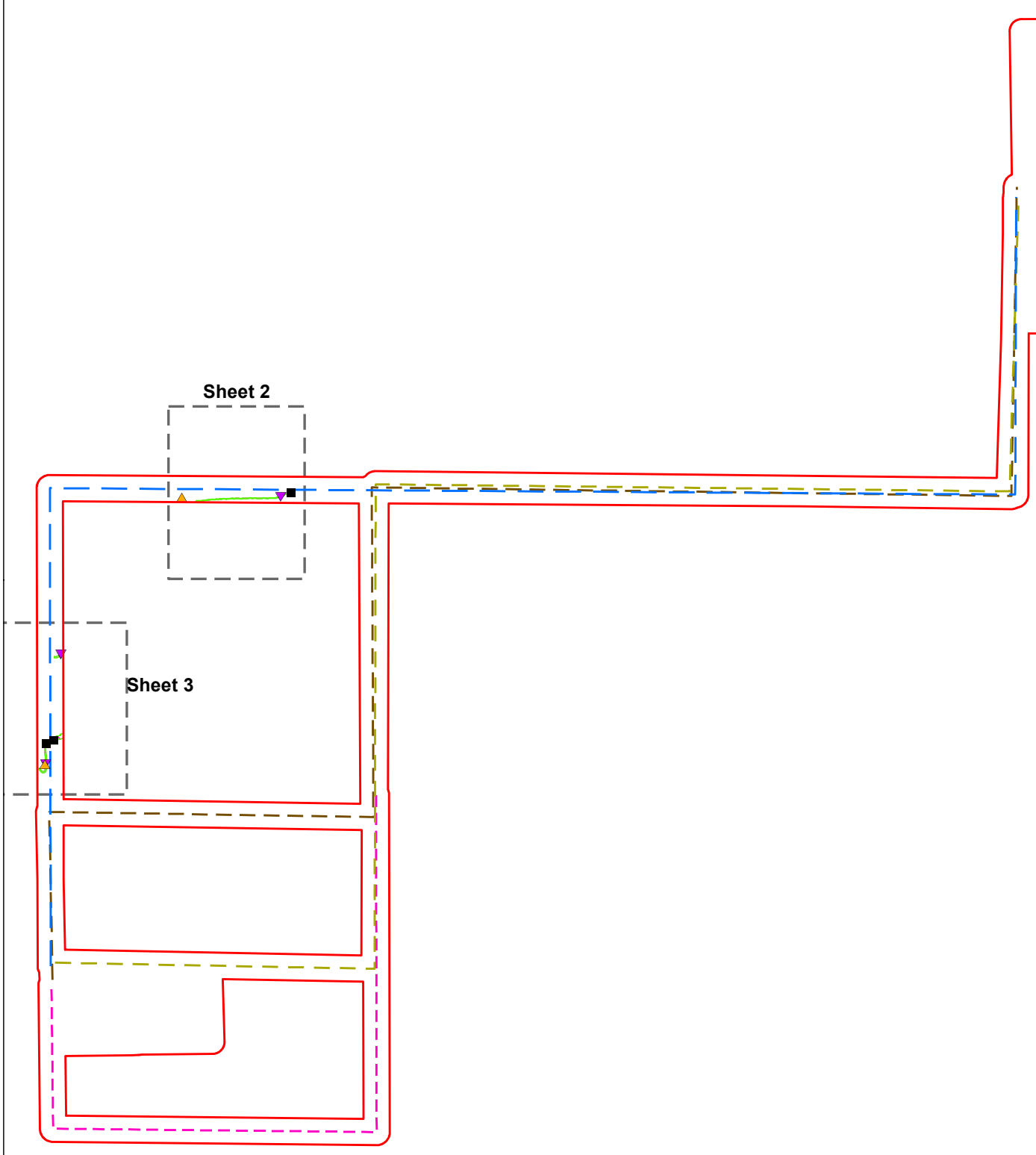
**Figure 4. Potentially Jurisdictional Features**




Survey Area

**Project Features**

- Brine Pipeline 1
- Brine Pipeline 2
- Brine Pipeline 3
- New Tertiary Effluent Pipeline
- AWPF Site
- Brine Ponds - Location 1
- C6

- Culvert

**Sample Locations**

- Upland
- Wetland

**State/RWQCB Jurisdiction**

- Waters of the State (Streambed)

**CDFW Jurisdiction**

- Riparian
- Streambed

0 1,200 2,400 Feet

(At original document size of 11x17)
1:14,400

N

Stantec

| | |
|---|---|
| *Project Location* | Prepared by DL on 2024-06-21 |
| City of Palmdale, | TR by SET on 2024-06-21 |
| Los Angeles County, California | IR by JV on 2024-06-21 |
| *Client/Project* | 184031611 |

Palmdale Water District
Pure Water Antelope Valley – Advanced Water Treatment Project
Aquatic Resources Delineation Report

*Figure No.*

**4**

*Title*

**Aquatic Resources**

***Notes***

**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



V:\1858\Active\184031611_Palmdale_FieldMap\ARDR_Figure4_Waters_20240603.mxd Revised: 2024-06-21 By: dalaw

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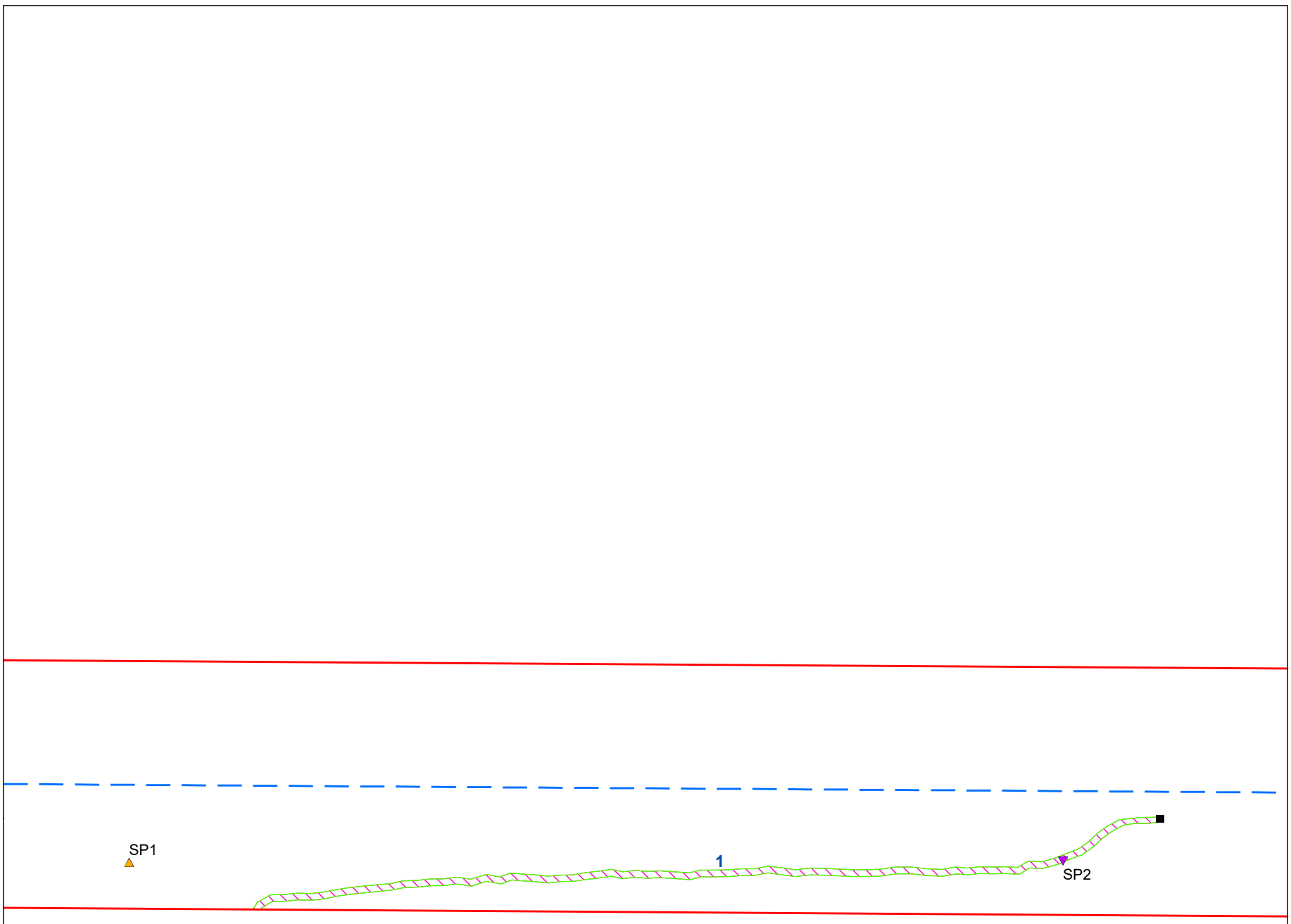


Survey Area

**Project Features**

Brine Pipeline 3

Culvert

**Sample Locations**

Upland

Wetland

**State/RWQCB Jurisdiction**

Waters of the State (Streambed)

**CDFW Jurisdiction**

Riparian

Streambed

0 120 240 Feet

(At original document size of 11x17)
1:1,440

N

Stantec

*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2024-06-21
TR by SET on 2024-06-21
IR by JV on 2024-06-21

*Client/Project*
184031611
Palmdale Water District
Pure Water Antelope Valley – Advanced Water Treatment Project
Aquatic Resources Delineation Report

*Figure No.*
**4**

*Title*
**Aquatic Resources**

***Notes***
**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



V:\1858\Active\184031611_Palmdale_FieldMap\ARDR_Figure4_Waters_20240603.mxd Revised: 2024-06-21 By: dalaw

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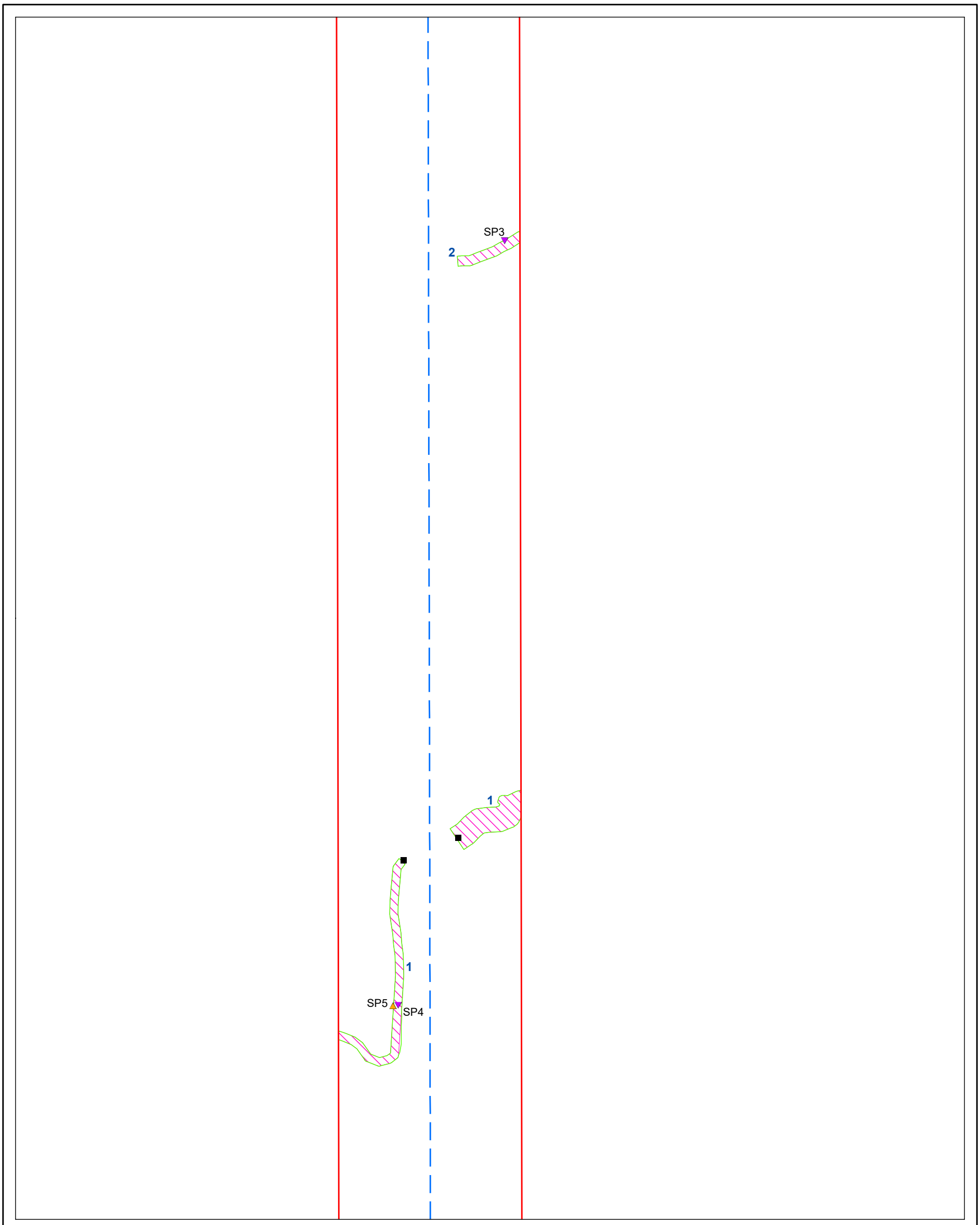


Survey Area

**Project Features**

Brine Pipeline 3

Culvert

**Sample Locations**

Upland

Wetland

**State/RWQCB Jurisdiction**

Waters of the State (Streambed)

**CDFW Jurisdiction**

Riparian

Streambed

0 120 240 Feet

(At original document size of 11x17)
1:1,440

N

Stantec

*Project Location*
City of Palmdale,
Los Angeles County, California

Prepared by DL on 2024-06-21
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IR by JV on 2024-06-21

*Client/Project*
184031611

Palmdale Water District
Pure Water Antelope Valley – Advanced Water Treatment Project
Aquatic Resources Delineation Report

*Figure No.*

**4**

*Title*

**Aquatic Resources**

***Notes***

**1.** Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
**2.** Data Sources: Stantec 2024,
**3.** Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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# Appendix B Wetland Data Sheets

## SOIL

Sampling Point: SP1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16" | 7.5YR 4/4 | 100% | | | | | Clay loam | Soil is moist but not saturated. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ___ No ✔

Remarks:

No hydric soil indicators present.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✔ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface soil cracks present; however, might just be from the clay nature of the soil.

## SOIL

Sampling Point: SP1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16" | 10YR 4/3 | 100% | | | | | Silty clay lo | Soil is moist but not saturated. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☐ No ☑

Remarks:

Soil is moist but not saturated.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☑ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☑ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

**Wetland Hydrology Present?** Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface soil cracks present and soil deposits. Soil is moist; however, not moist enough to be considered saturated.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Pure Water Antelope Valley – AdvancedWater | City/County: Palmdale/Los Angeles | Sampling Date: 5/8/24

Applicant/Owner: Palmdale Water District | State: CA | Sampling Point: SP2

Investigator(s): Ryan Blaich | Section, Township, Range: 19, 6N, 11W

Landform (hillslope, terrace, etc.): Low terrace | Local relief (concave, convex, none): Convex | Slope (%): 1%

Subregion (LRR): LRR C: Mediterranean California | Lat: 34.6020026 | Long: -118.0789401 | Datum:

Soil Map Unit Name: Hesperia fine sandy loam, 0 to 2 percent slopes (HkA) | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes ____ No ✓ |
| Hydric Soil Present? | Yes ____ | No ✓ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks:

Point taken within ephemeral drainage just outside of the OHWM and below top of bank (right).

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30') | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15')** | | | |
| 1. Ericameria nauseosa | 10% | Y | NL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |
| **Herb Stratum (Plot size: 5')** | | | |
| 1. Hirschfeldia incana | 5% | Y | NL |
| 2. Erigeron canadensis | 5% | Y | FACU |
| 3. Melilotus albus | 5% | Y | NL |
| 4. Bromus madritensis | 5% | Y | UPL |
| 5. Helianthus annuus | 5% | Y | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 25% = Total Cover | | |
| **Woody Vine Stratum (Plot size: 30')** | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum 75% % Cover of Biotic Crust 0%

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x 1 = |
| FACW species | x 2 = |
| FAC species | x 3 = |
| FACU species | x 4 = |
| UPL species | x 5 = |
| Column Totals: (A) | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No ✓

Remarks:

No hydrophytic vegetation present.

## SOIL

Sampling Point: SP2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16" | 10YR 4/3 | 100% | | | | | Silty clay | Soil is moist but not saturated. |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ___ No ✓

Remarks:

Soil is moist but not saturated.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface soil cracks present and soil deposits. Soil is moist; however, not moist enough to be considered saturated.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Pure Water Antelope Valley – AdvancedWater | City/County: Palmdale/Los Angeles | Sampling Date: 5/8/24

Applicant/Owner: Palmdale Water District | State: CA | Sampling Point: SP3

Investigator(s): Ryan Blaich | Section, Township, Range: 19, 6N, 11W

Landform (hillslope, terrace, etc.): Low terrace | Local relief (concave, convex, none): Convex | Slope (%): 1%

Subregion (LRR): LRR C: Mediterranean California | Lat: 34.5983941 | Long: -118.0850583 | Datum:

Soil Map Unit Name: Rosamond fine sandy loam (Ro) | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ✓ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ____ | **Is the Sampled Area within a Wetland?** Yes ____ No ✓ |
| Hydric Soil Present? | Yes ____ | No ✓ | |
| Wetland Hydrology Present? | Yes ✓ | No ____ | |

Remarks:

Drainage is used to convey water for some reason. There is water present within the drainage; however, pit was dug approximately 3" away from surface water and water table is not present.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30') | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15')** | | | |
| 1. Ericameria nauseosa | 10% | Y | NL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |
| **Herb Stratum (Plot size: 5')** | | | |
| 1. Rumex crispus | 10% | Y | FAC |
| 2. Typha latifolia | 40% | Y | OBL |
| 3. Melilotus albus | 3% | N | NL |
| 4. Sphaeralcea ambigua | 5% | N | NL |
| 5. Bromus madritensis | 5% | N | UPL |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 66% = Total Cover | | |
| **Woody Vine Stratum (Plot size: 30')** | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum 34% % Cover of Biotic Crust 0%

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x 1 = |
| FACW species | x 2 = |
| FAC species | x 3 = |
| FACU species | x 4 = |
| UPL species | x 5 = |
| Column Totals: (A) | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

No dominant hydrophytic vegetation present.

## SOIL

Sampling Point: SP3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16" | 10YR 4/3 | 100% | | | | | Silty clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ____ No ✓

Remarks:

Silty clay loam, no hydric soil indicators.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 3"

**Wetland Hydrology Present?** Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology is only present due to the water valve draining into ditch.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Pure Water Antelope Valley – AdvancedWater | City/County: Palmdale/Los Angeles | Sampling Date: 5/8/24

Applicant/Owner: Palmdale Water District | State: CA | Sampling Point: SP4

Investigator(s): Ryan Blaich | Section, Township, Range: 19, 6N, 11W

Landform (hillslope, terrace, etc.): Low flow channel | Local relief (concave, convex, none): Concave | Slope (%): 1%

Subregion (LRR): LRR C: Mediterranean California | Lat: 34.5958573 | Long: -118.0854714 | Datum:

Soil Map Unit Name: Rosamond fine sandy loam (Ro) | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ No ____ | **Is the Sampled Area within a Wetland?** Yes ✓ No ____ |
| Hydric Soil Present? | Yes ✓ No ____ | |
| Wetland Hydrology Present? | Yes ✓ No ____ | |

Remarks:

Ditch receives water input from water district pump upstream of where the sampling location is. Wetland hydrology is only present due to water input.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30') | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15')** | | | |
| 1. Salix laevigata | 10% | Y | FACW |
| 2. Salix lasiolepis | 10% | Y | FACW |
| 3. Baccharis salicifolia | 5% | N | FAC |
| 4. Ericameria nauseosa | 5% | N | NI |
| 5. | | | |
| | 30% = Total Cover | | |
| **Herb Stratum (Plot size: 5')** | | | |
| 1. Eleochris palustris | 5% | N | OBL |
| 2. Veronica anagallis-aquatica | 10% | N | OBL |
| 3. Typha latifolia | 2% | N | OBL |
| 4. Schoenoplectus americanus | 70% | Y | OBL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 87% = Total Cover | | |
| **Woody Vine Stratum (Plot size: 30')** | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum 13% % Cover of Biotic Crust 0%

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ✓ No ____

Remarks:

## SOIL

Sampling Point: SP4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-2" | 10YR 3/2 | 100% | | | | | Sandy cla | Roots present. |
| 2-10" | 10YR 5/3 | 97% | 5YR 4/6 | 3% | CS | M | Loamy sa | Distinct |
| 10-12" | 10YR 5/2 | 95% | 7.5YR 4/6 | 5% | C | M | Loamy sa | Distinct |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

This point meets the indicators for Problematic Hydric Soils: Vegetated sand and gravel bars within floodplains. The point occurs within an ephemeral drainage that has sandy soils. There is evidence of redoximorphic features within the soil profile. The influx of new sand from upstream sources do not allow this soil to meet one of the above Hydric Soil Indicators. Rock rejection at 12".

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 3"

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology is only present due to the water valve draining into ditch.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Pure Water Antelope Valley – AdvancedWater City/County: Palmdale/Los Angeles Sampling Date: 5/8/24

Applicant/Owner: Palmdale Water District State: CA Sampling Point: SP5

Investigator(s): Ryan Blaich Section, Township, Range: 19, 6N, 11W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2%

Subregion (LRR): LRR C: Mediterranean California Lat: 34.5958552 Long: -118.0854931 Datum: _____

Soil Map Unit Name: Rosamond fine sandy loam (Ro) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Point taken upslope from SP4.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30') | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | = Total Cover | | |
| **Sapling/Shrub Stratum (Plot size: 15')** | | | |
| 1. Salix laevigata | 10% | Y | FACW |
| 2. Baccharis salicifolia | 2% | N | FAC |
| 3. Ericameria nauseosa | 30% | Y | NL |
| 4. | | | |
| 5. | | | |
| | 42% = Total Cover | | |
| **Herb Stratum (Plot size: 5')** | | | |
| 1. Hirschfeldia incana | 10% | N | NL |
| 2. Bromus madritensis | 75% | Y | UPL |
| 3. Melilotus albus | 5% | N | NL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 90% = Total Cover | | |
| **Woody Vine Stratum (Plot size: 30')** | | | |
| 1. | | | |
| 2. | | | |
| | = Total Cover | | |

% Bare Ground in Herb Stratum 10% % Cover of Biotic Crust 0%

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks:

## SOIL

Sampling Point: SP5

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1-16" | 10YR 4/3 | 100% | | | | | Sandy loa | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present? Yes _____ No ✓**

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

**Wetland Hydrology Present? Yes _____ No ✓**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers (USACE)

# RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

*OMB Control No. 0710-XXXX*

*Approval Expires:*

| Project ID #: 184031611 | Site Name: Pure Water Antelope Valley | Date and Time: 5/8/24 11:32 am |
|---|---|---|
| Location (lat/long): 34.6019977, -118.0789786 | Investigator(s): Ryan Blaich | |

**Step 1** Site overview from remote and online resources
**Check boxes for online resources used to evaluate site:**

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [ ] topographic maps
- [ ] Other: _____

**Describe land use and flow conditions from online resources.**
Were there any recent extreme events (floods or drought)?

Land is adjacent to the Palmdale airport and road E Avenue P. This last winter this drainage experienced above average rainfall.

**Step 2** Site conditions during field assessment

First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

There is a culvert that the drainage ends at at E Avenue P, where it drains into an underground storm drain.

**Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.**

**OHWM is at a transition point,** therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

**OHWM.** Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

### Geomorphic indicators

- [x] **Break in slope:**
  - [x] *on the bank:* a
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [x] **Shelving:**
  - [x] *shelf at top of bank:* a
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [x] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [x] *unvegetated:* x
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* x
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [x] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* a
- [ ] **Secondary channels:**

### Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [ ] **Mudcracks:**
- [x] **Changes in particle-sized distribution:** x
  - [x] *transition from* clay to gravels
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

### Vegetation Indicators

- [ ] **Change in vegetation type and/or density:**

Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

- [ ] *vegetation absent to:*
- [ ] *moss to:*
- [ ] *forbs to:*
- [ ] *graminoids to:*
- [ ] *woody shrubs to:*
- [ ] *deciduous trees to:*
- [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

### Ancillary indicators

- [ ] **Wracking/presence of organic litter:**
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

**Other observed indicators?**

**Describe:**

**Step 4** Is additional information needed to support this determination?

- [ ] Yes
- [x] No

If yes, describe and attach information to datasheet:

Project ID #: 184031611

**Step 5** Describe rationale for location of OHWM

Within the top of banks of the drainage there is a steep decline up until a sudden low terrace shelf, on both sides. Within the low flow terrace, there is evidence of sediment deposition of fine sediments and small gravels.

**Additional observations or notes**

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☐ Yes ☒ No If no, explain why not: Photos included in photo log.

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

| Photo Number | Photograph description |
|---|---|
| | |
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**OHWM Field Identification Datasheet Instructions and Field Procedure**

Step 1 **Site overview from remote and online resources** **Complete Step 1 prior to site visit.**

**Online Resources: Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.**

a. gage data
b. aerial photos
c. satellite imagery
d. LiDAR
e. topographic maps
f. geologic maps
g. land use maps
h. climatic data (precipitation and temperature)

**Landscape context: Use the online resources to put the site in the context of the surrounding landscape.**

a. **Note on the datasheet under Step 1:**
   i. Overall land use and change if known
   ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
b. Consider the following to inform weighting of evidence observed during field visit.
   i. What physical characteristics are likely to be observed in specific environments?
   ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
   iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

**Step 2 Site conditions during the field assessment (assemble evidence)**

a. Identify the assessment area.
b. Walk up and down the assessment area noting all the potential OHWM indicators.
c. Note broad trends in channel shape, vegetation, and sediment characteristics.
   i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?
   ii. Are there any secondary and/or floodplain channels?
   iii. Are there obvious man-made alterations to the system?
   iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?
d. Look for signs of recurring fluvial action.
   i. Where does the flow converge on the landscape?
   ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?
e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.
f. **In Step 2 of the datasheet** describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.
   i. What land use and flow conditions may be affecting your ability to observe indicators at the site?
   ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?

**Step 3a List evidence**

**Assemble evidence by checking the boxes next to each line of evidence:**

a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| **Geomorphic indicators** | **Sediment and soil indicators** | **Vegetation Indicators** | **Ancillary indicators** |
|---|---|---|---|
| Where are the breaks in slope? | Where does evidence of soil formation appear? | Where are the significant transitions in vegetation species, density, and age? | Is there organic litter present? |
| Are there identifiable banks? | | Is there vegetation growing on the channel bed? | |
| Is there an easily identifiable top of bank? | Are there mudcracks present? | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there any leaf litter disturbed or washed away? |
| Are the banks actively eroding? | | | |
| Are the banks undercut? | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation? | Is there large wood deposition? |
| Are the banks armored? | | | |
| Is the channel confined by the surrounding hillslopes? | | Is the vegetation tolerant of flowing water? | Is there evidence of water staining? |
| Are there natural or man-made berms and levees? | | Has any vegetation been flattened by flowing water? | |
| Are there fluvial terraces? | | | |
| Are there channel bars? | | | |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring*
*Bedforms; riffles, pools, steps, knickpoints/headcuts*
*Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**

**OHWM Field Identification Datasheet Instructions and Field Procedure**

**Step 3b Weight each line of evidence and weigh body of evidence**

**Weight each indicator by considering its importance based upon:**

**a. Relevance:**

i. Is this indicator left by low, high, or extreme flows?

**Tips on how to assess the indicator relative to type of flow:**

*Consider the elevation of the indicator relative to the channel bed. What is the current flow level based on season or nearby gages? Consider the elevation of the indicator relative to the current flow. If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

***Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

***Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form. Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.
2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

**b. Strength:**

i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

**c. Reliability:**

i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

**d. Weigh body of evidence:**

i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.

ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).

iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and relieability.

**e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.**

i. Annotate photos with descriptions of indicators.

**Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?**

a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.

b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.

c. Attach any remote data and data analysis to the datasheet.

**Step 5 Describe rationale for location of OHWM:**

a. Why do the combination of indicators represent the OHWM?

b. If there are multiple possibilites for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.

c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

U.S. Army Corps of Engineers (USACE)

**RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET**

The proponent agency is Headquarters USACE CECW-CO-R.

*OMB Control No. 0710-XXXX*

*Approval Expires:*

| Project ID #: 184031611 | Site Name: Pure Water Antelope Valley | Date and Time: 5/8/24 1:50 pm |
|---|---|---|
| Location (lat/long): 34.598373, -118.085057 | Investigator(s): Ryan Blaich | |

**Step 1** Site overview from remote and online resources
**Check boxes for online resources used to evaluate site:**

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [ ] topographic maps
- [ ] Other: _____

**Describe land use and flow conditions from online resources.**
Were there any recent extreme events (floods or drought)?
Water valve drains into the ditch.

**Step 2** Site conditions during field assessment

First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Ther is a water valve that flows into the drainage. There is no surface water present; however, no surface water flow.

**Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.**

**OHWM is at a transition point,** therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

**OHWM.** Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

**Geomorphic indicators**

- [x] **Break in slope:**
  - [x] *on the bank:* a
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [x] **Shelving:**
  - [x] *shelf at top of bank:* a
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [x] **Channel bar:**
  - [x] *shelving (berms) on bar:* a
  - [ ] *unvegetated:*
  - [x] *vegetation transition (go to veg. indicators)* x
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [ ] **Instream bedforms and other bedload transport evidence:**
  - [ ] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* x
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [ ] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* a
- [ ] **Secondary channels:**

**Sediment indicators**

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [ ] **Mudcracks:**
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

**Vegetation Indicators**

- [x] **Change in vegetation type and/or density:**

Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

- [ ] *vegetation absent to:*
- [ ] *moss to:*
- [ ] *forbs to:*
- [x] *graminoids to:* woody shrubs
- [ ] *woody shrubs to:*
- [ ] *deciduous trees to:*
- [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

**Ancillary indicators**

- [ ] **Wracking/presence of organic litter:**
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

**Other observed indicators?**

**Describe:**
Typha spp. present within the OHWM and just above it.

**Step 4** Is additional information needed to support this determination?

- [ ] Yes
- [x] No

If yes, describe and attach information to datasheet:

Project ID #: 184031611

**Step 5** Describe rationale for location of OHWM

There is a break in slope where surface water is present. There is also a break in vegetation just above the OHWM.

**Additional observations or notes**

There is a water valve draining into the ditch.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☐ Yes ☒ No If no, explain why not: Photos included in photo log.

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

| Photo Number | Photograph description |
|---|---|
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**OHWM Field Identification Datasheet Instructions and Field Procedure**

Step 1 **Site overview from remote and online resources** **Complete Step 1 prior to site visit.**

**Online Resources: Identify what information is available for the site. Check boxes on datasheet next to the resources used to assess this site.**

a. gage data
b. aerial photos
c. satellite imagery
d. LiDAR
e. topographic maps
f. geologic maps
g. land use maps
h. climatic data (precipitation and temperature)

**Landscape context: Use the online resources to put the site in the context of the surrounding landscape.**

a. **Note on the datasheet under Step 1:**
   i. Overall land use and change if known
   ii. Recent extreme events if known (e.g., flood, drought, landslides, debris flows, wildfires)
b. Consider the following to inform weighting of evidence observed during field visit.
   i. What physical characteristics are likely to be observed in specific environments?
   ii. Was there a recent flood or drought? Are you expecting to see recently formed or obscured indicators?
   iii. How will land use affect specific stream characteristics? How natural is the hydrologic regime? How stable has the landscape been over the last year, decade, century?

**Step 2 Site conditions during the field assessment (assemble evidence)**

a. Identify the assessment area.
b. Walk up and down the assessment area noting all the potential OHWM indicators.
c. Note broad trends in channel shape, vegetation, and sediment characteristics.
   i. Is this a single thread or multi-thread system? Is this a stream-wetland complex?
   ii. Are there any secondary and/or floodplain channels?
   iii. Are there obvious man-made alterations to the system?
   iv. Are there man-made (e.g., bridges, dams, culverts) or natural structures (e.g., bedrock outcrops, Large Wood jams) that will influence or control flow?
d. Look for signs of recurring fluvial action.
   i. Where does the flow converge on the landscape?
   ii. Are there signs of fluvial action (sediment sorting, bedforms, etc.) at the convergence zone?
e. Look for indicators on both banks. If the opposite bank is not accessible, then look across the channel at the bank.
f. **In Step 2 of the datasheet** describe any adjacent land use or flow conditions that may influence interpretation of each line of evidence.
   i. What land use and flow conditions may be affecting your ability to observe indicators at the site?
   ii. What recent extreme events may have caused changes to the site and affected your ability to observe indicators?

**Step 3a List evidence**

**Assemble evidence by checking the boxes next to each line of evidence:**

a. If needed, use a separate scratch datasheet to check boxes next to possible indicators, or check boxes of possible indicators in pencil and use pen for final decision.
b. If using fillable form, then follow the instructions for filling in the fillable form.

*Context is important when assembling evidence. For instance, pool development may be an indicator of interest on the bed of a dry stream, but may not be a useful indicator to take note of in a flowing stream. On the other hand, if the pool is found in a secondary channel adjacent to the main channel, it could provide a line of evidence for a minimum elevation of high flows. Therefore, consider the site context when deciding which indicators provide evidence for identifying the OHWM. Explain reasoning in Step 5.*

**Questions to consider while making observations and listing evidence at a site:**

| **Geomorphic indicators** | **Sediment and soil indicators** | **Vegetation Indicators** | **Ancillary indicators** |
|---|---|---|---|
| Where are the breaks in slope? | Where does evidence of soil formation appear? | Where are the significant transitions in vegetation species, density, and age? | Is there organic litter present? |
| Are there identifiable banks? | | Is there vegetation growing on the channel bed? | |
| Is there an easily identifiable top of bank? | Are there mudcracks present? | If no, how long does it take for the non-tolerant vegetation to establish relative to how often flows occur in the channel? | Is there any leaf litter disturbed or washed away? |
| Are the banks actively eroding? | | | |
| Are the banks undercut? | Is there evidence of sediment sorting by grain size? | Where are the significant transitions in vegetation? | Is there large wood deposition? |
| Are the banks armored? | | | |
| Is the channel confined by the surrounding hillslopes? | | Is the vegetation tolerant of flowing water? | Is there evidence of water staining? |
| Are there natural or man-made berms and levees? | | Has any vegetation been flattened by flowing water? | |
| Are there fluvial terraces? | | | |
| Are there channel bars? | | | |

Are the following features of fluvial transport present?

*Evidence of erosion: obstacle marks, scour, armoring*
*Bedforms; riffles, pools, steps, knickpoints/headcuts*
*Evidence of deposition: imbricated clasts, gravel sheets, etc.*

**In some cases, it may be helpful to explain why an indicator was NOT at the OHWM elevation, but found above or below. It can also be useful to note if specific indicators (e.g., vegetation) are NOT present. For instance, note if the site has no clear vegetation zonation.**

**OHWM Field Identification Datasheet Instructions and Field Procedure**

**Step 3b Weight each line of evidence and weigh body of evidence**

**Weight each indicator by considering its importance based upon:**

**a. Relevance:**

i. Is this indicator left by low, high, or extreme flows?

**Tips on how to assess the indicator relative to type of flow:**

*Consider the elevation of the indicator relative to the channel bed. What is the current flow level based on season or nearby gages? Consider the elevation of the indicator relative to the current flow. If the stream is currently at baseflow and indicator is adjacent to that, then it is likely a low flow indicator. The difference between high and extreme flow indicators can sometimes be difficult to determine.*

***Landscape context from Step 1 can help determine the relevance, strength, and reliability of the indicators observed in the field.**

***Information in Chapter 2 of the OHWM field manual provides information on specific indicators which can assist in putting these in context and determining relevance, strength, and reliability.**

ii. Did recent extreme events and/or land use affect this indicator?

1. Recent floods may have left many extreme flow indicators, or temporarily altered channel form. Other resources will likely be needed to support any OHWM identification at this site. Field evidence of the OHWM may have to wait for the site to recover from the recent flood.
2. Droughts may cause field evidence of OHWM to be obscured, because there has been an extended time since the last high flow event. There can be overgrowth of vegetation or deposition of material from surrounding landscape that can obscure indicators.
3. Both man-made (e.g., dams, construction, mining activities, urbanization, agriculture, grazing) and natural (e.g., fires, floods, debris flows, beaver dams) disturbances can all alter how indicators are expected to appear at a site. Chapter 6 and Chapter 7 of the OHWM field manual provides specific case-studies that can help in interpreting evidence at these sites.

**b. Strength:**

i. Is this indicator persistent across the landscape?

1. Look up and downstream and across the channel to see if you see the same indicator at multiple locations.
2. Does the indicator occur at the same elevation as other indicators?

**c. Reliability:**

i. Is this indicator persistent on the landscape over time? Will this indicator still persist across seasons?

1. This can be difficult to determine for some indicators and may be specific to climatic region (in terms of persistence of vegetation) and history of land use or other natural disturbances.
2. Chapter 2, Chapter 6, and Chapter 7 of the OHWM field manual describes each indicator in detail and provides examples of areas where indicators are difficult to interpret.

**d. Weigh body of evidence:**

i. Combine weights: integrate the weighted line of evidence (relevance, strength, reliability) of each indicator.

ii. For each of the observed indicators, which are more heavily weighted? Where do high value indicators co-occur along the stream reach? Do they co-occur at a similar elevation along the banks relative to water surface (or channel bed if there is no water).

iii. On datasheet, select the indicators used to identify the OHWM. Information in Chapter 2 of the OHWM field manual provides descriptions of specific indicators which can assist in putting these in context and determining relevance, strength, and relieability.

**e. Take photographs of indicators and attach a log using either page 2 of datasheet or another method of logging photos.**

i. Annotate photos with descriptions of indicators.

**Step 4 Is additional information needed? Are other resources needed to support the lines of evidence observed in the field?**

a. If additional resources are needed, then repeat steps 3a and 3b for the resources selected in Step 1 of assembling, weighting, and weighing evidence collected from online resources. Chapter 5 of the OHWM field manual provides information on using online resources.

b. Any data collected from online tools have strengths and weaknesses. Make sure these are clear when determining relevance, strength, and reliability of the remotely collected data. Clearly describe why other resources were needed to support the lines of evidence observed in the field, as well as the relevance, strength, and reliability of the supporting data and/or resources.

c. Attach any remote data and data analysis to the datasheet.

**Step 5 Describe rationale for location of OHWM:**

a. Why do the combination of indicators represent the OHWM?

b. If there are multiple possibilites for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.

c. If needed, add additional site notes on page 2 of the datasheet under Step 5.

# Appendix C Photo Log

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# Photographic Log

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 1 |  |
| **Photo Location:** Palmdale, Los Angeles County, CA | |
| **Direction:** West | |
| **Survey Date:** 5/8/2024 | |
| **Comments:** Culvert on east end of 25th S E | |



| | |
|---|---|
| **Photograph ID:** 2 |  |
| **Photo Location:** Palmdale, Los Angeles County, CA | |
| **Direction:** East | |
| **Survey Date:** 5/8/2024 | |
| **Comments:** Culvert on west end of 25th S E | |

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 3 |  |
| **Photo Location:** Palmdale, Los Angeles County, CA | |
| **Direction:** Northeast | |
| **Survey Date:** 5/8/2024 | |
| **Comments:** Culvert underneath E P Ave | |



| | |
|---|---|
| **Photograph ID:** 4 |  |
| **Photo Location:** Palmdale, Los Angeles County, CA | |
| **Direction:** West | |
| **Survey Date:** 5/8/2024 | |
| **Comments:** Drainage near E P Ave 1 | |

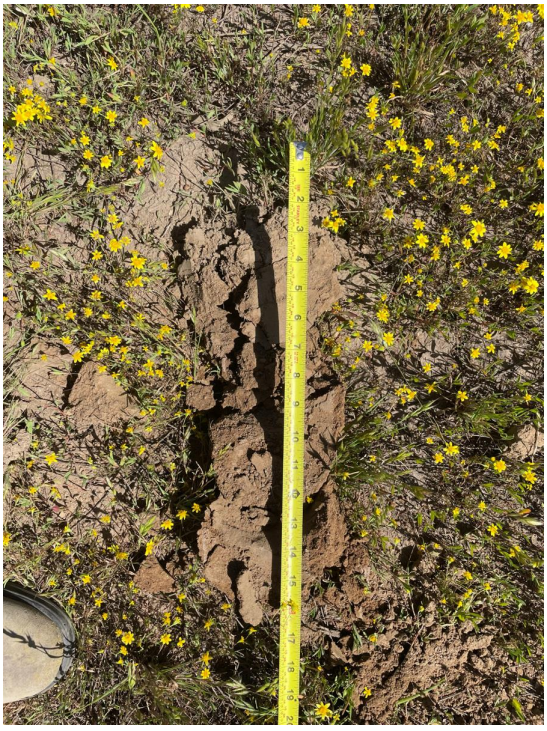
| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 5<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** East<br>**Survey Date:** 5/8/2024<br>**Comments:** Drainage near E P Ave |  |
| **Photograph ID:** 6<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** Southwest<br>**Survey Date:** 5/8/2024<br>**Comments:** Drainage on east end of 25th St E |  |

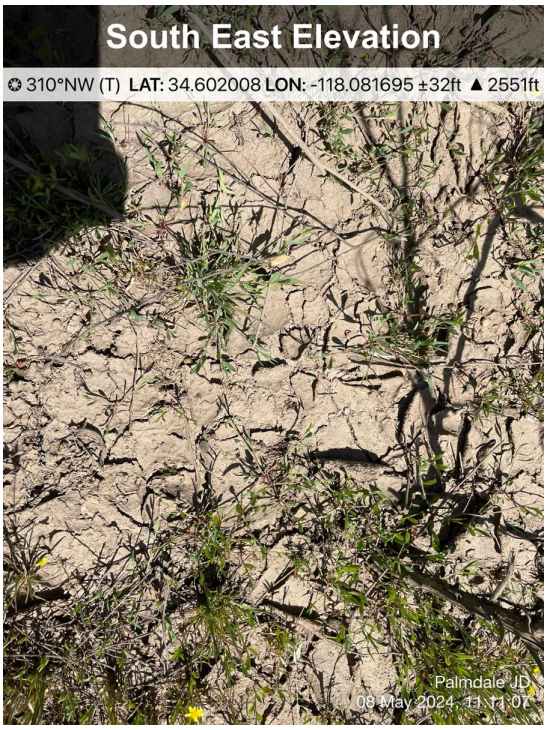
| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 7<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** North<br>**Survey Date:** 5/8/2024<br>**Comments:** Picture of rabbitbrush scrub that looks like a drainage from aerial imagery. |  |
| **Photograph ID:** 8<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** Southeast<br>**Survey Date:** 5/8/2024<br>**Comments:** SP1 sampling location |  |

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 9<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** North<br>**Survey Date:** 5/8/2024<br>**Comments:** SP1 soil pit |  |
| **Photograph ID:** 10<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** South<br>**Survey Date:** 5/8/2024<br>**Comments:** SP1 soil |  |

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 11<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** Northwest<br>**Survey Date:** 5/8/2024<br>**Comments:** SP1 Surface Soil Cracks |  |
| **Photograph ID:** 12<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** West<br>**Survey Date:** 5/8/2024<br>**Comments:** SP2 sampling location |  |

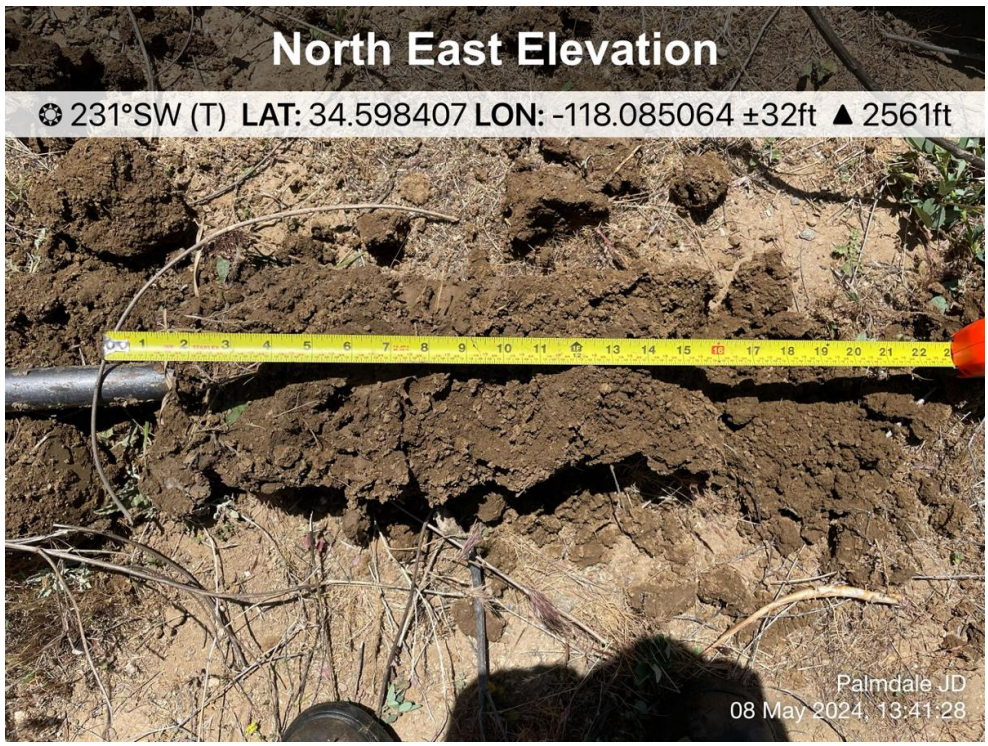
| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 13<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** East<br>**Survey Date:** 5/8/2024<br>**Comments:** SP2 soil pit |  |
| **Photograph ID:** 14<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** Southeast<br>**Survey Date:** 5/8/2024<br>**Comments:** SP2 soil |  |

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 15<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** Southwest<br>**Survey Date:** 5/8/2024<br>**Comments:** SP3 drainage and sampling location |  |
| **Photograph ID:** 16<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** Northeast<br>**Survey Date:** 5/8/2024<br>**Comments:** SP3 soil pit |  |

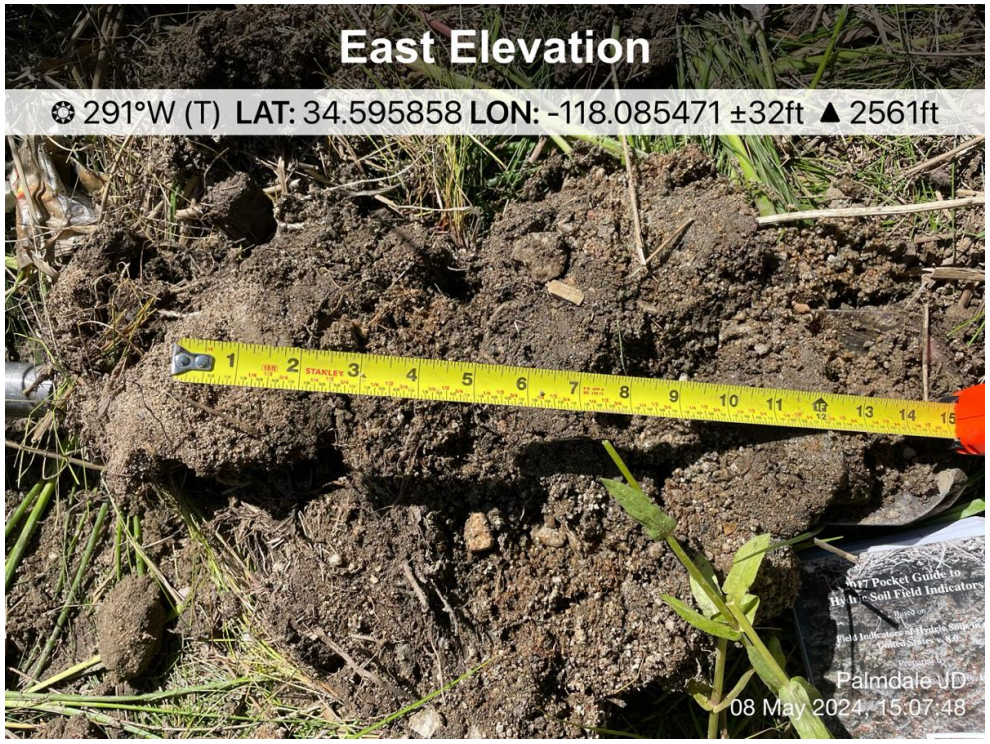
| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 17 |  |
| **Photo Location:** Palmdale, Los Angeles County, CA | |
| **Direction:** Southwest | |
| **Survey Date:** 5/8/2024 | |
| **Comments:** SP3 soil | |



| | |
|---|---|
| **Photograph ID:** 18 |  |
| **Photo Location:** Palmdale, Los Angeles County, CA | |
| **Direction:** South | |
| **Survey Date:** 5/8/2024 | |
| **Comments:** SP4 sampling location and drainage. | |

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 19<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** South<br>**Survey Date:** 5/8/2024<br>**Comments:** SP4 soil pit |  |
| **Photograph ID:** 20<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** West<br>**Survey Date:** 5/8/2024<br>**Comments:** SP4 soil |  |

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

| | |
|---|---|
| **Photograph ID:** 21<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** North<br>**Survey Date:** 5/8/2024<br>**Comments:** SP5 soil pit |  |
| **Photograph ID:** 22<br>**Photo Location:** Palmdale, Los Angeles County, CA<br>**Direction:** North<br>**Survey Date:** 5/8/2024<br>**Comments:** SP5 soil |  |

| | | | |
|---|---|---|---|
| **Client:** | **Palmdale Water District** | **Project:** | **Pure Water Antelope Valley – Advanced Water Treatment Project** |
| **Site Name:** | **Palmdale** | **Site Location:** | **Palmdale, Los Angeles County, CA** |

**Photograph ID:** 23

**Photo Location:**
Palmdale, Los Angeles County, CA

**Direction:**
North

**Survey Date:**
5/8/2024

**Comments:**
Within middle of the Survey Area in the South West Square where no drainage occurs.